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THE ARCHITECTS' & BUILDERS' JOURNAL.

A Weekly Journal for Architects Surveyors Builders and Constructional Engineers.

It is our aim, our ambition, our aspiration even, to build our Journal worthily and well not for the hour only, but for future years; for the few men in the forefront of an enduring and a laborious art; for the disciplined ranks of a distinguished profession; for the young men—Architects to be—and for all who love a clustered column or a flying buttress, a traceried window or a Greek frieze; for the man, too, who honestly plumbs a jamb. . . . . .

CAXTON HOUSE, WESTMINSTER.

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Fore and Aft.

The year that is past has shown a scarcely perceptible improvement on the stagnation of business that has been for so long prevalent. It was a year of bad trade and, in this country, of political unrest, which made matters much worse than they need have been. Anxious as we are to keep clear of political partisanship, we cannot shut our eyes to the plain fact that the Budget proposals with regard to land have had a most sinister influence in quashing, in postponing, or in otherwise seriously restricting building operations. That is palpably the immediate result; what the ultimate effect may be, supposing that those proposals are approved by the country, we do not pretend to prophesy. Our one hope is that the verdict, one way or the other, may be so signal and decisive as to put an end to the suspense that is notoriously more distressing than the realisation of the worst that can happen. One outstanding feature of the past year upon which we think that the building trade is justly entitled to congratulate itself is its splendid optimism. In spite of the most depressing conditions, in spite of heart-sickening hope deferred, there has been no whimpering and whining; but, instead, a fine manly exhibition of courage and fortitude. Adversity has been met in the right spirit of dogged British pluck and endurance. For our part, we have done all in our power to encourage this spirit, not merely because it is an admirable thing it itself, but also because it is actively remedial. We believe it to be a literal truth that in the battle of life "Fortune favours the brave," and that, on the other hand, evil forebodings have a deadly tendency to materialise. It is for these reasons that in the volume of the "Builders' Journal" just closed the search for anything in the nature of a genuine jeremiad would be perfectly vain. Not that we have emulated the folly of the ostrich. We have had to chronicle many unpalatable facts; but we have consistently refused to allow them either to be magnified by the faint-hearted or to be exploited for political purposes by those who seem to be more interested in vote-catching than genuinely concerned for the welfare of our country. We are, in short, convinced of the strength of moral effect; and, therefore, as it is the aim of this journal to promote in every way the best interests of all who are engaged in the great industry of building, we conceive it to be our duty to discountenance every tendency to depress, and to foster every element of firmness and courage. We confidently anticipate that during the year that has just begun, there will be much less need for strenuous Mark Tapleyism. Prosperity is coming along, not in leaps and bounds, but with sure and steady steps, and it will arrive, we firmly believe, in good time to make 1910 the beginning of a new cycle of profitable activity. We sincerely congratulate the entire fraternity of builders—the professional men, the contractors, the merchants, and even the operatives—upon their firmness and patience in adversity. Their all-round courage and optimism have been really splendid, and will, we hope, reap, ere the year is out, a fitting reward, so that, at its close, we may have the very great satisfaction of offering our congratulations upon material as well as upon moral grounds: which is equivalent to saying what we now venture to express in so many words, that we wish most heartily to all whose interests it is our business and our pleasure to represent, a Happy and Prosperous New Year!

The Salting Bequest.

Of the several methods of achieving immortality, that of the collector of "articles of bigotry and virtue" is probably the most inoffensive. Nor is lasting fame in this kind cheap or easy of acquisition. The late Mr. George Salting, who died a week or so ago, spent a lifetime and a large fortune in the acquisition of antiquities; and he has extended and perpetuated his fame as a collector, and added to it something of the lustre of a public benefaction, by bequeathing to the nation the objects acquired at so much expense, and selected with so much discrimination. These fill, at the Victoria and Albert Museum, about eighty cases, of which twenty-nine contain Oriental porcelain, while ten cases show Italian majolica, and ten more are given up to Italian bronzes and reliefs. These figures, representing about two-thirds of the total number of the museum cases, may be taken as a tolerably clear indication of the collector's bent. Apparently his main pursuit was Oriental porcelain, with Italian majolica and bronzes as alternative or relief hobbies, while the miscellaneous objects which make up the minor portion of the collection perhaps came across his path more or less casually. A cynic has said that the collection contains "an unusual proportion of authentic specimens"; and there can be no doubt that Mr. Salting was uncommonly difficult to deceive. That he was occasionally beset by grave misgivings as to the genuineness of some of his purchases is a proof of the extraordinary skill of the manufacturers of sham antiques, whose wares are often so cunningly contrived as to deceive the very elect, among whom Mr. Salting was certainly counted.

The Craze for Curios.

Because of the shams, and upon other considerations, there has been lately observed a revival of the disposition to regard collectors of antiquities as the enemies of modern art. It is complained against them that they favour what is curious rather than what is of intrinsic artistic merit, and that, by bringing ancient and modern into unnatural competition, they divert considerable wealth and interest and influence from the art of to-day, thus devoting to traffic in what is over and done such resources as might be more advantageously bestowed on what is or should be a-doing. There seems, however, to be but little strength in the inference that if this money were spent on antiques, more would be dedicated to modern art, and while it must be admitted that the moral effect of antique-hunting is rather discouraging to the modern artist, yet, on a reasoned view, from which all envy and bitterness are strictly excluded, it may be supposed that the manifestation of interest in art of any kind or of any date is a tribute to the value of art at large. For even granting that most of "the things that they put in museums"—that is, those of them that are shaped by the hand of man—are not conspicuously artistic, but are frankly preserved as "curiosities," they nevertheless show in themselves some attempt towards art, and the bare fact of their collection may be taken as indicating some degree of appreciation of that attempt.

Inflated Values.

Curio-collecting, in fact, seems to be grafted on an estimable root principle, which, however, is apt to produce unseemly and undesirable offshoots. Moreover, it certainly may be supposed to set up a false standard of values. The Salting collection is estimated to be worth from two to four millions sterling. As a matter of comparison, the estimate seems to be utterly preposterous. True, a thing may be, as a matter of price, "worth what it will fetch"; but, on a same view of the inflated value of useless articles of bronze and bric-a-

brac, and so forth, preserved in glass cases to be looked at, and offering a bare recompense to the casual glance, and on a consideration of the outcry that is nearly always raised against the proposed expenditure of a few thousands on the erection of some noble public building, which is destined to high utility, and also to impress generations of citizens with a stimulating sense of service, beauty, and dignity one cannot help thinking that a public which calmly acquiesces in the one case and is sordidly recalcitrant in the other, shows much the same sort of mental perversity as that which is said to have characterised Mr. Salting himself, who, immediately after spending six thousand guineas on a bronze, thought that sixpence was an ample price to pay for a cake with which to entertain a lady guest at tea! But the nation gets the collection for nothing; which is perhaps a shade or so nearer its true value than that exaggerated estimate of four millions sterling. It is good to appreciate what is old and rare, and to cherish what is worth preserving; but such generous emotions should be kept well within the bounds of sanity and moderation, lest they lead to consequent error in undervaluing what is new and comparatively common.

Training Colleges and the New Spirit.

The fine buildings of Leeds are, it is to be hoped, about to be augmented by a notable addition. The City Corporation, it is announced, have determined to erect, in Beckett's Park, a training college, which, with its eight hostels, is estimated to cost £130,000. This is to build nobly, if expenditure may be regarded as a criterion. The Leeds Town Hall, designed by Mr. Brodrick, and one of the finest in the kingdom, did not cost much more; but it was built some forty years ago, when labour was decidedly cheaper, and materials also were probably, on the whole, less dear. But, in any case, £130,000 is a handsome sum to spend on a training college. Nor should it be begrudged for such an object. A handsome and dignified building is not only a splendid asset for a city, giving it tone and character, and increasing the self-respect of the citizen and the awe of the alien, to the no small advancement of interest and commodity, but it is also an agent of liberal education, and a monument to the enlightened views of education which have long distinguished the people of Leeds, whence have sprung an astonishingly large proportion of the nation's very best elementary teachers. Hitherto the training colleges of England have been—with perhaps the solitary exception of the costly London Day Training College in Southampton Row, which, however, is partly a school of arts and crafts—run up in a niggardly spirit that suggests an almost fatal misconception either of the supreme importance of elementary education or of the necessity—we do not think the word a whit too strong—of suitably embodying a noble ideal in a worthy building. Many of the colleges—for instance, Whitelands at Chelsea, the Goldsmiths' at New Cross, and Avery Hill, Eltham—have been adapted from buildings that were originally intended for other purposes; and in the majority of those that were specially built there is very little that is suggestive of the Grand Manner. Some of the earlier buildings are rather reminiscent of the charity school view of national education—buildings that are mean and soulless. To Leeds belongs the signal honour of setting a magnificent example to the rest of the country, and we trust that their public spirit will result in a building that will be in every way worthy of their splendid spirit, and that other cities may thereby take courage to follow so notable an example.

Councils of Architecture.

Mr. Cass Gilbert, whose name is much better known in this country since the illustration of some of his works in this journal and in the "Architectural Review," delivered an interesting address as retiring president of the American Institute of Architects, at the forty-third annual convention of that body, which was held at the New Willard Hotel, Washington, D.C., on December 14th-16th. Referring to the Executive Order of President Roosevelt, under date January 19th, 1909, creating a Council of Fine Arts, as an outgrowth of discussions at the 1908 Convention, Mr. Gilbert said that further developments were being mooted. It has been urged that the Institute should advocate, in place of the Council, a Department of Public Works, under which would be placed the construction, adornment, and maintenance of all public buildings, bridges, parks, and roadways. "Such a department," he said, "co-ordinating the functions of both structural and artistic design, would seem to be justified by the vast extent of the Government's enterprises; but the exact method by which the general result should be obtained is of comparatively minor importance." The time seems to be ripe for advocating some such reform in this country. Indeed, the Town Planning Act places more power in the hands of a central authority than would perhaps be possible in the United States; and it therefore becomes highly necessary to arrange that that power shall be judiciously exercised. To this end it is necessary that full use shall be made of the best available advice; and perhaps, to echo Mr. Cass Gilbert's phrase, the exact method of obtaining it is of comparatively minor importance. Nevertheless, we should like to see more definite signs of organised and co-ordinated wisdom. As yet we are left in doubt as to whether the Government intend to gather this wisdom fortuitously and casually, or whether they will attach it to themselves regularly and statedly. Either course would have its natural drawbacks. The former is too loose, the latter might easily become hidebound. We can only trust that the R.I.B.A. is making the most of the greatest opportunity it has ever had of impressing itself upon the counsels of the nation in a matter in which the interests of the country, the profession, and the art of architecture, are intimately concerned, and at many points coincide.

The Example of Paris.

In Paris, great doings are toward. The Chamber of Deputies, by 338 votes against 33, has passed a Bill sanctioning the borrowing of a sum that is about equivalent to thirty-six millions sterling, to be expended on works for the hygenic and æsthetic improvement of Paris, and there is no doubt that the Senate will endorse the action of the Chamber. As the voting indicates, there were many abstentions, and some of the Paris papers, commenting on this fact, accuse the absentees—who were, it seems, mostly country members—of callousness towards the capital, and no word of gratitude is offered them for having at least had the decency to remain neutral. Now, if such a vote had been taken in the House of Commons with regard to London, the provincial mind—which in this connection does not by any means exclude metropolitan members—would have been actively and successfully hostile; for where building is concerned we have not yet learned to think in tens of millions. In fact, in referring to the provincial mind, we do the provinces a gross injustice; for, in proportion to their size and wealth as compared with London, they display, on the whole, an amount of enterprise and of corporate pride to which the Londoner has not yet attained, and it would perhaps be more just to say that his view of building operations is parochial rather than provincial. The example of Paris should not be lost upon him. One regrets that it was not exhibited four or five years ago, when it would have been useful as a stimulus to the "Little Londoners" who have cut down the cost of the County Hall to a sum that, however tremendous it may look to the mean-spirited ratepayer—whom vote-hunters have almost persuaded that every pound spent on London comes out of his own pocket—is really insignificant as compared with the importance of the occasion.

Architectural Copyright.

The report of the Committee of the Law of Copyright, in so far as it relates to architecture, is printed in our Special Issue, dated December 31st, 1909. The committee recommend that architecture should be protected under the law of copyright, both in order to bring about uniformity with the revised International Copyright Convention signed at Berlin on November 13th, 1908, and "because it deserves to be protected and presents no differences in principle from that applicable to the sister arts." We imagined that, considering the mass and weight of evidence placed before them by the appointed representatives of the R.I.B.A., the committee could hardly arrive at any other decision. Yet it is not surprising that Mr. Joynson-Hicks, and two other members of the committee, have dissented from the finding. Mr. Joynson-Hicks's chief objection seems to refer to difficulties of administration. He appears to think that it would often be hard to decide what was and what was not an infringement; but we think that he could hardly have given sufficient attention to the extant records of the working of the law in foreign countries. He does not quite see how infringement could always be penalised. He shrinks from the pulling down of a "pirate" building; and he thinks that such a drastic course might inflict unmerited hardship on an innocent owner. This, however, is to anticipate the passing of a very wooden sort of an Act. We are inclined to think, however, that Mr. Joynson-Hicks reflects more truly than the majority of the committee the spirit with which the measure will almost certainly be received in the House of Commons. Even supposing the architects of the kingdom go solid for copyright, they are likely to be met by strongly opposing forces, in face of which the chances of the committee's recommendations immediately becoming law seem rather remote. It is very far from our intention to throw cold water on the movement; and we trust that these observations may be taken in the sense that to be forewarned is to be forearmed.

SURFACE TREATMENT OF CONCRETE.

By Thomas Potter.

Now that concrete for general building purposes is recognised as one of the best and strongest systems of construction, the difficulty is as to the most suitable methods of finishing the external surfaces of monolithic walls.

Cavity Walls.

In olden times, the concrete was usually faced on both sides, or on one side only, with stone or brick, and the cavity between was filled with concrete. When the facing was external only, forms or shutters were used on the inside in the same way as practised at the present time. This was more easily done than now, as the walls were usually thicker. Reading Abbey, and other extensive ruins, show the stone facing decayed in parts, leaving the concrete core generally intact. The same method of construction is still practised occasionally, where the walls are thick enough for the purpose; but, unless the facing material is of a substantial character, the concrete is apt to disturb it if punning or tamping is practised, whereas if punning or tamping is omitted, the concrete must be deposited in a sloppy condition, otherwise it will not be homogeneous, and will probably allow damp to penetrate.

To Allow for Tamping.

The walls of a suburban church that was built some five-and-thirty years ago, were faced with brickwork, a half-brick in thickness on both sides, with core of cement concrete. Tamping, however, tended to push the brickwork out, and, as a remedy, the walls for a certain number of courses in height were built to slope slightly inward, so that when the concrete was deposited in place tamping was practised until the brickwork was plumb.

It was formerly the custom, where lime was used as a matrix, to deposit the aggregate in a dry state between the facings, and pour in the lime in the form of liquid grout until it had filled up all the interstices, and in this way pressure on the facings was almost avoided.

One-side Facing.

If concrete walls are faced on one side only with other materials, the temporary wood forms or shutters cost nearly as much as if they were necessary on both sides; for although only one-half the boards are necessary, the labour is much more in proportion, as the forms have to be substantially strutted to keep them rigid; whereas, if necessary on both sides, they can be bolted, or otherwise attached to each other, in which case much lighter strutting is required.

But, whatever the facing materials may be, it must be bedded with cement, and time must be allowed for it to harden before the concrete is added: and not more than a foot or eighteen inches in height should be built at a time, unless the facing is of heavy and substantial character. Great care has to be exercised in watching and plumbing the facings, in order to make sure that they are not forced outward while the concrete is being poured in.

Flint Facing.

Flints would, on a superficial view, appear to be the worst materials for facing; but in reality they are among the best. They can be built a foot in height at a time, and after the work has been allowed to rest for a day or two for the cement to harden, the concrete can be deposited in place, and with ordinary care the flints will not be disturbed. Owing to the irregular size and shape of the flints, the concrete bonds with them in a way much superior to brickwork backing, and it becomes a difficult matter to remove any after the concrete has been in place for a few days. Church walls built with flints and having a Caen stone slab facing one and a half to two and a half inches in thickness on the inside, were in every way a success.

Flint Chequer-work.

Chequer-work for walls—i.e., flint squares twelve to eighteen inches square, alternating with faced stone of a similar shape and size—is simpler still, as flints can be faced and laid face downwards in open frames or boxes and backed up with concrete to three or four inches in total thickness (the frames having small holes in the bottom and sides to let the effluent water pass away), and when hard, set by masons in the same way and at the same time as the stone squares.

Encaustic Tiles.

Facing monolithic walls with encaustic or coloured tiles by placing them in the wood trough formed by the shutters, and backing them up with concrete, has been advocated and tried, but, so far as the writer is aware, with no great measure of success.

Coloured Concrete Slabs.

Concrete slabs about an inch in thickness, with lugs at each end, or metal bars to tie them to the concrete core, were used to some extent at one time. They were cast in iron moulds, and the cement for the faces of those required for external use was stained with oxide of iron, while those for the inside of the walls were left rough to afford a key for the plaster, or left smooth of a natural colour, and afterwards painted or distempered. The external and internal slabs were held together temporarily by wood clamps until the concrete had set.

If good, permanent, and suitable colours could be secured, possibly some system of the kind might be practicable, but, owing probably to the lime constituent in cement, the colours are apt in course of time to fade or to become paler. Earthy stains, such as ochres and umbers, weaken cement, which appears to resist affinity with materials whose particles are finer in size than itself.

First Scale Pattern Slabs.

Another system of facing concrete walls was the use of cast concrete slabs of a fish-scale pattern, an invention of the late Mr. Lascelles, of Bunhill Row, but although sometimes used as a facing for concrete walls, they were better adapted for fixing with wood screws to wood framing. They were stained in the ordinary way, and cast in metal moulds.

Stucco the Chief Resource.

Apparently, therefore, in the absence of some better method of treating the surfaces of monolithic concrete walls of moderate thickness, the use of a plastic material is the only remedy to fall back upon. It has been stated that Portland cement does not adhere well to concrete, and if used as stucco for outside walls, will come off. Having cemented many concrete walls of buildings, I can only say that I never knew this to occur in a single instance. If the concrete face is very smooth, perhaps hacking the surface may be advisable, but I never found it necessary if the walls were well watered, the cement well seasoned, and preferably not applied when the sun's rays were powerful.

Roughcast for Rural Districts.

In rural districts and provincial towns Portland cement can be used in various ways that are not so well adapted for large smoky cities and manufacturing places. Roughcast, for instance, is not suitable to towns, since smoke and soot particles cling to all irregular surfaces, rain merely removing them from point to point. Cement is now recognised as being of an extremely durable character, capable of resisting the acid constituents of the London atmosphere; and also it admits of architectural treatment in a rational manner.

A Bad Old Tradition.

Unfortunately, cement was used to so great an extent many years since to clothe all kinds of rotten brickwork, and its treatment was so constantly in the hands of a low class of piecework plasterers, who had peculiar notions of trying to imitate stone, and masons' joints, and who used the cheapest cement and sand procurable; the result be-



Photo: Arch. Review.

SHOP FRONT, HIGH STREET, MARYLEBONE, LONDON, W. REGINALD BLOMFIELD, A.R.A., ARCHITECT.

ing such deplorable failure, that the words "stucco" and "jerry building" became for a time synonymous.

Previous to the invention of Portland cement, and for years after, Roman cement, invented in 1796, was extensively employed as a facing material for walls, and much sound work that was done fifty to eighty years since is still in existence, and is apparently as good as it ever was, but its colour necessitated its being distempered or painted. It was usually called "cement stucco," in contradistinction to a much less costly process, in which ground lime, usually blue lias, and sharp clean sand, or preferably pounded slag sand, were the ingredients employed, and very great care was taken in the mixing and application.

For rural buildings and small towns, roughcast in panels, with narrow bands of cement, is inexpensive, and forms an appropriate finish to concrete walls; but it should be executed by workmen who are accustomed to this class of work. The shingle or gravel should be washed quite clean, preferably by passing it through a cross-mesh sieve, of the size required, in a tub of water, until every particle of dirt and foreign matter is removed. The sand should be coarse, sharp, and clean, the lime of an hydraulic character, and best quality, and quite fresh. The proportion usually is: one part of lime, two parts of sand, and two of shingle, all by measure. The ingredients require to be intimately mixed and kept well stirred until no particles of lime remain unslaked, the mass being then allowed to cool.

A coat of good lime and hair mortar is applied as a rendering coat to the walls, and scratched with a lathe in the usual way; the second or floating coat is applied when the rendering coat is quite dry, and then straightended with a floating rule. While the work is still soft the roughcast is thrown on vigorously with a scoop. One coat of plaster only is sometimes used, but it makes inferior work as compared with two coats. Necessarily only a few yards must be floated at a time before the roughcast is thrown on.

Pebble-dashing.

Pebble-dash, as it is called, consists in dashing clean washed pebbles, or small pieces of flint, shells, etc., in a dry state on the floating coat of hair mortar, and gently pressing them in with the hand, or with a hand float. This is more often done when the pebbles, etc., are of a suitable colour. Roughcast is more often whitened or coloured as may be preferred.

Portland cement mixed with sharp, clean, coarse sand, in the proportion of 1—3 or 1—4, is sometimes used in preference to lime and hair mortar; it insures dry walls, but the second coat has to be applied in smaller surfaces at one time, owing to its quicker setting properties. If delayed too long, the shingle fails to get a grip of the cement, and bald patches are the result.

Stabbed Stucco.

An old-time treatment of plastered walls in an economical way is to mix together Portland cement and lime putty in equal proportions, and add three or four parts of sharp sand. This is applied in the usual way—either one or two coats—and when partly set, is stabbed with the stump of a birch broom, the end cut or trimmed straight and even. Better still is to fix in a plasterer's hand float, about half the size of an ordinary float, and small nails driven through from the back until they project about a quarter of an inch, and rough-shapen the points with a file. They require to be about three-eighths of an inch apart, over the whole area of the float. With this implement the cement surface is "stabbed." A little practice is necessary, but if the work is done well the appearance is very satisfactory, and the surface is of superior durability as compared with roughcast.

Cement Stucco for City Streets.

Cement stucco for certain classes of buildings in smoke- and soot-laden places like London is no doubt an exceedingly convenient material. Cement, judiciously applied, and of the best quality, mixed with pulverised slag as a sand constituent, is equal in hardness and durability to almost any natural stone. There is nothing has such an affinity for cement as slag sand, if it is kept a sufficient time to liberate by aeration any sulphur it may contain.

In Victoria Street, Westminster, where none of the buildings are more than about fifty years old, nearly every kind of wall facing material in common use has been employed. Stone, brick, cast concrete, cement, terra-cotta, and a sprinkling of granite and marble, are all in evidence; but owing to soot and smoke the various materials are scarcely distinguishable from each other.

R.I.B.A. EXAMINATION RESULTS.

The Preliminary.

The preliminary examination, qualifying for registration as Probationer R.I.B.A., was held in London and the undermentioned provincial centres on the 8th and 9th November. Of the 123 candidates admitted, claims for exemption from sitting for the examination were allowed to the number of 35. The remaining 88 candidates were examined, with the following results:—

District.	Number Exam'd.	Passed.	Re'egated.
London ...	... 46	26	20
Birmingham ...	... 4	3	1
Bristol	... 7	5	2
Cardiff ...	... 3	2	1
Glasgow ...	... 3	2	1
Leeds	... 6	5	1
Manchester ...	... 16	8	8
Newcastle ...	... 3	3	0
	88	54	34

The 89 passed and exempted candidates, who have been registered as Probationers, are as follows:—

Ackroyd, S. W., Yorks; Adams, W. A. C., W. Kensington; Alison, W., Glasgow; Anglin, S. N., Hale; Apperly, E. L., Hyde Park, W.; Arthur, J. L., Llandaff; Ashbolt, J. S., Southampton; Bagenal, P. H. E., London, S.W.; Bell, C., Dundee; Betts, A. W., Nottingham; Bhedvar, S. K., Brixton Hill, S.W.; Blyth, C. K., Highbury, N.; Boddington, F. E., Brisbane; Broadhead, F. A., Nottingham; Brown, P. N., Huddersfield; Cobb, R. S., Shortlands; Cook, C. R., Wallington; Court, H. W., Greenwich, S.E.; Crabtree, E. J., Southport; Crossland, H. E., Sutton-in-Ashfield; Curwen, J. S., Kendal; Daly, T., Renfrewshire, N.B.; Dear, F. T., Lambeth Road, S.E.; Dod, H. A., Birkdale; Donaldson, B., Newcastle-on-Tyne; Donger, W. J., Winchester; Edmunds, H. C., Swansea; Edwards, S. J., Pinner; Farr, R. P., Lombard Street; Fletcher, D., Uttoxeter; Fox, W. E., Gainsborough; Godwin, W. H., Birmingham; Gratton, S., Newton Abbot; Gregory, H., Yorks; Hamilton, T. C., Wallsend-on-Tyne; Harman, S. W., Teddington; Hemm, G., Heaton Chapel, nr. Stockport; Hickman, E. J., Birmingham; Hickson, H. A., Netherton, nr. Huddersfield; Holroyd, F., Woodlesford, nr. Leeds; Horton, A. W., Derby; Hoten, S., Stonebroom, nr. Alfreton; Hunter, A., Stockwell Road, S.W.; James, J. A. B., Port Talbot; Jones, R., Parcmain, Carmarthen; Knight, W. J., Gloucester; Le Grice, C. H., Lowestoft; Lennox, H., Ayr; Lewis, G. M., Highbury New Park, N.; Lipscomb, S. G., Edgware Road, N.W.; Litten, H. E., Twickenham: Macphail, D. St. Clair, Edinburgh; March, J. E., Axbridge R.S.O., Somerset; Marcucci, D., Southfields, S.W.; Moore, J., Beighton, nr. Sheffield; Moorsom, Petersfield; Morley, C. S., Beckenham; Moscrop, W. N. J., Darlington; Norris, W., Oldham; Orme, T. J., Birmingham; Parkes, E. M., Northwich; Peermahomed, A. B., Blackheath, S.E.; Proffitt, G. W., Walkden, nr, Manchester; Roarty, S., Sydney; Robinson, G. J., Salisbury; Rogers, W., Eastleigh; Russell, A. L. N., Roxburghshire, N.B.; Sawer, J. S., Ipswich; Shanks, T. E. T., Bath; Simmons, C. G., Primrose Hill, N.W.; Smith, A., Luton; Somerford, T. R., Brixton, S.W.; Stevens, T. T., Bury St. Edmund's; Taylor, J. A. C., Oldham; Templar, W. R., Seven Kings; Teulon, C. M., Croydon; Thomas, G., Manchester; Thomas, W. N., Crewe; Triscott, H. S., Plymouth; Walker, H. F., Potter's Bar, Herts.; Welch, H., Edinburgh; West, A. J., Nottingham; Williams, F. E., Birmingham; Williams, J. G., Bristol; Williamson, H. R., Edinburgh; Winch, K. M., Richmond, S.W.; Winter, R., Dundee; Woodroffe, N. F., Lincoln's Inn Fields, W.C.; Worthington, C. E., Upper Phillimore Place, W.

Intermediate Examination.

The intermediate examination, qualifying for registration as Student R.I.B.A., was held in London and at the undermentioned provincial centres on the 8th, 9th, 11th, and 12th November. One hundred and eight candidates were examined, and the results are reported as follows:—

District.	Number Exam'd.	Passed.	Relegated.
London ...	... 69	35	34
Bristol ...	... 5	2	3
Cardiff ...	... 4	2	2
Glasgow ...	... 3	2	1
Leeds	... 10	4	6
Manchester ...	... 11	5	6
Newcastle ...	... 6	1	5
	108	51	57

The successful candidates are as follows, in order of merit, as placed by the Board of Examiners:—

Knight, F. W., Chelsea, S.W.; Rutter, W. A., Cardiff; Selway, E. R. D., Clapham, S.W.; Scott, B. W. H., Clapham Park, S.W.; Holland, H. D., Wigan; Robinson, H. L., Leytonstone; Broad, K. S., Putney, S.W.; Moir, D J., Glasgow; Hendry, H. D., South Wanstead; West, J. G., Westminster, S.W.; Houston, W. W., Belfast; Morley, W. B. R., Norwich; Voelkel, W., Yorks; Gunton, W. H., Blomfield Street, E.C.; Pedley, E. W., Derby; Hague, H. V. De Courcey, Blackpool; Macmillan, A. L., Southport; Knyvett, J. S., Birmingham; Shears, R., Westcliff-on-Sea; Miller, S. R., Acton, W.; Owen, A. H., Holloway, N.; Knott, A. J., Weston-super-Mare; Nightingale, F. B., Wandsworth Common, S.W.; Bradley, H., Blackpool; Clark, W. L., Phœnix Street, N.W.; Colbeck, H., Halifax; Cowper, R. S., West Kensington, W.; Davies, J. C. G., Morriston, Glam.; Evans, C. G., Neath; Furniss, R. W., Loughborough; Gilks, S. L. C., Putney, S.W.; Hall, M. A., Lincoln; Hallett, G. F., Brighton; Harrison, S., Middlesbrough; Jessop, B., Notts.; Knapp-Fisher, A. B., Kensington; Lay, C. H., Suffolk; Lowry, R., Bayswater, W.; Martin, C. F., Edgbaston; Newham, T. N., Hastings; Pickmere, T., Liverpool; Reid, C. B., Vauxhall Bridge Road, S.W.; Rylatt, A., Hull; Smeed, C. A., Stratford, E.; Surveyor, M. F., Strand, W.C.; Vey, A. E., Chiswick, W.; Walker, R., Vauxhall Bridge Road, S.W.; Welch, H. A., Regent's Park, N.W.; Whitehead, T. G., Croydon; Wilks, J., Manchester; Wylde, F. C., Norbury, S.W.

Exemptions from Intermediate Examination

The following candidates, who had attended the architectural courses and obtained first-class certificates at certain schools of architecture were granted exemption from their names, were granted exemption from sitting for the intermediate examination, and have been registered as Students R.I.B.A.:—

Cable, R. W., Brixton, S.W.; Clarkson, G. F., Kensington, W.; Dod, H. A., Birkdale; Farey, C. A., West End Lane, N.W.; Graeme, A. V. S., Westminster; Hake, G. D. G., South Lambeth Road, S.W.; Hett, L. K., Ardingly; Home, G. W., West Kensington, W.; Jones, T. A., Waltham, Hants.; Levy, A. L., Netherhall Gardens, N.W.; Lodge, T. A., E. Molesey; Matthews, B. F., Stockwell Road, S.W.; Pigott, R. M., Wandsworth Common, S.W.; Prynne, C. E. F., Ealing; Robinson, A. D., Camden Road, N.;

Swindells, F. H., Hampstead, N.W.; Tanner, E. J., Beckenham; Voysey, C., Hampstead, N.W.

Final and Special.

The final and special examinations, qualifying for candidature as Associate R.I.B.A., were held in London from the 18th to the 26th November. Of the 114 candidates examined, 43 passed, and 71 were relegated to their studies. The names of the passed candidates are as follows:—

Ainsworth, J. G., Hyde; Alexander, G. L., Warwick Square, S.W.; Allen, J. G., West Hampstead, N.W.; Atkinson, R., Gray's Inn, W.C.; Auty, J., Morley; Bluhm, Q. M., St. Anne's-on-the-Sea; Bryan, A. F., St. John's Wood, N.W.; Burstow, G. H., Brighton; Chapman, R. T., Bolton; Claypole, E. E. B., Streatham; Davidson, J. A., Londonderry; Davis, C. W., Birmingham; Dickman, H. A., Nottingham; Douglas, A. H., N. Kensington, W.; Elton, P. I,. South Kensisgton, S.W.; Finn, E., Canterbury; Goodchild, W., Ipswich; Guthrie, L. R., Adelphi, W.C.; Hadwen, N.W., Triangle, Yorks.; Hanscomb, C. E., Ladywell, S.E., Hastewell, R. E., Haltwhistle; Hawkins, F. G., Hendon, N.W.; Hepple, F. H., Worcester; Hollis, H. C., Oakley Square, N.W.; Maxwell, W. C., Belfast; Milburn, W., junr., Sunderland; Moberly, A. H., Campden House Road, W.; Munnings, J. F., India; Orme, R. W., St. Anne's-on-Sea; Osler, F., Hammersmith, W.; Page, J., Bowes Park, N.; Roberts, D. J., Erdington, nr. Birmingham; Roberts, W. J., Manchester; Rowledge, G. H., Manchester; Sagar, W. H., Chelsea, S.W.; Scott-Willey, Reigate; Stone, G. M., Brixton Hill, S.W.; Stonehouse, C., Blackburn; Thompson, M., Lytham, Lancs.; Troup, F. G., Bayswater; Ware, V., Bournemouth; Woollatt, J., Nottingham; Wright, C. L., New Malden.

The following table shows the number of failures among the seventy-one relegated candidates in each division of the final examination:—

I.—Design	51
II.—Mouldings and Ornaments	61
III.—Building Materials ...	15
IV.—Principles of Hygiene ...	20
V.—Specifications	27
VI.—Construction, Foundations, etc.	33
VII.—Construction, Iron and Steel, etc.	22

Colonial Examinations.

The following candidates passed the Colonial intermediate examination held in Sydney, November, 1908:—

Keith-Harris, R. J., Sydney, N.S.W.; Roarty, S., Sydney.

The following candidates passed for Colonial special examinations qualifying for candidature as Associate R.I.B.A., held in Sydney last June:—

Sutcliffe, H., Australia; Taylor, E. A., Sydney, N.S.W.

The following candidate passed the special examinations held in Johannesburg in July last:—

Beall, W. J., Natal.

ST. PAUL'S CROSS.

Part of the foundation has been laid for the cross to be erected on the north-east side of St. Paul's Churchyard on the site formerly occupied by the fountain, which was removed to Hornsey, and there opened recently by the Lord Mayor. The late Mr. H. C. Richards, K.C., left £5,000 for the erection of the cross, and Mr. Reginald Blomfield prepared the designs.

Mr. Bertram Mackennal has executed a bronze figure of St. Paul, who is represented grasping a cross in his right hand. The figure stands nine feet high, upon a Doric column, with an ornamental plinth and platform, surrounded by a balustrade of black marble and Portland stone. On three sides memorial panels have been placed, while on the fourth a bronze gate is situated. When complete the monument will reach a height of fifty-two feet.

Strong foundations have been necessary to support the statue, and excavations to a depth of thirty feet have been made. This portion of the work has occupied the contractors for three months, and they expect to conclude the work a year hence.

THE HOUSING CO-PARTNERSHIP MOVEMENT.

The secretary of the Co-partnership Housing Council has issued his annual statement, from which it appears that the movement was inaugurated at Ealing in 1902, and at the end of 1906 the amount of capital invested was £88,935. In the following year that sum was more than doubled, reaching a total of £204 639. In 1908 there were eight societies in existence, the same number as in the previous year, and the investments in property amounted to £346,514. Last year four societies were added, making 12 in all, and the amount invested has increased about 60 per cent., the investments totalling £536,300. The 12 societies are situated in the following districts:—Ealing, Letchworth, Sevenoaks, Leicester, Manchester, Hampstead (two), Harborne, Fallings Park, Stoke-on-Trent, Wayford, and Derwentwater. There are now houses let to tenants at 3s. 9d. per week in the provinces, and 6s. per week in London, which not only give living accommodation at least as good, in the way of air space, as any others within the neighbourhood, but also give the tenants the privilege of using club-rooms, tennis-courts, bowling greens, play spaces for the children, and fields for athletics. The houses, too, are never built at more than 12 to the acre, against 30 or 40 on the ordinary system.

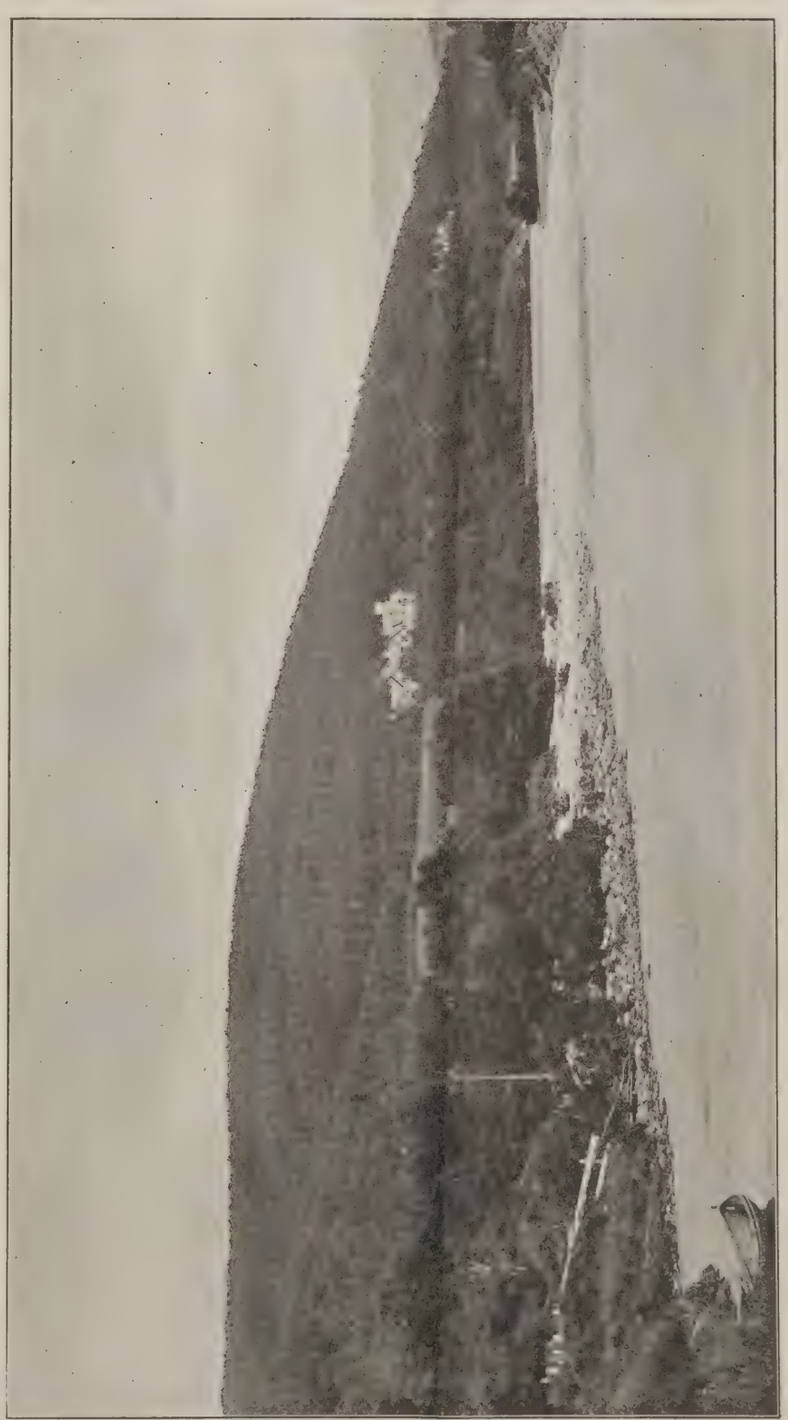


Photo: B. Wilken.

DALCHROY, ADVIE, STRATHSPEY VIEW FROM THE RIVER STRATHSPEY. A. MAITLAND AND SONS, ARCHITECTS.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Jan. 15.	ELEMENTARY SCHOOL, KEIGHLEY.—The Education Committee invite competitive designs and estimates for a new Public Elementary School for older children to be erected at Highfield, Keighley. Printed instructions and conditions, with a lithographed plan of the site, may be obtained on application at the Education Offices. Designs and estimates to be sent by Jan. 15 to H. Midgley, Secretary, Education Offices, Keighley. Only architects residing or carrying on business within the Borough are invited to compete.
Jan. 31.	NATIONAL MUSEUM OF WALES. The Council desires to receive competitive designs for the erection of a new National Museum at Cardiff. Three premiums are offered of £200, £150, and £100, for second, third, and fourth. The Council have appointed Sir Aston Webb, R.A., Mr. John J. Burnet A.R.S.A., and Mr. Edwin T. Hall, F.R.I.B.A., as Assessors. Particulars and plans of the site will be supplied to competitors on payment of a fee of £2 2s., returnable if all papers are returned within 14 days. Inquiries to be addressed to Dr. Wm. Evans, Hoyle, Director of the Museums. City Hall, Cardiff.
Jan. 31.	PEMBROKE (Co. DUBLIN) LAYING OUT HERBERT PARK. The U.D. Council invite schemes with estimates of cost, for the laying out of above public park, which is about thirty-five statute acres in extent, within their district. A premium of £50, which is to include all expenses, will be paid to the person whose scheme may be selected. All plans, estimates, etc., sent in by the successful competitor to become the property of the Council. The Council will not be liable for any payment to a competitor, other than the above premium to the successful party. A plan of the lands as now existing can be obtained from on and after Monday, 3rd January, 1910. J. C. Manly, Clerk to the Council, Town Hall, Ballsbridge, Pembroke, Co Dublin.
Feb. 1.	OLDHAM, EXTENSION OF THE TOWN HALL. Restricted to Architects practising or residing in the Borough. Premiums of £50, £30 and £20, for the three designs placed 1st, 2nd and 3rd, and a sum of £5 will be paid to all unsuccessful competitors who send in a complete set of plans in accordance with the instructions. Plan of site, with instructions and suggestions for architects obtainable from E. C. Foote, Borough Surveyor, Town Hall, Oldham. Deposit: 21s.
Mar. 1.	GLAZED BRICKWORK DESIGNS AND ESSAYS. A committee of glazed brick manufacturers invite designs for works to be executed in glazed brickwork, also essays as to the advantages to be derived from the use of this material in accordance with conditions to be obtained from J. Johnston Green, 142, Liverpool Road South, Southport. Premiums of 100 guineas, 50 guineas and 25 guineas awarded to designs and essays jointly. Assessor Mr. Max Clarke, F.R.I.B.A., appointed by the President, R.I.B.A.
May 31.	MUNICIPAL OFFICES, KARACHI. The Municipality offer a premium of 7,500 rupees (£500) for the best design, detailed plans and estimates for new Municipal Offices. Cost not to exceed 500,000 rupees, and the style of architecture is left open to the designers. Ferrotype plans of the site and a general arrangement of the floors of the building showing the accommodation to be provided, together with a copy of instructions to architects, will be supplied to intending competitors on application to the Chief Officer and Chief Engineer, Karachi Municipality. A charge of Rs. 5 will be made therefor, which will not be refunded. Each set of drawings must be sent in anonymously, but accompanied by a sealed envelope containing the author's name and address. Each set of drawings and all the documents required, including the sealed envelope, must be securely packed in a wooden box addressed as follows:—The Chief Officer and Chief Engineer, Karachi Municipality, Karachi, India, and forwarded, at the competitor's own risk and charges, in time to reach the Chief Officer on or before the 31st day of May, 1910. It is proposed to apply to Government for permission for one of the chief architects to act as assessor to decide on the design to which the prize shall be awarded. The decision of the assessor will be final and not be open to dispute. The decision of the Municipality will be made within three months of the latest date for submission of designs, and payment of one-half of the premium will be made thereafter to the author of the selected design, the balance to be paid when the further details specified in the instructions to architects have been supplied. On payment of the premium the Municipality will have all rights in the design, with power to erect the building under its own agency, either according to the design selected or with such additions or alterations as it may deem necessary.

Elementary School, Maldon.

The plans of Mr. A. S. R. Ley, 55, Bishopsgate Street Without, E.C., have been accepted by the Essex Education Committee for the new elementary school at Maldon. The estimated cost is £5,554 10s.

Girls' Elementary School, Loughton.

The plans of Mr. H. Tooley, of Buckhurst Hill, have been accepted by the Essex Education Committee for this new school at Loughton, which, it is estimated, will cost about £4,460.

New School, Broomfield, Chelmsford.

The Essex Education Committee have invited Mr. P. M. Beaumont, Maldon, Messrs. C. and W. H. Pertwee, Chelmsford, Mr. H. Tooley, Buckhurst Hill, and Mr. A. Christy, London, to compete for the above.

New School at Heybridge, near Maldon.

The Essex Education Committee have invited Mr. J. W. Start, Colchester, Messrs. C. and W. H. Pertwee, Chelmsford, Mr. P. M. Beaumont, Maldon, and Mr. J. R. Rogers, Maldon, to compete for the above.

Leeds Training College.

Sir Aston Webb, C.B., R.A., has assessed the above competition, which was limited to Leeds architects. Twenty-seven designs were submitted, the design numbered 9 being selected as the best design for the college. The author of the design was found to be Mr. G. W. Atkinson, of Mark Lane, Leeds. The assessor reported that of the remaining designs, Nos. 4, 13, 14, and 26 would be the next suitable for the erection of the eight hostels which form part of the scheme, and the respective authors were disclosed as Mr. Albert Kirk, Bond Street, Leeds, Mr. S. D. Kitson, M.A., Greek Street Chambers, Leeds, Mr. W. P. Schofield, A.R.I.B.A., Albion Street, Leeds, and Messrs. Percy Robinson and W. Alban Jones, Albion Street, Leeds. The cost of the whole scheme, embracing the college and eight hostels, is expected to be about £130,000.

Wood Green Public Baths.

The U.D. Council have selected the design of Mr. Harold Burgess, of West Green, South Tottenham, for the above, the second premium of 25 guineas going to Mr. E. Harding Payne, John Street, Bedford Row, W.C., and the third premium to Messrs. F. S. and F. Danby Smith, of Parliament Mansions, Victoria Street, S.W.

At an exhibition held at Clifford's Inn Hall, Fleet Street, by Mr. T. Fisher Unwin, the most noteworthy items were two magnificent drawings of Rouen Cathedral by Mr. Joseph Pennell.

* * *

Mr. John McKie Elliott, of Prospect Street, Gateshead, lath-render and builders' merchant, who suffered from an almost lifelong blindness, and who died on November 27, aged 70, left estate valued at £12,143 gross, with net personality £6,423. The testator, after certain bequests, left the residue of his property, apparently amounting to about £10,000, to form a fund for the benefit of blind persons, of whatever age or sex or creed or absence of creed, in Newcastle or Gateshead.

Correspondence.

The Editor declines responsibility for the statements made or opinions expressed by correspondents.]

The R.I.B.A. Form of Agreement.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—A misprint has been discovered in Clause 30 of the Revised Form of Agreement and Schedule of Conditions for Building Contracts which has been issued from the Royal Institute since October 14th, 1909. If all those who have purchased copies of the form since that date will kindly return them to me, I will at once send them corrected copies.

IAN MACALISTER, Sec. R.I.B.A.

Builders' Locked-up Capital.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Your correspondent "A Lancashire Builder" voices the opinion of a large number of North-country builders. The locked-up capital of builders is appalling, and calls for drastic remedies. I know of a builder in this district who has over £20,000 out, which is more than 14 months overdue.

I think it is time a move forward was made. It is of little avail commiserating each other on the hard lot of builders. We could all, I daresay, give examples galore of the injustices perpetrated. Let us cease talking about it and get into action.

I have often wondered why it is that the building trade is conducted on lines so different from any other important trade.

I remember meeting a while ago a gentleman who had deserted the building trade for the bleaching industry. He told me he never knew what comfort was while he was in business as a builder. Since he got out of building business has been a delight to him. The accounts come to hand monthly, nett, on a given date, as regularly as interest on debentures. No seeing architect or surveyor and earning his profit a second time as an advocate after first earning it as a tradesman, and at the best getting paid months, perhaps years after it was due. I have often thought of his words since.

We have in Lancashire a gigantic trade in the various branches of the textile industry, whose basis of business is with tradesmen, cash monthly, but unfortunately builders are treated as something quite apart from ordinary business routine, and are at once deprived of the usual privileges of other tradesmen.

We are the only body of tradesmen I know who wait for our accounts to be made out by the party who has run up the bill. I know this is the practice bequeathed by past generations, but why should it continue?

Before we can prescribe the proper remedy we must ascertain the real causes of this departure from sound business methods. Is the proprietor, architect, or builder to blame?

The proprietor, in my opinion, is merely taking advantage of our loose methods, and what is now almost a custom.

The architect fails because, first and foremost, he is an artist, a thinker, a dreamer if you like; and to persons of that temperament figures and accounts are a dreaded nightmare. He has no commercial training to balance the irresponsible artist temperament, and he cannot understand why he should be worried with things he hates, especially when he is so busy with new work which he hopes to get. I am writing now of the architect who takes out his own quantities, which seems to be becoming more the practice in the North.

Sole contractors and sub-contractors are often suffering from the same disease as the architect, that is, over-development of one side of their character (the trade side) and a want of development of the commercial side.

Here you have two classes of people who have been largely warped in their training. Is it any wonder that an evil practice is the outcome, and that builders are the shuttlecocks of interested parties?



ADDITIONS TO THE GOLDSMITHS' COLLEGE, NEW CROSS. REGINALD BLOMFIELD, A.R.A., ARCHITECT.

These additions consist, on the ground floor, of five class rooms, a large art room, and a large room for nature study. On the first floor are two rooms for crafts, a costume-life room, a design room, museum, and nature-study room, the head art-master's room, lavatory, and cloak room. On the second floor are two rooms for crafts, lecture room, nude-life room, higher-painting room, three modelling rooms, and casting room, with lavatories, etc. The facings are of red brick, with Portland stone dressings, and the roof is covered with Westmorland green slates. The older building, described in one of the Sunday papers as a charming Georgian building, was, in point of fact, built about 1840, and formed an indifferent example of brick and stucco of the heavy classic of the time. The general contractor for the new work was J. Carmichael, of Wandsworth. The sanitary work and heating was carried out by Burn Brothers, and the carving was executed by W. Aumonier and Son, to the designs and under the supervision of the architect.

I should like to see the influence of our Federation turned into other channels than combating the demands of labour merely. The time has arrived when we must take a broader outlook and tackle such questions as these which have such a blighting effect on our trade.

I should like to see a return to the practice of quantities being taken out by duly qualified quantity surveyors independent of the architect's staff. Builders can then get a more impartial tribunal for the settlement of differences and prices. It is asking too much of human nature for the architect to condemn himself or his staff, and this means that the builder must face his own and the architect's omissions and miscalculations.

I think a "Lancashire Builder's" suggestions are very good ones, but do not go far enough.

There is a large body of builders in the Northern Federation of opinion that the R.I.B.A. form of contract has too many blanks, which are filled up in widely varying terms by different architects. What is required is that these blanks should be filled up in agreement with the R.I.B.A., or, failing that, the builders should formulate their own.

LANCASTER.

ARCHITECTURAL ACTIVITY IN AMERICA.

Architectural Employment Bureau.

Tentative plans for the formation of an employment bureau have been made by a special committee of the New Jersey Chapter, American Institute of Architects. It may be used by draftsmen and architects alike, and there will be no charge for the service. The plan is to have an exchange where draftsmen may register and where architects may come for help. A list of the draftsmen will be kept on file, and whenever an architect applies for an assistant he will be given the names of a number of men who are most likely to be able to fulfil his requirements. Very complete data concerning the draftsmen will be kept on file. This will include their full names, ages, education, etc. This information will be kept according to a system that can be referred to readily. There will be no charge for registration. Though the object for organising such a bureau by the New Jersey Chapter, American Institute of Architects, is primarily to aid the draftsmen, it will also be of service to architects. It is expected largely to obviate the bother of having so many draftsmen looking for employment calling at the offices of architects. But best of all, it will give them a list of men, whose qualifications they can tell at a glance, to draw from. Thus it will not be necessary to see young men who are not fitted for the work in question. The committee from the New Jersey Chapter, American Institute of Architects, which has charge of the proposed bureau, is made up as follows: Herman Kreitler, chairman; B. F. Hurd, Frank F. F. Ward, Richard Erler and Alfred Walters.

An Architectural Arts League.

A new organisation has been launched, to be known as the "Architectural Arts League of Atlanta." The object of the association is the promotion of architecture and the allied fine arts. It embraces in its membership sculptors, painters, draughtsmen, mural decorators, etc., as well as architects, and has the power to admit into alliance with the league, artistic, literary, scientific and philosophical societies, which may include in their objects the promotion of architecture or any of the allied fine arts. Instruction in designing, rendering and modeling will be provided and monthly competitions of the "Beaux Arts" and other problems will be held in the league rooms. A special feature will be the annual exhibition of architectural drawings, casts, bronzes and mural paintings, which will be open to the public.

Prof. Percy Ash.

Prof. Percy Ash, in charge of the department of architecture of George Washington University, has been elected Associate Professor of Architecture at the University of Michigan, and was to leave Washington some time before Christmas so as to be able to take up his new duties on January 1. Prof. Ash has been associated with the Department of Architecture of George Washington University for seven years. Five years ago he was appointed professor in charge of the department. He is a graduate of the University of Pennsylvania, where he received the degree of B. S. and C. A. In 1895 he won the travelling scholarship of the University of Pennsylvania and went to Europe to study architecture in Paris and at the American Academy at Rome.

Obituary.

Mr. A. B. Rowe, Architect to Worcestershire County Council.

The death has occurred suddenly of Mr. Alfred B. Rowe, the Worcestershire county architect. Mr. Rowe was the eldest son of Mr. Henry Rowe, who was both city and county architect, and held many kindred offices. Mr. Alfred Rowe succeeded his father as architect to the County Council, and the Standing Joint and Education Committees, in which capacity he planned and supervised the erection of many police and public buildings, and latterly secondary and elementary schools. On the death of his father he succeeded him as architect to the Worcester Charity Trustees, the Worcester Theatre Co., the Worcester Permanent Building Society, and many other bodies. Like his father, he was a zealous and prominent Freemason.

Messrs. L. Whitehead and Co., Ltd., of Portland Works, Portland Place North, Clapham Road, S.W., write to point out that they were the builders of the new Church of St. Michael, Sutton Court, Chiswick (Messrs. Caröe and Passmore, architects), which fact was omitted from the note in our last issue.

* * *

The annual dinner of the past and present pupils of Messrs. Parry, Blake and Parry and Mr. Richard Parry is announced for Saturday, January 22nd, at the Criterion Restaurant. A somewhat novel departure will be made by the omission of speeches and the substitution of a first-class musical entertainment.



DALCHORY, ADVIE, STRATHSPEY, A. MAITLAND AND SONS, ARCHITECTS.

CONCRETE AND STEEL SECTION
(MONTHLY.)

Standard Notation.

The reader of the literature of reinforced concrete, particularly in respect to the theory of design, will appreciate the great advantages that would be derived from uniformity in the algebraical notation employed to represent quantities in calculations. Each author up to the present has been left to choose his symbols at his own free will, and many and various notations have been employed, some of which are better or worse than others. Of course, it would be a very valuable thing if the whole range of symbols employed in engineering calculations generally, were standardized, but that is a large task and but little organised attempt has been made to perform the task. Of course, each branch of engineering uses certain quantities different, or somewhat of different sense, to every other, and as letters or symbols available are small in number, we must expect that the same letters will mean different things in different branches, but first of all we need to strive for uniformity in each branch, though it would be as well if those responsible for the drafting of the lists of symbols in the various branches could consult with each other to avoid too much clashing. Electrical engineering and reinforced concrete engineering are so far the only branches in which standard notations have been arrived at. Of course, it has been urged as a great boon if an international notation could be made, such as we have in chemistry, but in engineering it is very difficult to arrive at a really useful notation to everyone in that way. For instance, after the Science Committee of the Concrete Institute began to consider the subject in 1908, they received in January, 1909, a communication from the International Commission on Reinforced Concrete (formed by the parent body, the International Association for Testing Materials), consisting of a suggested list of symbols for international algebraical adoption for calculations for reinforced concrete. It was found, however, that though some sort of general principles could be agreed upon, the difference in language was so considerable as to render strict conformity with a Continental notation inadvisable. Thus, while the Concrete Institute could agree to adopt the "Three-alphabet" system suggested by the International Commission, consisting of capital Roman letters, small Roman letters and small Greek letters, it decided that the principle of the initial letter, i.e., the use of the initials or the distinctive self-explanatory letters of governing as are customarily employed for abbreviations, forbade the universal application of one standard notation, for it was thought that notation should as far as possible be in harmony with the language in which the specifications and statical computations were written or made. The Concrete Institute has now issued its report with its suggested standard notation, and this is to be considered by the American engineering societies concerned, and there seems hope of agreement between English speaking countries upon one standard English notation. This notation was also put before the International Commission on Reinforced Concrete at its meeting at Copenhagen last year, and it was then found that the representatives of the various Continental countries seemed able to agree upon a single notation, but that ours was considerably different. It was there thought that the only way open was to have two-standard notations—one for the Continent and the other for English-speaking countries, and this is a sensible view to take until we have either a universal language or an international vocabulary of technical terms. As is pointed out in the report of the Science Committee of the Concrete Institute on the subject, if we confine ourselves to the Latin and Greek alphabets we have a total of about 100 letters, from which, however, 33 must be deducted on account of risk of confusion, thus leaving 67 symbols. As there are many hundreds of terms embodied in equations in some form or other in the various branches of engineering, it is obvious that the same symbols must have different meanings in the various branches. An international system of notation would not be suitable for daily national use, for, in so far as it were self-explanatory to the English-speaking peoples, so far would it be a matter of memory to the other nations and vice versa. With these preliminary remarks, we may summarise the Concrete Institute's report as follows: Algebraical notation in engineering formulæ should be simply a species of shorthand in which one letter stands for a word or phrase. This species of shorthand should have a logical basis, should be self-explanatory, and should not tax the memory. The simplest and most natural system is to abbreviate the significant words to their fullest extent. For example, successive abbreviations of longhand would give us in turn such forms as diameter, diam, dia and finally d. Risk of confusion by successive abbreviations is reduced to a minimum by the adoption of what is known as the three alphabet system.

Three alphabet system of notation adapted to the English language:—

LATIN SMALLS.	LATIN CAPITALS.	GREEK SMALLS.
Lineal Dimensions (lengths and distances, etc.)	Areas and Volumes	
—	Moments	—
Intensity of Forces	Total Forces	—
Intensity of Loads	Total Loads	—
Intensity of Stresses	Total Stresses	—
—	Angles	Angles
Constants, etc.	Constants, etc.	Constants, etc.

The notation has been drafted so as to leave the symbols independent of the magnitude of various units. Therefore it is necessary for writers to specify in every case what units they employ. For example, according to circumstances, W may represent

Weight per unit of length,
Weight per unit of area,
Weight per unit of volume.

In specifying the units employed, it is suggested that the Hospitalier notation, consisting of the following abbreviations be used:—

Inches = ins. Feet = ft.

Cubic inches = ins.^{3} Pounds per square inch = lbs./in.^{2}

Hundredweights per cubic foot = cwts./in.^{2}

Tons per square foot = tons/ft.^{2} etc., etc.

We have published articles in these columns recently in which we have employed the notation of the Concrete Institute, and we hope that it will come into immediate general use, for it deserves to be. It has the great merit of being mnemonic, and we feel sure it will commend itself to almost all English-speaking engineers, as being most practical, and if another standard notation is used by Continenetal writers, then it can easily be understood and learnt by the few who consult writings in other languages, and it will be an easy matter to transpose from one notation into the other. Indeed, we might here remark on the lax way in which many translators of technical articles and books repeat the same symbols and use the same phrasing instead of going to the slight extra trouble of twisting sentences round and transposing into other symbols, so as to be easily read and grasped by the average reader.

The Theory of Reinforced Concrete.

Mr. Charles F. Marsh, M.Inst.C.E., M.C.I., has written a good deal on the subject of reinforced concrete design in theory and practice, and in association with Mr. William Dunn, F.R.I.B.A., has published two very valuable books, namely, "Reinforced Concrete" and "Manual of Reinforced Concrete." We were among the first to welcome the former as the standard work on the subject in the English language, and it still occupies a foremost position, while the latter volume is a most useful handbook for constant reference for those in practice. But there has been room for a shorter work, occupying a position between the two, for the first is a bulky work and expensive perhaps to many students, while the "Manual" is only an abbreviation of the conclusions, as it were, of the larger work and a sort of pocket book of formulæ without the argument. Mr. Marsh has now, alone, written a work which fulfils the need. It is called, "A Concise Treatise on Reinforced Concrete," and is published at the moderate figure of 7s. 6d. nett. by Messrs. Archibald Constable and Co., Ltd., of 10, Orange Street, London, W.C., the publishers of his other works. This work is a sort of abbreviation of the theory part of the large book, though it is in no wise copied, and contains considerable matter that is new in treatment and perhaps some new facts. It serves to explain the "Manual," too. Mr. Marsh, in his preface, gives as a reason for publishing this "Concise Treatise" that the greater publicity given to the subject of recent years has led to a better understanding of it, so that it has at length become possible to treat it in a considerably more condensed manner than was justified a few years ago, since details of construction and lengthy descriptions of experiments have no longer the special interest that they possessed in the immediate past. We believe with the author that this volume should meet the demand that undoubtedly exists for a concise and handy volume. We welcome the book especially because we do not quite like the manner in which other authors have dealt with the subject as regards the instruction of the student in the way he should go. Mr. Marsh develops his subject scientifically, and his rigid and careful treatment of the theory must be valuable to the student. He himself draws attention to the many points in which the assumptions made for purposes of calculation depart from the results obtained by exact experiments, but he shows the reasonableness and utility of these hypotheses, and the student is warned against taking everything as final. The spirit of inquisitiveness in the study of reinforced concrete should be fostered, and Mr. Marsh's book shows the student the right road. Though at times we are inclined to think some of the author's remarks savour of the trite and the obvious and are out of place in a "concise" book, we recognise the difficulty of instructing the beginner in the subject, and the need of preparatory groundwork. There are many points in theory, too, in which we differ from the author. Stresses in bending and shear are not so simple as Mr. Marsh makes them, and in a book of this character an author should be very chary of laying down the law. We trust, too, that in future editions of all his works he will use the standard algebraical notation of the Concrete Institute, which will, we feel sure, do much to help the reader to readily follow the text.

RAPID AND EASY DIAGRAM OF MAXIMUM STRESSES: FAILURE BY SHEAR, PLASTIC AND ELASTIC.

By Professor Robert H. Smith.

Tension and compression are commonly referred to as "direct" stresses; but a better and more expressive name is "normal" stress, and this term will be used in this article. It is the component of the whole stress on a section which is perpendicular or normal to the section. The other components parallel to the section are termed "tangential," or shear.

The mathematics of stress and strain in solids within the limits of "perfect elasticity" have long ago been worked out very fully and accurately, and it is improbable that much future useful development of them is possible. The true and full meaning of the condition of "perfect elasticity," which is the basis of all this mathematics, is, however, very far from being universally understood in any clear and definite manner; and on this subject several remarks will be made below.

The Theory of Failure.

In quite recent years a revolution in the theory of failure of material under stress has been threatened, and is now making rapid headway. This began with the experiments of Mr. Guest in 1900. Since then the further investigations of Mr. Turner, Professor C. A. Smith, Mr. Hancock, and Mr. W. A. Scoble have greatly advanced our knowledge. The latest papers on the subject were read on November 26th by Mr. Scoble before the Physical Society, and by Professor Smith and Mr. Mason on December 17th before the Institution of Mechanical Engineers.

Maximum Shear Stress.

It may be now regarded as proved that the maximum shear stress is much more influential than is the maximum normal stress upon failure either by large permanent deformation or by fracture. This idea is not quite new, having been known to mathematicians under the name of "maximum stress difference" theory for a considerable number of years; but it is only now that it is beginning to be recognised as true, or nearly so, and its great importance and proper influence upon the art of designing is hardly yet at all known to engineers.

Experiments in Stresses.

This discovery has necessarily been made by analysis of experiments upon structures subject to "compound stress," i.e., where both normal and shear stresses are involved in large degree.

In each part of a structure or machine it is generally possible to choose a section upon which easily ascertainable stresses act, the normal and shear stresses being separately calculated, and very often caused by separate load-actions. From these it is possible to calculate the "principal stresses," that is, the normal stresses upon sections on which the shear stress is zero. The largest of these principal stresses (of which there are three at right angles to each other) is the greatest stress occurring on any section in that part of the structure. In all the textbooks the demonstration and calculation of these principal stresses are expanded in algebraical forms, which to most students are very tedious and difficult; so much so that all clear idea of the physical phenomenon being investigated is too often lost before the student has struggled to the end of the proof. An admirably simple demonstration is given in Cotterill's "Applied Mechanics." As a clear and exact idea of these stress relations is essential to any considered judgment upon the new developments, there is here given an extremely simple and rapid graphic construction which enables the calculation to be made in a minute or two, and which shows the various relations exceedingly plainly. So far as the writer knows, this construction is new, having been worked out by him for the purpose of this article.

The New Method.

In Fig. 1A is shown a small cubic block on whose four surfaces act the ascertained shear stress s, and on whose two opposite faces act the ascertained normal stress p. These are supposed to be the only stresses acting on the block. In Fig. 1B is shown the stress diagram. The shear stress s is set off to scale horizontally as nk, and the normal stress p set off to same scale vertically, as kh, from one end of s. Then p or kh is bisected in c, and from c as centre with cn as radius, the semi-circle mnl is drawn on the diameter ml coinciding with kh prolonged. Finally, join mn and nl. This is the whole construction, giving complete information.

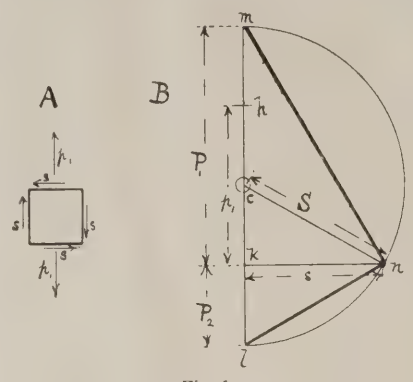


Fig. 1.

The line mn gives the direction of one maximum or principal stress; ln that of the other. Their two magnitudes are $P_1 = +mk$ (tension) and $P_2 = -kl$ (compression), these acting on sections lying in the respective directions ln and mn. The maximum shear stress S is measured to scale in magnitude by cn=cm=cl, and acts upon the sections at 45° to those of the principal stresses, that is, bisecting the right angle mnl.

This is not the place to demonstrate the accuracy of this construction; but the proof is easy.

Fig. 2B gives the similar stress diagram for the case of a shear s combined with two normal stresses p_1 and p_2, on rectangular faces, both p_1 and p_2 being here taken + or as tensions. The construction applies equally to cases where these are of opposite signs. Fig. 2A diagrams this distribution of stress upon a small cube of material.

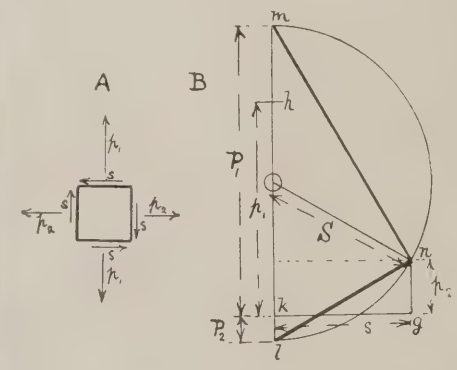


Fig. 2.

The shear s is scaled off as before, as kg, and from its two ends are erected perpendicularly the scaled lengths representing p and p_2, as kh and gn, both in the same direction, as here, if of the same sign, but, if of opposite signs, then one upwards and the other downwards. The difference of the heights p_1 and p_2 is bisected in c; i.e., $hc = \frac{1}{2}(p_1 - p_2)$. From c as centre, with radius cn, the semi-circle mnl is drawn upon the diameter ml, upon the prolongation of kh. Here the maximum normal, or principal, stresses lie in the directions mn and ln, and their magnitudes are $P_1 = +mk$ and $P_2 = -kl$, a compression, in spite of p_2 being a tension. If l lay above k, then P_2 would be a tension. P_2 may be a tension if the shear s is small in comparison with the normal stress: it is so, in fact, if $s^2 < p_1, p_2$. This is illustrated in Fig. 4, which should be compared with Fig. 2. The magnitude of the maximum shear stress S is scaled by $cn = cm = cl = \frac{1}{2}(P_1 - P_2)$, and the planes on which it acts bisect the directions mn and nl.

It may now be noted that Fig. 1 is only a particular case of Fig. 2. Fig. 3 illustrates the case of p_1 and p_2 being of opposite sign. This Fig. 3 shows graphically that P_1 and P_2 cannot be of the same sign if p_1 and p_2 are of opposite signs. Otherwise, if p_1 and p_2 are of opposite signs, their product must be negative, and S^2 cannot be less than $p_1 p_2$.

Another 3-Dimensional Diagram.

A similar equally easy stress diagram giving the three principal stresses and the maximum shear stresses can be made for three-dimensional stress, the diagram being constructed in plan and elevation after the method introduced by the present writer in his 1889 paper in Proc.I.C.E. and subsequently developed in his book on Graphic Calculation (Longmans, 1889).

Simple consideration of the diagrams Figs. 1 and 2 shows that, in any case of pure shear unaccompanied by normal stress upon either of the rectangular sections of the shear, that is, $p_1 = 0$ and $p_2 = 0$, the principal stresses are on the sections at 45° to those of the shear, and are each equal to $s = P_1 = P_2$ one being a tension and the other a compression.

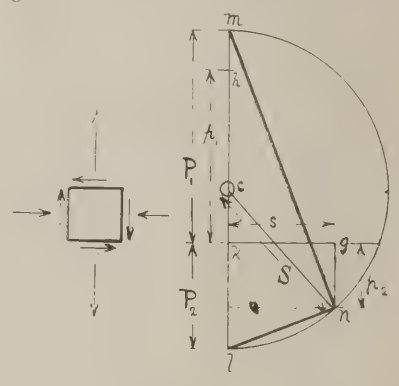


Fig. 3.

This is not the only way in which pure shear arises. To each of these equal and opposite principal stresses may be added an equal amount—so that their difference remains unchanged—without altering the shear. In fact, as above mentioned, there is always pure shear on the sections at 45° to the principal stresses, and its amount is $\frac{1}{2}(P_1 - P_2)$.

Nature of Proof.

These stress relations are proved without any regard being paid to the geometrical strains which accompany them; they are strictly true in whatever way the material is deformed, and whether the strain be small or great. But in applying them to strained material it must be borne in mind that they establish stress-relations between various sections in the deformed shape, not between the same sections (sections containing the same particles) in the original unstrained shape. So long as the strains are very

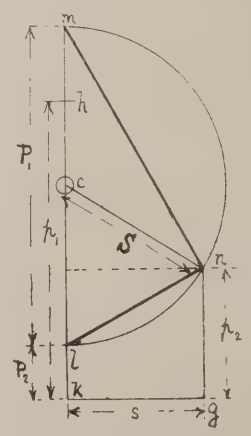


Fig. 4.

minute, there is no appreciable error in applying them either to the strained or unstrained shape indifferently. When the strains become large, however, the error in such application may become important.

Large Strain Effects.

Thus when a rod is stretched by a pull P, its cross-dimension decreases in a ratio usually called Poisson's ratio: the ratio of elongation being e, and that of cross-contraction ηe Thus the cross-sectional area is decreased in the ratio $(1-\eta e)^2$. The tensive stress calculated on the original unstrained section is P, and there may be considerable difference between P and $P/(1-\eta e)^2$. For small strains $\frac{1}{(1-\eta e)^2}$ approximately $(1+2\eta e)$. For engineering materials η lies between $\frac{1}{3}$ and 1·5. With $e=.1$ and $\eta=\frac{1}{4}$, we have $(1+2\eta e)=1.05$, or 5% increase of the stress. The exact figure is 1.0519.

Inexactitude of Ordinary Formulæ for Shear Stress and Strain.

Again, if, under a pure shear stress s, there be a shear strain γ, the 45° diagonal sections are changed in area, the one in the ratio $\left(\cos\frac{\gamma}{2}-\sin\frac{\gamma}{2}\right)$ and the other in the ratio $\left(\cos\frac{\gamma}{2}+\sin\frac{\gamma}{2}\right)$; while the normal forces acting on them are changed in the ratios $\left(\cos\frac{\gamma}{2}+\sin\frac{\gamma}{2}\right)$ and $\left(\cos\frac{\gamma}{2}-\sin\frac{\gamma}{2}\right)$. Thus the principal stresses are no longer each of magnitude s, but the tension becomes approximately $s(1+\gamma)$, and the compression $s(1-\gamma)$. But this tension diminishes further the section it acts upon in the ratio $\left(1-\eta\frac{s}{e}\right)$; and the final result is approximately that the principal tension is $s(1+\gamma)\left(1+\frac{\eta}{1+\eta}\frac{\gamma}{2}\right)$ while the principal compression is $s(1-\gamma)\left(1-\frac{\eta}{1+\eta}\frac{\gamma}{2}\right)$

To illustrate, let $\gamma=.1$ and $\eta=\frac{1}{4}$; then $P_1=s(1.1+1.01)=1.1115$ and $P_2=0.9015$. The more exact figures are 1.115 and 0·8966, or 11½ and 10½% different from the text-book results for minute strains.

In the mathematics of elasticity, similar calculations have for long past been made of the relations between strains of various kinds, and on sections lying in different directions. Thus the maximum shear strain is shown to be on the 45° planes, which are subject to the greatest shear stress. Here again, however, the published calculations stop short at the application to very minute strains. Thus, when the two principal elongations are e_1 and e_2, the maximum shear strains on the 45° planes are always given as $(e_1-e_2)(1+\eta)$. But to find the true result for strains that are not minute there must be used the more exact formula.

$$\text{Max. Shear Strain} = (e_1-e_2)(1+\eta)\,\frac{1+\frac{1}{2}(e_1+e_2)(1-\eta)}{(1+e_1-\eta e_2)(1+e_2-\eta e_1)}$$

To illustrate this, take $e_1=.1$ and $e_2=.05$ and $\eta=\frac{1}{4}$. The ordinary formula would give the shear—.0625. But the complete formula requires this to be multiplied by .9576, yielding .0592, or 5¼% less than the less exact figure. The difference may be again illustrated in a case of principal strains of opposite sign; for example $e_1=.1$ extension with $e_2=-.05$ contraction and $\eta=\frac{1}{4}$. Here $(e_1-e_2)(1+\eta)=.1875$. The true formula gives this mutiplied by .9898, or only 1% less than the approximate calculation. If the opposite strains be of equal magnitude, $\pm e$, the simpler formula gives the shear strain $2e(1+\eta)$, and the exact one gives this divided by $\{1-e^2(1+\eta)^2\}$. With $e=\pm.1$, the former yields .25 as shear strain, but this ought to be multiplied by 1,.016. Thus the rule for every minute strains exaggerates small shear strains and makes large shear strains less than they really are.

When one of the normal strains $e_2=o_1$, the formula reduces with close approximation to $e_1(1+\eta)\left\{1-\frac{e_1}{2}(1-\eta)\right\}$. With $e_1=.1$ and $\eta=\frac{1}{4}$, this yields $.1\times1\frac{1}{4}\times.9625=.1203$, instead of .125.

Nature of Normal Strains.

It must be understood that the normal strains e_1 and e_2 used in the above calculations are not those that actually result. They are those due to the normal stresses p_1 and p_2, each acting alone. The actual extensions in the two principal directions are $(e_1-\eta e_2)$ and $(e_2-\eta e_1)$, or $\frac{1}{E}(p_1-\eta p_2)$ and $\frac{1}{E}(p_2-\eta p_1)$ for isotropic material.

Constancy of Shear Stress at Failure.

The records of recent experiments show a decidedly nearer approximation to constancy of shear stress than to constancy of normal stress at incipient failure. But most of them also show a decided deviation from the former towards the latter law. The discrepancy is too great in well-authenticated series of tests to be accounted for by the above-explained differences between approximative and exact theory. Because the above numerical illustrations are taken, in order to show visibly the effects of the corrections, on very large strains, which are far beyond the "yield-point" of ordinary materials. If, for example, the strains were taken $e_1=.01$ and $e_2=.005$, instead of .1 and .05, the corrective factor would be .9942 instead of .9476, that is ½% instead of 5¼%.

Objections to Maximum Shear Limit.

Again, one of the objections raised to the maximum shear limit strength is that the approximate formula makes the limit depend solely upon the difference of the two principal normal stresses. It is argued that this would allow of these two stresses being indefinitely increased to prodigious amounts without leading to any increase of danger of tracture. This is illustrated in Fig. 4. To examine whether the corrective factor here given explains this anomaly, we may consider the following set of examples, in which the strain-difference is throughout .05, and the value of $\eta=\frac{1}{4}$, so that $(e_1-e_2)(1+\eta)=.0625$ in all cases. The corrective factor is here called k.

e_1	e_2	e_1-e_2	k	.0625k
+.15	+.10	·05	.9148	.05718
+.10	+.05	·05	.9476	.05923
+.05	0	·05	.9798	.06125
+.025	—.025	·05	1.0010	.06256
0	—.05	·05	1.0227	.06392
—·05	—.10	·05	1.0607	.06629
—·10	—.15	·05	1.1048	.06905

If the extreme strains in this table were elastic strains in a material having the very ordinary elastic modulus of 10,000 tons per sq. in., the corresponding stresses would vary from 1,500 tons per sq. in. in tension to 1,500 in compression, both impossible stresses, and yet this range shows only a variation 9½% up and down of the maximum shear strain, and, therefore, of the maximum shear stress.

The Objection Answered.

The above objection is illogical, and the true answer to it is that there must certainly be fracture-limits to the normal tension and compressive stresses which would cause failure independently of what the shear stress may be; but that in ordinary engineering practice these limits are not reached; in such practice the shear-failure limit is nearly always reached first. In compression the superior normal stress limit is certainly very high; as is proved by the extreme difficulty of fracturing a truly spherical ball of homogeneous material under hydraulic pressure, where the three-dimensional symmetry eliminates all shear. That the superior tension-limit actually exists is proved by the bursting of a spherical balloon of thin material under gas pressure. Here the radial compression is very small, and the problem is really a two-dimensional one of complete symmetry, and, therefore, again zero sheer.

Limit of Elasticity.

At the outset it was said that the common definitions (or want of definition) of "perfect elasticity," and of the "limit of elasticity," were unsatisfactory, and require closer examination.

In the first place, no experimental records worthy of the title of sound evidence exist that Poisson's ratio η remains constant for small and large elastic strains. The notion of this ratio is based solely upon a very few accurate measurements of it for particular strain-values: there is no real evidence, at least none of sufficiently extensive range, to show that strict linear proportion is maintained between stress-elongation and lateral contraction as the elongation is gradually increased from zero to the elastic limit.

(To be concluded.)

WOOLWICH FOOTWAY TUNNEL.

At present the only facility for crossing the river at Woolwich, for either vehicular or pedestrian traffic, is the Woolwich Free Ferry, as the nearest communication north and south is the Blackwall Tunnel, about three miles westward. The Council maintains a 24 hours' service with the ferry, the frequency of the crossings varying from ten minutes during the greater part of the day to 30 minutes during the early hours of the morning. It is anticipated that a footway tunnel will enable the hours of the ferry service to be shortened, reducing the annual expenditure involved in the maintenance of the ferry by £6,500. It is expected that at the end of 60 years, when the capital charge is liquidated, the cost of maintaining the tunnel will amount to about £2,500 yearly, thus effecting an economy of £4,000 on the ferry service. The committee, having considered the question from its various aspects, resolved that application be made to Parliament for the necessary powers, which were obtained on August 16, 1909. The contract for the work has now been placed with Messrs. Walter Scott and Middleton., Ltd., for the sum of £78,860.

In the construction of the tunnel the Greathead shield will be employed, and it is interesting to note that in 1874 Mr. Greathead designed a shield for the building of a tunnel at the spot which is now selected. However, owing to the use of compressed air not having been sufficiently developed at that time in connection with work of this character, that scheme was abandoned. The tunnel will be constructed under the Thames almost immediately beneath the place where the free ferry plies from bank to bank. It will be 1,655ft. in length, and 11ft. 9ins. inside and 12ft. 8ins. outside diameter, while the headway will be 8ft. 9ins. above the floor, which will be 8ft. 9ins. wide. The top of the tunnel will be about 58ft. below Trinity high water mark, rendering it possible for the Port Authority to dredge a channel 51ft. 6ins. below Trinity high-water for a width of 500ft. at the bottom. From the north side there will be a descending gradient of one in 21.2 for a total of 212ft.; the tunnel will then be built on the level for 130ft., after which there will be rising gradients to the south side of 1 in. 345 for a distance of 690ft., 1 in 41 for 430ft., and 1 in 17.3 for 173ft. The tunnel will be constructed of eight 1⅛-in. cast-iron segments, and a key, with an inside lining, 10½ins. thick, of 4 to 1 concrete, finished with tiles in the ordinary manner. Beneath the floor there will be two ducts, with removable covers, and each duct will accommodate a group of six 3-in. electric conduits, water hydrants, etc. The water employed for cleansing purposes will be drained to a sump, from which it will be lifted to the surface by means of two pumps driven by electric motors.

Entrance to the tunnel will be afforded by vertical shafts, one at each end, built with

the aid of compressed air, to a depth of 63ft. on the north and 51ft. on the south side of the river. They will each have two steel linings placed 3ft. 6ins. apart, the intervening space being filled with concrete. The outside lining will be 34ft. 4ins. in diameter, and the inside one will be 27ft. 4ins. The shafts will then be lined with brickwork, affording a clear internal diameter of 25ft. Two spiral staircases, one for access and the other for egress, will be erected in each shaft, and sufficient space will be left to render possible the provision of small lifts, should such additional facilities be found necessary. Each shaft will be covered by small circular brick edifices.

The work has been designed by, and will be executed under the supervision of, Mr. Maurice Fitzmaurice, engineer in chief to the London County Council. It is expected that the undertaking will be completed in about two years.

LONDON S FINEST CLUB.

When the new Royal Automobile Club, now being erected on the site of the old War Office in Pall Mall, is completed, it will be the largest club house in London.

The façade, which has a frontage of 228ft., and is in the modern Renaissance style, will have a fine monumental effect, and will make a conspicuous addition to London's street architecture.

On entering, the whole scheme is dominated by the large central vestibule, which is 48ft. by 32ft., with a colonnaded gallery on the first floor, and around this all the different departments are grouped.

The swimming bath, with a pool measuring 75ft. by 30ft., Turkish baths, and gymnasium occupy the lower basement, where there are also three racquet courts, dressing rooms, and servants' dining rooms.

Three immense rooms take up the ground floor, namely, the lounge and lecture-hall, which is 108ft. long by over 40 ft. wide, and the dining-saloon and the club-room, both of which measure 93ft. by 35ft.

The billiard-rooms (five tables in all), card-room, library and various committee-rooms, as well as the touring department, are on the first floor, while on the three upper floors there are more than 150 bedrooms and offices.

The building is being pushed on with all possible speed, and it is hoped to have the work completed before the end of the year.

Plans and elevations of the club appear in our Special Issue dated December 31st., 1909.

£36,000,000 FOR PARIS IMPROVEMENTS.

A Bill authorising the city of Paris to contract a loan of £36,000,000 for the embellishment and the sanitary improvement of the capital has passed the French Chamber by 358 votes to 33.

This will be the largest loan contracted by Paris since the year 1870. The programme which is being submitted for execution is also the most ambitious that has been brought forward for a long time. Complaints have been rife as to the neglect into which certain municipal services have fallen. The streets are not kept so tidy as they used to be. Entire blocks of the poorer class of dwellings are admittedly hotbeds of infection. The improvements which were planned years ago have not been carried out. Many a public garden and open space which was necessary to the health and well-being of its inhabitants has been encroached upon or entirely used up by the enterprising builder.

Among a host of proposed improvements will be the termination of the Boulevard Haussmann, with a large square at the end, which will be the Boulevard des Italiens and the Rue Drouot, with splendid houses all round. Old public buildings will be replaced by new ones.

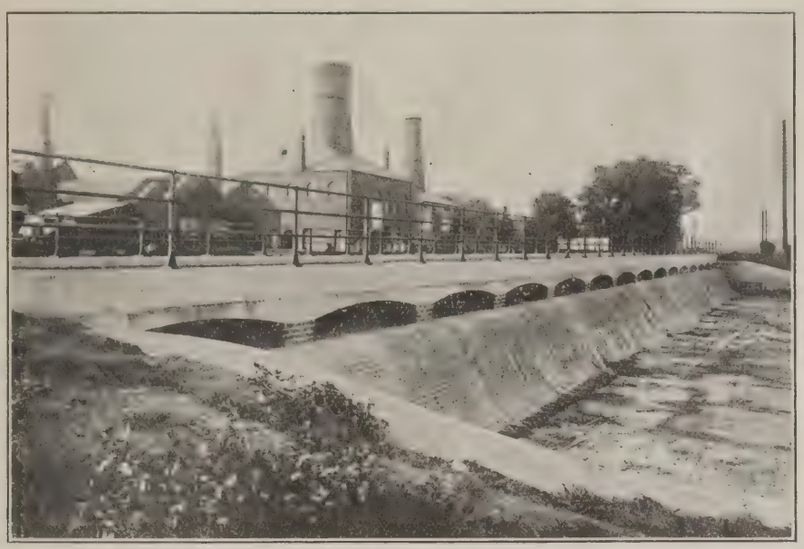
Whole streets of squalid dwellings will disappear, and on some of those sites public gardens will flourish. Thanks to the ready means of transport, workmen will be able to live quite outside the city. £60,000 is to be devoted to the re-paving of streets, and £40,000 to new promenades and squares. Municipal buildings will be repaired or rebuilt. Nearly £1,500,000 is to be spent on the battle against tuberculosis, and almost £4,000,000 is included in the programme to cover past and future expenditure on the improvement of school buildings. The great central markets are also to be finished, and access to them is to be rendered more convenient.

METROPOLITAN WATER BOARD.—NEW RESERVOIR AT CHINGFORD.

In connection with the general scheme for the above, a great deal of reinforced concrete work was involved in the construction of bridges, parapet walls, water towers, etc. The accompanying illustrations show views of some of the bridges in course of erection, also the completed public road bridge over the overflow to the River Lea diversion. The spans vary from 56ft. to 25ft. There are two 56ft. span foot-bridges, and in connection with these, piling had to be resorted to, as conveyance of the centering to the work had to be carried on after the River Lea had been diverted into the new channel. The reinforcing to the bridges consists of mild steel rods of varying diameters. Altogether there are seven bridges, and five of them are already completed. The Columbian Fireproofing Co., Ltd., are carrying out the construction of all the bridges and other reinforced concrete work, and the general contractors are Messrs. C. Wall, Ltd.



NEW RESERVOIR WORKS AT CHINGFORD FOR THE METROPOLITAN WATER BOARD: VIEW SHOWING COLUMBIAN REINFORCEMENT FOR BRIDGES. WM. B. BRYAN, M.Inst.C.E., CHIEF ENGINEER.



NEW RESERVOIR WORKS AT CHINGFORD FOR THE METROPOLITAN WATER BOARD.
WM. B. BRYAN, M.Inst.C.E., CHIEF ENGINEER.

Completed Columbian reinforced concrete road bridge over the overflow to River Lea diversion.

Obiter Dicta.

Art and Life.

I do not believe that until you get life back into the city you can possibly get life back into the art school. I look upon idealism as one of the most practical necessities of life; and a city—a great manufacturing city above all—needs this imaginative side of life as a part of its necessary existence.—*Mr. William Rothenstein, interviewed by a representative of the "Morning Post."*

Official Furniture.

There is something peculiarly depressing about official furniture. However much the Office of Works may spend on the new furniture of a room, it remains the same solemn, matter-of-fact, unsympathetic wood and leather that has been superseded. I think one of the main reasons why we are governed with so little imagination and insight is that the work of governing has to be done under the chilly and austere shadows of such unlovely mahogany and oak. Entrap into your official room the most ardent young civil servant fresh from the University, full of ideas and ideals; three years' servitude with Office of Works furniture, and his ideas have moulted away, leaving him a mere featherless permanent official.—*His Honour Judge Parry, in the "Cornhill Magazine" for January.*

Presentable and Pleasing, or Plain and Ugly?

After all, it costs very little more to put up a presentable and pleasing structure than it does for one plain and ugly. We agree that utility should be a pre-eminent thought in the designs for houses and tenements. Yet the people who are to live in these places will be none the worse for artistic surroundings, and the man who can bear both points in view is the one who will best serve future generations. We admit the enormous land values of the metropolis prevent architects doing all they desire as regards dwellings for the people. But this drawback does not prevail to the same extent in the provinces; and where considerable areas of land are purchased with the view of future development, it should be easy to secure adequate provision for suitable environment. The higher the standard, the better for the people.—*Sanitary Record.*

"Isolating the Enough."

'In Venice I catch myself trying to *isolate*, if I may use such an expression, the *enough*. I have to realise the charm of one detail, to live through one suggestion (the rigging and mirrored keel of a single boat, or the grace of a single house, or the perfection, say, of one piece of stone lattice-work or framed marble slab in the narthex of St. Mark's), before I can live it into my own life and keep it as mine.—*Vernon Lee, in "The Westminster Gazette."*

The Profession and the Art.

While we rightfully devote much time to those matters which relate to architecture as a profession, we must not neglect its development as an art. Scholarship, intellectual achievement, scientific research, and, above all, the art of design, are, and always will be, of the first importance to this organisation [the American Institute of Architects].—*Mr. Cass Gilbert's presidential address.*

Town Planning.

The real hope of the future [with respect especially to street architecture] lies in our students, whose education to-day is receiving more consideration than it has ever done before; the methods of the great academies of France and America are being adopted in our schools. This alone, however, is insufficient if that education is not extended in some way to the general public. They hold the purse-strings, and how wisely they open them may be judged by the fact that three-quarters of the building done to-day in England does not rank as architecture at all. Town-planning from an æsthetic point of view has been en-



NEW RESERVOIR WORKS AT CHINGFORD FOR THE METROPOLITAN WATER BOARD.
WM. B. BRYAN, M.Inst.C.E., CHIEF ENGINEER.

View showing Columbian reinforcement for bridgework.

tirely neglected in this country, but now there seems a likelihood of its entering into all future schemes of development. Architects have awakened to this, and are preparing to further it by the acquirement of its peculiar knowledge, and several sumptuous books on the subject have recently been published by members of the architectural profession. The great work done in France and America in this matter must give pause to all who think at all of these things, and we hope to see soon the stigma attached to our inaction removed. Kingsway is our first serious attempt since Waterloo Place and Regent Street were laid out, but this was only half-hearted.—*Mr. J. M. W. Halley, in the "Evening Standard."*

Apprenticeship.

Unfortunately the principle of apprenticeship has been rather in abeyance in the country, but, speaking for the industrial centre of the Midlands, I am glad to say we are beginning to realise the essential importance of apprenticeship, which is the only way to teach youth true and efficient workmanship. —*The Lord Mayor of Birmingham at a meeting of the Worshipful Company of Plumbers.*

Appreciation of Domestic Work.

For a long time the study of architecture in this country was practically limited to two branches, namely, churches and cathedrals, or municipal and other public buildings. Of recent years, however, there has arisen a growing recognition of the fact that domestic architecture is not less worthy of consideration, alike on grounds of historic interest and of æsthetic value.—"*Morning Post.*"

Proposed New Works.

ABERDEEN.—Six sets of plans, for the erection of a self-contained dwelling house, two houses each, for two tenants, and alterations to the ground floor of the Palace Theatre, have been submitted to the Town Council. The estimated value of the work is £4,260.

COVENTRY.—The following plans have been approved by the Council:—Amended plan, Spencer Park Estate; six houses (amended), Sir Thomas White's Road; two houses, Crabmill Lane; six houses, Broadway, Earlsdon; three houses and shops, Queen Victoria Road; six houses, Mayfield Road; house, Caludon Road; five houses and house and shop, Folly Lane; motor garage and stores, Upper York Street; eleven houses, Mayfield Road; additions to factory, Cheylesmore; two houses (amended), Spencer Avenue; twenty houses, St. Agatha's Road.

FENTON.—Among the plans recently approved by the Council are the following:—Proposed bridge at Carter's Crossing, over the North Staffordshire Railway; sixteen houses in Church Street, two houses in Station Road, and eight houses in Canon Street.

GLASGOW.—The Dean of Guild Court have granted, among other linings the following:—The North British Locomotive Company, to erect buildings at the Atlas Works, Edgefauld Road, Springburn; Sir Wm. Arrol and Co., to erect a new erecting shop and chimney at works in Preston Street; Riverside Milling Co., Ltd., Kingston, to erect an intake house and hand conveyer at Springfield Quay; The North British Locomotive Co., to erect buildings at Hydepark Works, Fleming Street.

GOUROCK.—The new garden suburb which is contemplated here will occupy an area of about thirty-eight acres. Plans have been prepared for the erection of 600 houses, each of which will comprise four or five rooms, with bathroom, scullery, etc., to be let at an inclusive rent of 10s. per week. Messrs. Salmon, Son, and Gillespie, of Glasgow, are the architects.

ISLEWORTH.—The following plans have been approved by the Council:—Four shops with dwelling-houses, Heston Road, Lampton; one house, Albert Road, Hounslow; four semi-detached villas, College Road, Isleworth; six cottages, Clare Road, Hounslow; additions to Stanley House, St. Stephen's Road, Hounslow.

LONDON.—At a meeting held recently at the Ladbroke Hall, in support of the proposed Jewish Hospital, it was decided strongly to support the movement, the sum casually mentioned as the probable cost of the building being £40,000.

LONDON.—At the meeting of the Tottenham Urban District Council, to be held on the 18th inst., the question of the erection of a large factory on a site 2½ acres in extent, for a German manufacturing firm, is to be introduced. Mr. Clifford Tee, architect, of Moorgate Street, is conducting the negotiations.

SCARBOROUGH.—Messrs. Russell and Cooper, architects, of London, have submitted plans for the widening of the Promenade, the provision of a new bandstand, and the construction of a combined covered-in and open-air café on the Promenade. The whole scheme of improvement is to be carried out for a sum amounting approximately to £3,850.

WATFORD.—The Urban District Council have passed the following plans:—Two pairs of villas, Pinner Road; alterations and additions to bakery, Villiers Road; new shop front, 100, High Street; additions in rear of No. 179, High Street; new Picture Theatre, the Market Place; four houses, Leavesden Road; twelve cottages, Benskin Road; five houses, Carey Place; two houses, Sydney Road; new cottage, Cecil Street.

Recognition of the fact that Mr. Max Clarke is not only Mayor of Holborn, but also a prominent member of the Royal Institute of British Architects, was made at the headquarters of that body, when he was presented by the members of the Science Committee, of which he is chairman, and of the Practice Standing Committee and the Council, of both of which he is a member, with a handsomely illuminated address of congratulation on his election to the Mayoralty of Holborn, and thanking him for his services for the advancement of the architectural profession. The presentation was made by Mr. W. H. Atkin-Berry (chairman of the Practice Standing Committee), and the address contained thirty-six signatures. Mr. Max Clarke is the third member of the Practice Standing Committee of the Royal Institute of British Architects who has occupied the position of Mayor of Holborn.



REINFORCED CONCRETE BRIDGE, SEAHAM HARBOUR.

REINFORCED CONCRETE BRIDGE, SEAHAM HARBOUR.

The bridge here illustrated has just been completed to the order of the Marquis of Londonderry, and crosses the South Hetton and N.E. Railway Co.'s lines at Swine Bank Lodge, Seaham Harbour, co. Durham. It is entirely constructed in concrete reinforced with indented steel bars supplied by the Patent Indented Steel Bar Company.

The bridge has a span across the railway of 42ft. 6ins. clear, and a roadway width of 26ft. The deck of the bridge is 8ins. thick, and is carried by five beams, each 27ins. deep, and 11ins. wide. The abutment walls are 6ins. thick, supported by counterforts 4ft. 6ins. by 11ins., corresponding with and forming a continuation of the beams. The moulded and panelled parapet wall is 4ft. 6ins. high, springing from a 9-in. moulded cornice, and finished with 9-in. moulded coping.

The bridge was designed by Mr. H. W. Taylor, M.Inst.C.E., engineer to the British Concrete Steel Company, of the Cathedral Buildings, Newcastle-on-Tyne, to carry a rolling load of 30 tons. The test, which was carried out in the presence of various officials of the company, the contractors (Messrs. Geo. Gradon and Son, Durham), the Marquis of Londonderry, and several engineering and other visitors, was conducted with two steam rollers, one of 16 tons and the other of 18 tons. The permissible deflection of 1-600th of the span is 0.85 of an inch, whereas the actual deflections were as follows, namely, 0.098 of an inch with the two rollers side by side at centre of bridge, and 0.074 of an inch with them tandem on the bridge, or less than one-eighth of the permissible deflection. The permanent set when the two rollers were removed amounted to 0.0005 of an inch.

It is announced that as from 30th of December, 1909, the address of the Yorkshire Federation of Building Trade Employers is West Bar Chambers, 38, Boar Lane, Leeds; telephone, Leeds Central, 3935 (J. Davidson, Secretary).

* * *

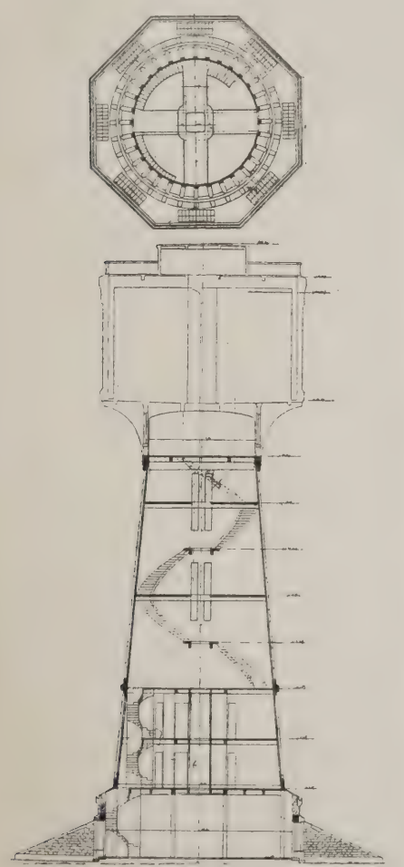
A carved oak reredos, erected at a cost of £680 and given by Mr. and Mrs. E. J. Wythes, of Copped Hall, Epping, which has been dedicated at a special service at the church of St. John, Epping, has 50 carved figures, the principal subjects represented being the Resurrection, the Ascension, the Lord's Supper, and the Heavenly Choir.

A CONCRETE WATER TOWER FOR THE BRUSSELS EXHIBITION.

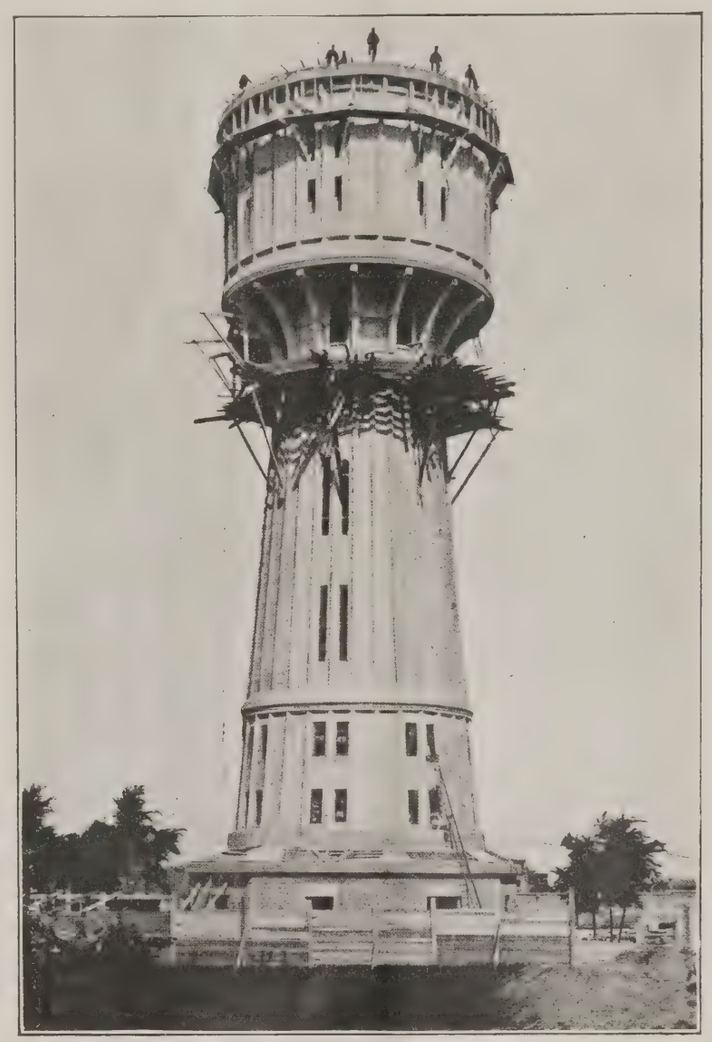
There is now nearing completion in Uccle, a suburb of Brussels, Belgium, a concrete water tower of striking and graceful proportions and of interesting construction.

A general idea of the tower is given in the view here shown. The tower is being built by Leon Monnoyer et Fils, concrete contractors, of Brussels, who are also the architects, of the structure, for the International Exposition of 1910. The tower and tank have a height of 145ft., and the latter has a capacity of 280,000 gallons. The structure is circular, and is built entirely of concrete blocks and without moulding of any kind excepting that used in the building of the concrete reinforcing struts surrounding the base of the tank proper. The inside of the tower is built up in practically six storeys, connected by a winding stairway. These different floors are divided into rooms, and these apartments, if they may be so called, will all be occupied by engineers, foremen, and other workmen during the Exhibition. The stairways are placed along the outer walls and the water mains in the centre, and enclosed by a concrete covering of square cross section. The tank will have a concrete top, the centre of which will rest on a continuation of the water mains or pipes. Excellent light is afforded the apartments by the large windows.

The most interesting feature of the structure, apart from its artistic merit, is the manner in which it is built up with the aid of concrete blocks. These blocks are of a new and peculiar design, and are made in a small steel form, usually on the ground where they are to be employed. The blocks were placed in horizontal courses, and were handled from the inside, where a light scaffolding was necessary. The blocks were reinforced with three small round rods, not so much for

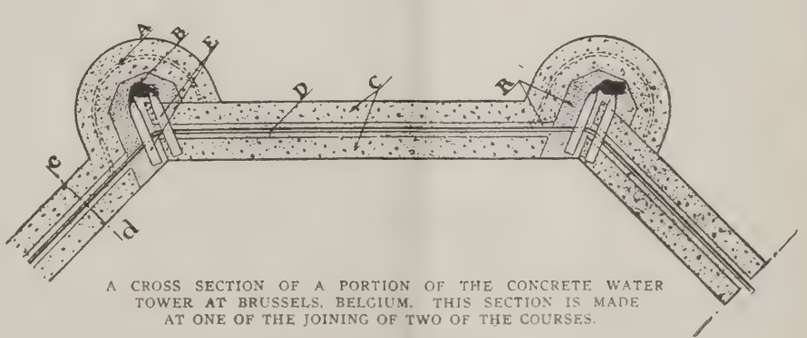


TRANSVERSE AND CROSS SECTION PLANS OF CONCRETE BLOCK WATER TOWER FOR THE BRUSSELS 1910 INTERNATIONAL EXHIBITION.



CONCRETE BLOCK WATER TOWER AT THE BRUSSELS EXHIBITION.

This tower is 145 feet high and has a capacity of 280,000 gallons.



A CROSS SECTION OF A PORTION OF THE CONCRETE WATER TOWER AT BRUSSELS, BELGIUM. THIS SECTION IS MADE AT ONE OF THE JOINING OF TWO OF THE COURSES.

A. Indicates the hidden reinforcing rods of the blocks.
B. The vertical steel reinforcing rod.
C. The concrete of the block.
D. The reinforcing rod connecting all the blocks in any one course.
E. A flat U-shaped iron brace which holds the vertical rod at a fixed p... in the hollow space.
R. Mortar filling.

their permanent reinforcement as to prevent breaking in handling. The number of blocks in each course always remains the same, but they are placed in the opposite direction in each succeeding course. That is to say, the blocks of the even courses will take one direction around the tower, and those of the odd courses will have the opposite direction. In this manner the joining of the blocks of one course, where they do not meet perfectly, will be covered by the blocks above and below. Each block has as one of its extremities a "hook" similar to the U. This hook forms a hollow space which extends the full length of the structure, and, of course, there will be just so many of these hollow spaces as there are sides to the tower, or 32. Through these vertical hollow spaces are placed steel reinforcing rods of circular cross section and varying in diameter according to their location in the structure. This is not the only reinforcing which the blocks have, however, as there is a series of small rods placed on top of each course and extending around the entire 32 blocks in the course.

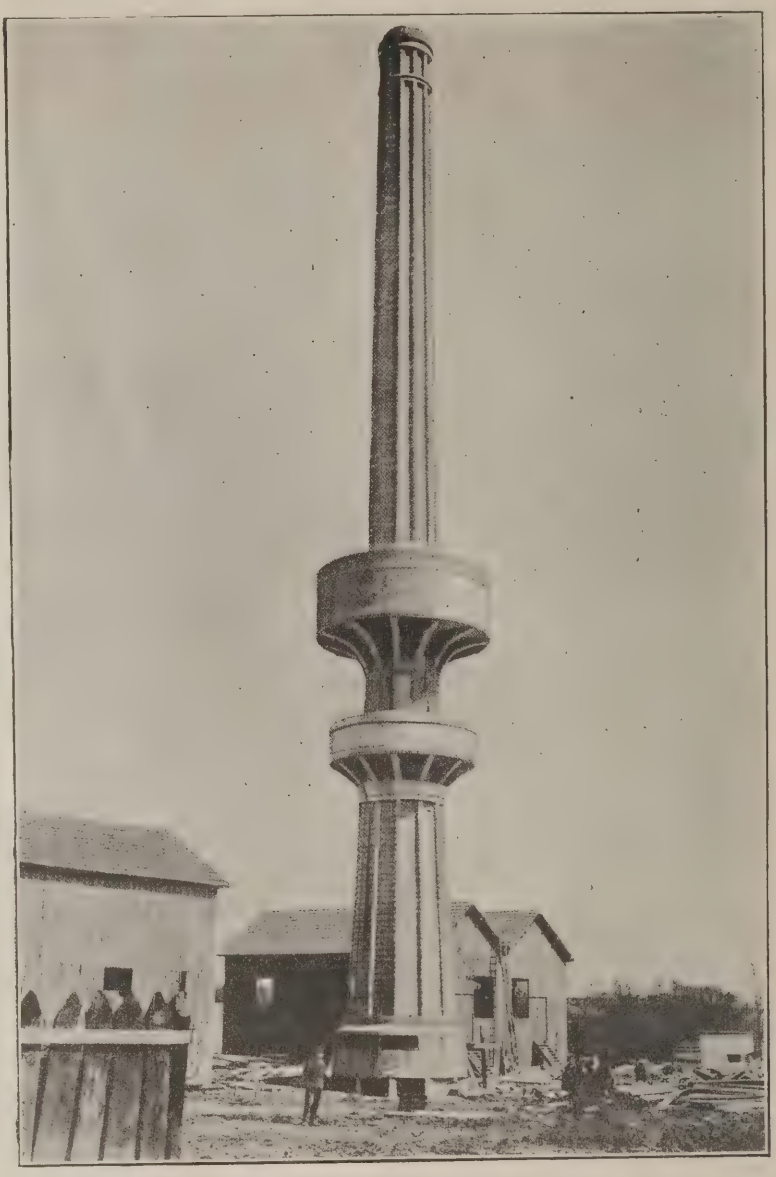
There are used only two or three sizes of blocks for the entire structure, although it has a considerable taper. In other words, the taper of the tower is taken up in an ingenious manner by utilising the hook in the blocks. The ends of the long arms of the blocks of the first course are placed just to the inside of the hook in the block next to it, and then in the next course the arms are placed a little farther into the hooks, and so on until the top is reached. Thus each succeeding course has a slightly smaller diameter than the one preceding it.

Our Plate.

Dalchroy, Advie, Strathspey.

This house was built as a fishing and shooting lodge, and occupies an ideal position on a lofty plateau commanding a fine view of the Spey Valley. The subsoil is rock. A magnificent range of mountains surrounds the whole valley, conspicuous among them being the snow-capped heights of the Cairngorms. In the immediate foreground is a fine reach of the River Spey. This house is built of local whinstone found on the site, and the tower is a commanding feature of the dwelling. In the interior Austrian oak has been largely used, which timber has also been used for the floors. The entrance hall is panelled in oak and the library is panelled with old carved oak. The house is also furnished with antique oak furniture. The lighting is by electricity produced in the power house, which has been built on the estate. The light fittings have been the subject of special consideration, torch forms being used in the hall, standard lamps in the drawing-room, and Jacobean pattern candelabra and brackets in the library. The house is heated throughout with radiators on the low-pressure system, and the most modern electrical devices have been installed for drying clothes and heating appliances. A system of telephones has been installed throughout the residence, and between it and all the out-buildings. The latter include a motor-house and quarters for the men-servants.. The architects were A. Maitland and Sons, Tain, Ross-shire.

The general contracts have been arranged on the Scotch system, each trade being taken by a separate contractor, as follows:—Mason work, Wm. Alexander and Co., Inverness; carpentry, Mackie and Mackenzie, Elgin; slate work, John Wilson, Lossiemouth; plumbing and sanitary work, R. Mackenzie and Son, Dingwall; lath and plaster and concreting, John Munro, Tain; fibrous and modelled plasterwork, Samuel Wright and Co., London; water supply, Alex. Nicholson, Elgin; smith's work, Thomas Gibson and Son, Edinburgh; heating, Mackenzie and Moncur, Edinburgh; electrical work, A. V. Givkins and Co., London; chimneypieces, etc.. Graham and Banks, London; woodblock flooring, Stevens and Adams, London; sculptor's work, D. and A. Davidson, Inverness; painting, Wm. Urquhart, Tain. The following firms supplied materials or carried out sub-contracts:—Glazed bricks, Howie and Co., Kilmarnock; stone dressings, Newton Quarry; Elgin; tiles, Minton, Hollins and Co., Stoke-on-Trent; casements and casement fittings and door furniture, Fletcher, Parker, and McAlpine, Glasgow; sanitary ware, John Bolding and Co., London; stained glass and leaded lights, Heaton, Butler and Bayne, London; gates, railings, etc., Maine and Co., Glasgow; wall-papers, etc., Arthur Sanderson and Co., Ltd., London; strong-room door, Milner's Safe Co., London; furnishing, Hampton and Sons, Ltd., London.



CONCRETE BLOCK CHIMNEY WITH RESERVOIRS OF REINFORCED CONCRETE, ANDERNY, FRANCE.

This chimney is 180 feet high. The large reservoir has a capacity of 100 cubic metres; the smaller one holds 22 cubic metres.

The London County Council have decided to apply to Parliament for authority to construct a subway under the Victoria Embankment to the tramway stopping-place near Charing-Cross Bridge.

* * *

The Preston Town Council have been asked to sanction a recommendation of the Streets and Buildings Committee to advertise for a chief assistant in the Borough Surveyor's department, at a salary of £200 per annum, such assistant to have a practical knowledge of engineering, both civil and mechanical, and some knowledge of the work of a borough surveyor's department.

THE BURSLEM MUNICIPAL BUILDINGS SCHEME.

A town's meeting convened by the Burslem Town Council on the question of the proposed new municipal buildings, has been held with the object of considering the following resolutions passed by the Town Council on December 6th:—"(1) That the Town Council provisionally approve of the plans for the erection of new municipal buildings at a cost of £25,000 for the buildings, and £2,750 for fittings and furniture, architect's commission, and other expenses; (2) that a public meeting of the burgesses be held to discuss the question and to decide whether a poll shall be taken." The meeting was confined to ratepayers who had previously obtained tickets of admission, and numbered between 400 and 500. A previous town's meeting held on November 11th decided against the scheme, and demanded a poll.

The scheme having been explained by Alderman Malkin, Mr. John Randell proposed as an amendment:—"That this meeting expresses its indignation at the contemptuous manner in which the Council have treated the desires of the ratepayers, and are determined that a poll shall be taken as decided by an overwhelming majority on November 11th."

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The Town Clerk (Mr. Arthur Ellis) said he had advised the committee to take the opinion of a gentleman whom he considered the greatest authority on Local Government Law in this country — Mr. Alexander McMorran, K.C.—and he had given his opinion in a very decided manner, that if the new authority declined to raise this money by loan, or if they were unable to raise this money by loan, the whole cost that was not defrayed before March 31st or not provided for by funds in hand at March 31st, would have to be a charge on the whole of the new federated area.

Alderman Malkin, in replying to the discussion, said they were charged with being too lavish. The plans were simplicity itself, and there was no decoration about them that was extravagant. Moreover, he did not agree that there must be extras. There would be no extras worth mentioning on the whole job.

The amendment that a poll be taken was then put to the meeting and defeated by a narrow majority. The Mayor remarked: So far as my opinion goes, the amendment is lost.

Mr. Randell said, as a ratepayer, he demanded that a poll be taken, to which the Mayor replied that if the law said that a burgess had any right to demand a poll, and it was within the legal right of the mayor to order a poll, then there would be no other alternative. But if it was not within his right, then let them not blame him if there was no poll.

PRINCIPLES OF PROFESSIONAL PRACTICE AND THE CANONS OF ETHICS.

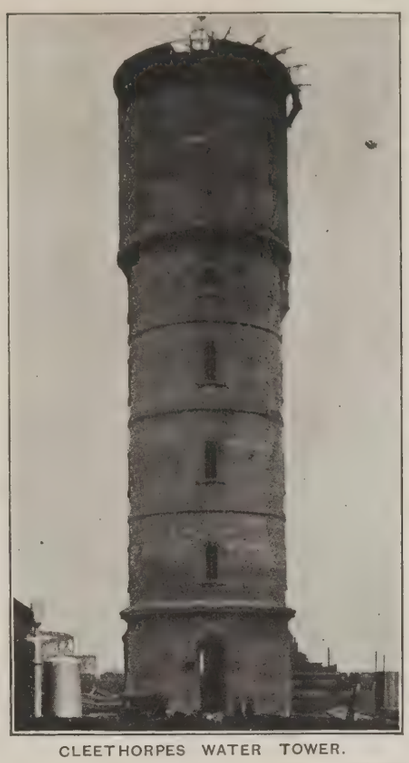
The following is the text of a circular that has been issued by the American Institute of Architects. It clearly refers to many matters of principle and practice that are of common interest at home and abroad.

The American Institute of Architects, seeking to maintain a high standard of practice and conduct on the part of its members as a safeguard of the important financial, technical, and æsthetic interests entrusted to them, offers the following advice to professional practice:

The profession of architecture calls for men of the highest integrity, business capacity and artistic ability. The architect is entrusted with financial undertakings in which his honesty of purpose must be above suspicion; he acts as professional adviser to his client, and his advice must be absolutely disinterested; he is charged with the exercise of judicial functions as between client and contractors, and must act with entire impartiality; he has moral responsibilities to his professional associates and subordinates; finally, he is engaged in a profession which carries with it grave responsibility to the public. These duties and responsibilities cannot be properly discharged unless his motives, conduct, and ability are such as to command respect and confidence.

No set of rules can be framed which will particularise all the duties of the architect in his various relations to his clients, to contractors, to his professional brethren, and to the public. The following principles should, however, govern the conduct of members of the profession, and should serve as a guide in circumstances other than those enumerated:

1. On the Architect's Status.—The architect's relation to his client is primarily that of professional adviser; this relation continues throughout the entire course of his service. When, however, a contract has been executed between his client and a contractor, by the terms of which the architect becomes the official interpreter of its conditions and the judge of its performance, an additional relation is created, under which it is incumbent upon the architect to side neither with client nor contractor, but to use his powers under the contract to enforce its faithful performance by both parties. The fact that the architect's payment comes from the client does not invalidate his obligation to act with impartiality to both parties. The architect should not, without authority, assume to act as the owner's agent.



CLEETHORPES WATER TOWER.
This tower is 173 feet high, and carries a steel tank of 250,000 galls. capacity.
(Indented Bar Reinforcement.)

2. On Preliminary Drawings and Estimates.—The architect at the outset should impress upon the client the importance of sufficient time for the preparation of drawings and specifications. It is the duty of the architect to make or secure preliminary estimates when requested, but he should acquaint the client with their conditional character, and inform him that complete and final figures can be had only from complete and final drawings and specifications. If, on the basis of approved preliminary sketches and specifications, definite expenditure has been mutually determined, the architect should bring his working drawings and specifications to meet such cost, provided that the client has requested no departure from the original basis of estimate, and that conditions beyond the architect's control have not arisen. If an unconditional limit of cost be imposed before such drawings are made and estimated, the architect must be free to make such adjustments as seem to him necessary. Since the architect should assume no responsibility that may prevent him from giving his client disinterested advice, he should not, by bond or otherwise, guarantee any estimate or contract.

3. On Superintendence and Expert Services.—On all work except the simplest, it is to the interest of the owner to employ a superintendent or clerk of the works. In many engineering problems and in certain specialised æsthetic problems, it is to his interest to have the services of experts, and the architect should so inform him. The experience and special knowledge of the architect make it to the advantage of the owner that these persons, although paid by the owner, should be selected by the architect under whose direction they are to work.

4. On the Architect's Charges. — The Schedule of Charges of the American Institute of Architects is recognised as a proper minimum of payment. The locality and the nature of the work, the quality of services to be rendered, the skill of the practitioner or other circumstances frequently justify a higher charge than that indicated by the schedule.

5. On payment for Expert Service.—The architect when retained as an expert, whether in connection with competitions or otherwise, should receive a compensation proportionate to the responsibility and difficulty of the service. No duty of the architect is more exacting than such service, and the honour of the profession is involved in it. Under no circumstances should experts knowingly name prices in competition with each other.

6. On Selection of Bidders or Contractors.—The architect should advise the client in the selection of bidders, and in the award of the contract. In advising that none but trustworthy bidders be invited, and that the award be made only to contractors who are reliable and competent, the architect protects the interest of his client.

7. On Duties to the Contractor.—As the architect decides whether or not the intent of his plans and specifications is properly carried out, he should take special care to see that these drawings and specifications are complete and accurate, and he should never call upon the contractor to make good oversight of errors in them, nor attempt to shirk responsibility by indefinite clauses in the contract or specifications.

8. On Engaging in the Building Trades.—The architect should not directly or indirectly engage in any of the building trades. If he has any financial interest in any building material or device, he should not specify or use it without the knowledge and approval of his client.

9. On Accepting Commissions or Favours.—The architect should not receive any commission or any substantial service from a contractor or from any interested person other than his client.

10. On Encouraging Good Workmanship.—The large powers with which the architect is invested should be used with judgment. While he must condemn bad work, he should commend good work. Intelligent initiative on the part of craftsmen and workmen should be recognised and encouraged, and the architect should make evident his appreciation of the dignity of the artisan's function.

11. On Offering Services Gratuitously.—The offering of professional services on approval and without compensation, unless warranted by personal or previous business relations, tends to lower the dignity and standing of the profession, and is to be condemned.

12. On Advertising.—Advertising tends to lower the standard of the profession, and is therefore condemned.

13. On Signing Buildings and Use of Titles.—The display of the architect's name upon a building under construction is condemned, but the unobtrusive signature of buildings after completion has the approval of the Institute. The use of initials designating membership in the Institute is proper in connection with any professional service, and is to be encouraged as helping to make known the nature of the honour they imply.

14. On Competitions.—An architect should not take part in a competition as competitor or professional adviser or juror unless the competition is to be conducted according to the best practice and usage of the profession as formulated by the Institute. Except as an authorised competitor, he may not attempt to secure work for which a competition has been instituted. He may not attempt to influence the award in a competition in which he has submitted drawings. He may not accept the commission to do the work for which a competition has been instituted if he has acted in an advisory capacity either in drawing the programme or in making the award.

15. On Injuring Others.—An architect should not falsely or maliciously injure the professional reputation, prospects, or business of a fellow architect.

16. On Undertaking the Work of Others.—An architect should not undertake a com-

mission while the just claim of a fellow architect, who had previously undertaken it, remains unsatisfied, unless such claim has been referred to arbitration or issue has been joined at law; nor should he attempt to supplant a fellow architect after definite steps have been taken toward his employment.

17. On Duties to Students and Draughtsmen.—The architect should advise and assist those who intend making architecture their career. If the beginner must get his training solely in the office of an architect, the latter should assist him to the best of his ability by instruction and advice. An architect should urge his draughtsmen to avail themselves of educational opportunities. He should give encouragement to all worthy agencies and institutions for architectural education. While a thorough technical preparation is essential for the practice of architecture, architects cannot too strongly insist that it should rest upon a broad foundation of general culture.

18. On Duties to the Public and to Building Authorities.—An architect should be mindful of the public welfare, and should participate in those movements for public betterment in which his special training and experience qualify him to act. He should not, even under his client's instructions, engage in or encourage any practices contrary to law or hostile to the public interest; for as he is not obliged to accept a given piece of work, he cannot by urging that he has but followed his client's instructions, escape the condemnation attaching to his acts. An architect should support all public officials who have charge of building in the rightful performance of their legal duties. He should carefully comply with all building laws and regulations, and if any such appear to him unwise or unfair, he should endeavour to have them altered.

19. On Professional Qualifications.—The public has the right to expect that he who bears the title of architect has the knowledge and ability needed for the proper invention, illustration, and supervision of all building operations which he may undertake. For that and other obvious reasons, such title should not be assumed without adequate qualifications.

The Canons of Ethics.

The following canons are adopted by the American Institute of Architects as a general guide, yet the enumeration of particular duties should not be construed as a denial of the existence of others equally imperative, although not specifically mentioned. It should also be noted that the several sections indicate offences of greatly varying degrees of gravity.

It is unprofessional for an architect

1. To engage directly or indirectly in any of the building trades.
2. To guarantee an estimate or contract by bond or otherwise.
3. To accept any commission or substantial service from a contractor or from any interested party other than the owner.
4. To advertise.
5. To take part in any competition, the terms of which are not in harmony with the principles approved by the Institute.
6. To attempt in any way, except as a duly authorised competitor, to secure work for which a competition is in progress.
7. To attempt to influence, either directly or indirectly, the award of a competition in which he is a competitor.
8. To accept the commission to do the work for which a competition has been instituted if he has acted in an advisory capacity, either in drawing programme or making award.
9. To injure falsely or maliciously the professional reputation, prospects, or business of a fellow architect.
10. To undertake a commission while the just claim of another architect who has previously undertaken it remains unsatisfied, or until such claim has been referred to arbitration or issue has been joined at law.
11. To attempt to supplant a fellow architect after definite steps have been taken toward his employment.
12. To compete knowingly with a fellow architect for employment on the basis of professional charges.

Coming Events.

Wednesday, January 5.

R.I.B.A. Art Committee Meeting.

Friday, January 7.

Birmingham Architectural Association.—Meeting.

Institution of Mechanical Engineers.—Mr. W. R. Eckart on "The application of the Pitot tube to the Testing of Impulse Water Wheels." Mr. C. W. Jordan on "The Power Plant of the Ontario Power Co., at Niagara Falls," 8 p.m.

Monday, January 10.

The Surveyors' Institution.—Mr. J. Willmott on "The Housing, Town-planning Act, etc., 1909." Discussion on Mr. Davidge's paper on "Town-planning Systems," adjourned from November 22, 1909, 8 p.m.

Tuesday, January 11.

University Extension Lectures on Ancient Architecture. — Mr. Banister Fletcher on Roman Architecture (Fora, Rectangular Temples), British Museum, 4.30 p.m.

Illuminating Engineering Society.—Mr. J. H. Parsons, F.R.C.S., on "Glare: Its Causes and Effects," 8 p.m.

Wednesday, January 12.

The Carpenters' Company Lectures.—Professor Beresford Pite on "What is Artistic Craftmanship?" Carpenters' Hall, 7.30 p.m.

Northern Architectural Association.—Council meeting, 7. p.m. Ordinary meeting, 7.30 p.m. Paper by Mr. Frank W. Rich.

Manchester Society of Architects.—Mr. A. E. Corbett on "Concrete and Concrete Tests."

Thursday, January 13.

The Surveyors' Institution.—Students' preliminary examination.

R.I.B.A.—Science Committee Meeting.

Friday, January 14.

The Surveyors' Institution.—Students' Preliminary Examination.

The Architectural Association.—Mr. J. Starkie Gardner on "A Comparison between English and Continental Ornamental Ironwork," 7.30 p.m.

Monday, January 17.

Woolwich House-Owners' Association.—Committee meeting, 7.30 p.m.

R.I.B.A.—Mr. S. D. Kitson on "Carr of York." Award of prizes and studentships, 8 p.m.

Tuesday, January 18.

University Extension Lectures on Ancient Architecture. — Mr. Banister Fletcher on Roman Architecture (Circular and Polygonal Temples, Basilicas), British Museum, 4.30 p.m.

Manchester Society of Architects.—Student's meeting, 6.30 p.m. Discussions on Architecture in general, Mr. J. H. Worthington; chairman, Mr. J. H. Sellers.

R.I.B.A.—Practice Committee Meeting.

Wednesday, January 19.

The Carpenters' Company Lectures.—Mr. M. H. Baillie Scott, on "The Art of Building with special reference to the use and abuse of materials," Carpenters' Hall, 7.30 p.m.

Northern Architectural Association.—Students' meeting, 7.30 p.m. Mr. S. Ash on "A Holiday in Belgium."

R.I.B.A.—Exhibition of Prize Competition Drawings opens at the Alpine Club, and continues until Jan 29.

Thursday, January 20.

R.I.B.A.—Literature Committee Meeting.

Friday, January 21.

Birmingham Architectural Association.—Professor S. D. Adshead on "Tone and Colour in Towns."

Saturday, January 22.

Aberdeen Architectural Association.—Mr. Alex Mcibbon on "Architectural Forms not influenced by material: a Popular Opinion Confuted," 7.30 p.m.

Monday, January 24.

The Surveyors' Institution.—Adjourned discussion on Mr. Davidge's paper, "Town-planning Systems," and on Mr. Willmott's paper, "Housing and Town-planning, etc., Act, 1909," 8 p.m.

Tuesday, January 25.

University Extension Lectures on Ancient Architecture. — Mr. Banister Fletcher on Roman Architecture (Thermae), British Museum, 4.30 p.m.

Wednesday, January 26.

The Carpenters' Company Lectures.—Mr. Banister Fletcher on "The Carpenters' Craft," 7.30 p.m.

Manchester Society of Architects.—Professor S. H. Capper on "Truro."

Saturday, January 29.

R.I.B.A.—Exhibition of Prize Competition Drawings, at the Alpine Club, closes.

Monday, January 31.

R.I.B.A.—President's address to students. Presentation of prizes and studentships. Announcement of Council's nomination for the Royal Gold Medal. Announcement of nomination of candidates for membership. Election, February 28.

Trade and Craft.

Fitting Up Royal Stables.

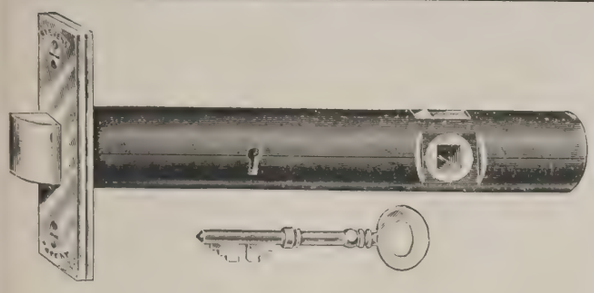
The fitting up of stables for royalty is sufficiently rare to make interesting the fact that no less than three contracts for work of this description have been placed with one firm during last year. In the early part of the year, the order for fitting up the stables of H.M. the Queen of Holland was received from the Dutch Government through their architect, Herr Peters, by the St. Pancras Ironwork Co., Ltd. Later in the year the same firm obtained the contract for re-fitting four of the stables at the Royal Mews, Buckingham Palace, and since then they have begun and nearly completed the fitting up of stables at Windsor Castle. The Dutch order was obtained in competition with a great number of firms of various nationalities, namely, Dutch, German, Belgian and French, which may help to reassure those who are nervous about our declining industries. The actual number of standings are 36 loose-boxes and 60 stalls. Several novel features have been designed for those stables by the above-mentioned company, at the wish of the Master of Horse, Herr Reigersberg Versluijs. The contract for the fittings at Buckingham Palace form the third which has been executed by this firm. In the stables at Windsor, paving bricks are still in position which were laid by the self-same firm more than thirty years ago, having lasted all this time without losing their non-slipping quality or showing any considerable signs of wear.

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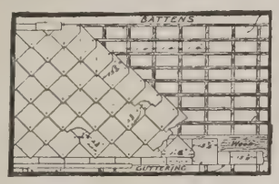
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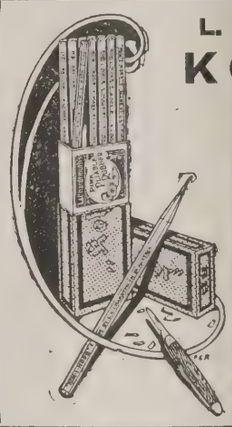
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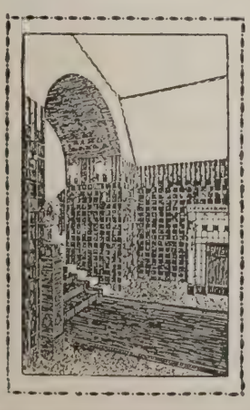
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Publisher's Notices.

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	s.	d.
At all newsagents and bookstalls	8	8
By post in the United Kingdom	10	10
By Post to Canada	13	0
By post elsewhere abroad	17	4

The Index (with Title Page) for each half-yearly volume is supplied free on application to the Publisher.

Subscribers can have their volumes bound complete with Index, in cloth cases, at a cost of 3/6 each.

Advertisements for the current week, alterations to serial advertisements, etc., must reach the office not later than first post on Saturday.

Rates for Serial Advertisements, Special position etc., sent upon application.

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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, Builders' Journal, *Caxton House, Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Bridlington.—For erection and completion of a dwelling house in Marine Drive, Bridlington, for Mr H. Webster. Mr. Joseph Shepherdson, 8, Quay Road, Bridlington, architect.

Turner and Son, York	£1,048	5	0
F. Kneeshaw	1,006	4	0
A. Leason, Driffield	968	0	0
F. Postill and Son	945	0	0
Sampson and Siddall	937	12	0
E. Wilson,* 73, Hilderthorpe Road	888	2	2

Rest of Bridlington.

*Accepted.

Brighton.—Recommended for acceptance for erection of the Municipal Day Training College, for the Brighton Education Committee:—
Pethick Bros., Ltd., Plymouth, £7,501.

Croydon.—For extensions to the Isolation Hospital, for the Croydon Rural District Council. Mr. R. M. Chart, F.S.I., surveyor.

F. H. Claridge, Stafford Road, Wallington	£6,520
C. Sayers, Lower Green, Mitcham	6,000
Paskerfield and English, Streatham	5,964
B. E. Nightingale, Albert Embankment	5,960
Pethick Bros., Laira Bridge, Plymouth	5,888
Howe and White, Manor Road, Wallington	5,678
J. Sands, Seely Road, Tooting	5,670
D. W. Barker, Church Road, Croydon	5,670
W. Dawson, Croydon Road, Beddington	5,595
Southern Building Co., London	5,573
Spencer, Santo, and Co., London, W.	5,515
Stewart and Sons, London Road, Wallington	5,479
Kirk and Randall, Woolwich	5,410
R. Wilkins and Son, Bishop Street, Bristol	5,378
Denne and Sons, Queen Street, Deal	5,375
H. Bacon, Thornton Heath	5,295
J. Parsons, 190, Waterloo Road, S.E.	5,293
J. Smith and Sons, South Norwood	5,200
W. Akers and Co., High Street, South Norwood	5,197
W. Smith and Sons, London Road, Croydon	5,194
G. E. Everitt, Windmill Road, Croydon	5,170
Deacon and Sons, Addlestone	5,149
W. Pattinson and Sons, 50, Parliament Street	5,143
Haslemere Builders, Ltd., Haslemere	5,069
Appleby and Sons, Southwark Park, S.E.	5,030
Burges and Son, Wycliffe Road, Wimbledon	5,000
T. W. Moss, Southend-on-Sea	4,944
E. J. Saunders, Wellesley Road, Croydon	4,940
Gathercole Bros., London Road, Norbury	4,900
H. King and Son, Peckham, S.E.	4,777
D. Waller,* Old Palace Road, Croydon	4,776
J. H. Allwork, Tolworth, Surbiton (withdrawn)	4,465

*Accepted.

Enfield.—For certain new w.c.'s and slop sinks and fixings at the Chase Farm Schools, Enfield, N., for the Guardians of the Edmonton Union. Mr. Stuart Hill, architect, 106, Cannon Street, E.C.

J. Thomas	£374	0	0
Wm. Pavey and Son	327	0	0
Edwd. G. Brown	299	7	0
Filch and Cox	294	0	0
Arthur Porter	251	0	0
W. Watkin and Son	233	12	0
Albert Monk*	195	0	0

*Accepted.

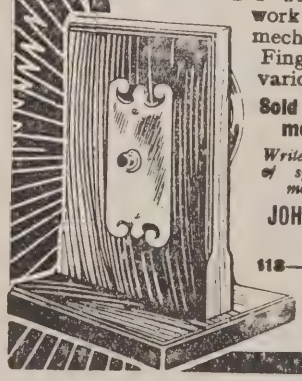
Fenton, Staffs.—For extensions to the Rubian Art Pottery, Fenton, Staffs., for The Rubian Art Pottery Co., Ltd. Reginald T. Longden, architect, Burslem and Leek.

T. Caulcott, Fenton	£1,159
J. Cummings, Hanley	980
Tompkinson and Bettelley, Longton	975
Ball and Robinson, Stoke	935
J. Cooke, Porthill	925
Grant and Sons, Burslem	910
J. R. Warrilow, Fenton	905
H. Beckett, Fenton	900
Meiklejohn and Son, Stoke	885
Wm. Cooke, Burslem	878
J. Walters, Longton	875
Thomas and Son, Hanley	853
Henry Howlett, Hanley	840
Broadhurst and Son, Burslem	829
Young and Son, Longton	825
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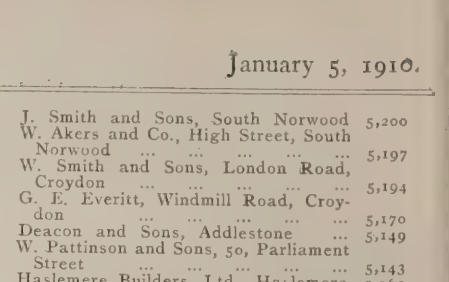
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COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about **five days** after the date of this issue.
Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders.
The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Jan. 1-17. **WEST HAM.**—Extension of the existing West Silvertown schools, and erection of the boys' new department, for the Corporation. Contractors are requested to make written application to William Jacques, A.R.I.B.A., Architect to the Education Committee, 2, Fen Court, Fenchurch Street, E.C., for copy of quantities, conditions, and form of tender, not later than Jan. 1. Each application must be accompanied by a deposit of a £5 Bank of England note. Plans and particulars may be seen at the Architect's Office. Tenders at the Education Department, 95, The Grove, Stratford, E. Fair wages clause.

Jan. 1-21. **EXMOUTH.**—Alterations and additions to the Exeter Road Council Schools, Exmouth (boys' and girls' departments), for the Devon County Education Authority. Bills of quantities for the work will be available in due course on deposit of £1 1s. Contractors desiring to tender must apply to the County Architect (Education), 1, Richmond Road, Exeter, not later than the first post on Jan. 1, enclosing a crossed cheque drawn in favour of the County Treasurer. Quantities will be issued about Jan. 8, and sealed tenders must be delivered at the Architect's Office not later than Jan. 21.

Jan. 3-12. **DEVONPORT.**—Erection of 20a and 20b, married soldiers quarters, in flats and cottages in three blocks, at Old Granby Barracks, Devonport, in the Southern Command, for the Secretary of State for War. Plans, specification, and conditions of contract may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., or at the Barrack Construction Office, Old Granby Barracks, Devonport, on Dec. 29, 30, and 31. Those desiring to tender and to receive a copy of the bills of quantities must apply to the Director of Barrack Construction not later than Jan. 3. The application must be accompanied by a deposit of 10s., payable to the Assistant Financial Secretary, and crossed "Bank of England for credit to Army Funds." Tenders must be delivered to H. De La Bere, Director of Army Contracts, War Office, Whitehall, London, S.W.

Jan. 3-17. **LONDON, S.W.**—Execution of the following, for the Secretary of State for War:—Reappropriation of A.S.C. block and erection of additions to provide accommodation for the Royal Army Medical Corps, Millbank, London, S.W. Plans, specification, and conditions of contract may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., on Jan. 3, 4, and 5, to whom application must be made by Jan. 7., accompanied by deposit of 10s. Cheques or orders to be made payable to the Assistant Financial Secretary, and crossed "Bank of England for credit to Army Funds." Tenders to be sent to H. De La Bere, Director of Army Contracts, War Office, Whitehall, London, S.W.

Jan. 5. **CALTHWAITE.**—Contractors desirous of tendering for the whole, or any, of the various trades in the erection and completion of new voluntary school, Hutton End, Calthwaite, are invited to send their names by to-day to H. Higginson, Architect, 3, Lonsdale Street, Carlisle. Quantities will be supplied.

Jan. 5. **HARROGATE.**—Persons desirous of tendering for the whole or any portion of the works required in the Erection of a new wing and other alterations to the Prince of Wales Hotel, Harrogate, for C. S. Norton, are requested to send in their names to Richardsons and Bell, A.R.I.B.A., Architects, Wakefield, by to-day.

Jan. 8-14. **PONTYPRIDD.**—Builders desirous of tendering for sixteen large villas, proposed to be erected on the Eglwysilan Road, Pontypridd, for the Tygwyn Villa Building Club, Pontypridd, are requested to send in their names, accompanied by a deposit of £2 2s for bills of quantities, to T. E. Richards and Kaye, Architects and Surveyors, Pontypridd. Tenders to be delivered to the Secretary, Harry John, 143, Wood Road, Pontypridd.

Jan. 10. **LLANTWIT MAJOR.**—Alterations and additions to the farm house and farm buildings at Highfield, near Llantwit Major, for the Glamorgan County Council. Plans can be seen and copies of specifications obtained at the County Police Station, Llantwit Major, and at the office, and contractors desirous of inspecting the premises can obtain the key at the County Police Station, Llantwit Major. Tenders are to be delivered to T. Mansel Franklen, Clerk of the County Council, Glamorgan County Council Offices, Westgate Street, Cardiff. Fair wages clause.

Jan. 10. **BERWICK-ON-TWEED.**—Mason, joiner, slater, and plumber work, of proposed additions to farm offices, on "Folly" Farm, Berwick-on-Tweed. Plans and specifications may be seen, and all necessary information given, on application to J. Stevenson and Son, Architects, 14, North Terrace, Berwick-on-Tweed, to whom tenders are to be sent.

Jan. 10. **TADCASTER.**—Construction of a new corrugated iron-covered diptheria block, with all drains, water pipes, and other accessories, at the infectious diseases Hospital, Garforth, for the R.D.C. Specifications and all other information may be obtained from H. M. Driver, Sanitary Inspector, Garforth, near Leeds. Tenders to be sent to Geo. A. Bromet, Clerk to the Council, Tadcaster.

Jan. 10. **NEWPORT (I. of W.).**—Erection of an infectious diseases hospital and laying out the ground, for the Joint Hospital Board. Plans and specifications and all particulars can be seen at the offices of S. R. Cocks, 5, St. Thomas Street, Ryde. Tenders to be sent to H. Eldridge Stratton, Clerk to the Board, 31, Pyle Street, Newport, Isle of Wight. Builders and contractors on the Island are invited to tender.

Jan. 10. **SOUTH FARNBOROUGH.**—Erection of a new county school for 570 children, at South Farnborough, for the Southampton C.C. Plans, specification, and conditions of contract, and bills of quantities, etc., at the office of W. J. Taylor, County Surveyor, The Castle, Winchester. A deposit of £5 5s. will be required for a copy of the bills of quantities and form of tender. Tenders are to be delivered to H. Barber, Clerk of the County Council, The Castle, Winchester.

Jan. 10. **MARLBOROUGH AND MALMESBURY (Wilts.).**—Execution of work in connection with the external and internal renovations to the Marlborough and Malmesbury police stations, for the Standing Joint Committee of the Wilts C.C. Specification and form of tender can be obtained on application to the County Surveyor, Trowbridge. Tenders, addressed to the County Surveyor, must be delivered at the office of J. George Powell, County Surveyor, Trowbridge.

Jan. 10. **STAMFORD BRIDGE, ETC.**—Execution of (a) erection of a Council school to accommodate 133 children, and teacher's house, at Stamford Bridge; (b) alterations and additions to the Council school at Burton Pidsea, for the East Riding of Yorkshire. Plans and specifications may be seen, and forms of tender obtained on application to the Building Surveyor, County Hall, Beverley. Tenders to be delivered to John Bickersteth, Clerk to the East Riding Education Authority, County Hall, Beverley.

Jan. 10. **WOOTTON BASSETT.**—Construction and maintenance of a brickwork tower, 44ft. by 24ft. and 20ft. high, and providing, laying and jointing short lengths of 6in. and 4in. cast-iron mains with valves and fittings, and including cutting the existing mains, inserting junctions, pipes and other works, at Coxstalls, Wootton Bassett, for the Cricklade and Wootton Bassett R.D.C. Contractors desiring to tender may see plans and specification and obtain a copy of the schedule of quantities and form of tender and other particulars upon application to the Engineer, F. Redman, 34, Wood Street, Swindon, Wilts, on deposit of £2 2s. Tenders must be delivered to H. Bevir, Clerk to the Council, Council Offices, Wootton Bassett.

Jan. 10-15. **BRITON FERRY.**—Builders desirous of tendering for the erection of a public hall and institute at Briton Ferry are requested to send in their names, accompanied by a deposit of £3 3s., to H. Alex. Clarke, Architect, Briton Ferry, to whom tenders are to be sent, and with whom plans and specifications may be seen.

Jan. 11. **PONTYPOOL.**—Pulling down the existing buildings and the erection on the present site of a new headquarters station, for the Monmouth C.C. Plans and specification may be seen at the office of William Tanner, F.S.I., County Surveyor, and a copy of the quantities obtained on deposit of £1 1s. Tenders to be sent to the County Surveyor.

Jan. 11. **RYHOPE.**—Erection of a secondary school at Ryhope, for the Durham C.C. Plans, specification, and general conditions, may be seen, and bills of quantities obtained, at the office of W. Rushworth, Shire Hall, Durham. Tenders to be sent to J. A. L. Robson, Secretary for Higher Education, Shire Hall, Durham.

Jan. 11. **SKIPTON.**—Masonry work required in the reconstruction of Pinder Bridge, at Skipton, for the U.D.C. Drawings, specifications, etc., may be seen, and other information obtained, at the Surveyor's Office, Town Hall, Skipton, on deposit of £1. Tenders to be sent to Richard Wilson, Clerk to the Council, Skipton.

Jan. 12. **MALTON.**—Erection of a new post-office at Malton, for the Commissioners of H.M. Works and Public Buildings. Drawings, specifications, and a copy of the condition and form of contract may be seen on application to H.M. Office of Works, Infirmary Street, Leeds. Bills of quantities and forms of tender may be obtained at the undermentioned address on deposit of £1 1s. Tenders must be delivered to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

Jan. 12. **HALIFAX.**—Enlargement of the Halifax post-office, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster, Head Post-office, Halifax. Bills of quantities and forms of tender may be obtained at the undermentioned address on deposit of £1 1s. Tenders must be delivered to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

Jan. 12. **GLAMORGAN.**—Execution of the following works for the C.C.:—1, new Council school for infants at Llest, Pontyrhyl; 2; new mixed department at the Council school at Sandfields, Aberavon; 3, new offices at Pontypridd County school. Plans and specification may be seen and bill of quantities and form of tender obtained, for 1 at the Pontycymmer Police Station, 2 at the Port Talbot Police Station. Plan of 3 may be seen and specification and form of tender obtained at the Pontypridd Police Station. Plans, specification, etc., may also be seen or obtained of T. Mansel Franklen, Clerk of the County Council, Glamorgan County Council Offices, Westgate Street, Cardiff, where tenders are to be sent. Fair wages clause.

Jan. 13. **SLIGO.**—Additions and alterations to the bank premises at Tubercurry, Co., Sligo. Plans and specifications may be seen at the Bank, Tubercurry, and at the office of Edward J. Toye, Architect, Northern Gate, Londonderry. Tenders to be sent to the General Manager, The Hibernian Bank, College Green, Dublin.

Jan. 13. **BRIGHTON.**—Erection of an additional office for police purposes, on a portion of the forecourt at the North East corner of the Town Hall, for the Corporation. Specification and form of tender may be obtained on application at the Office of the Borough Surveyor, at the Town Hall, Brighton. Tenders to be sent to Hugo Talbot, Town Clerk, Town Hall, Brighton.

Jan. 13. **HALIFAX.**—Execution of masons, iron-founders, joiners, slaters, and plasterers, plumbers and glaziers works required in the erection of business premises in Harrison Road, Halifax. Plans and specifications may be seen, and quantities obtained, on application to J. S. Dalton, Victoria Street East, Halifax, from Jan. 6, to Jan. 13, on which date sealed tenders must be sent in.

Jan. 14. **NORTON-IN-THE-MOORS.**—Erection and completion of a new Council school for 100 infants at Brown Edge, Norton-in-the-Moors, for the Staffordshire Education Committee. Quantities will be supplied upon receipt of £1 1s. deposit, which should accompany the application to tender, which must be made to Graham Balfour, Director of Education, County Education Offices, Stafford.

Jan. 14. **WORKINGTON.**—Demolition of the "Queen's Arms" and adjoining cottages, King Street, Workington, and re-building the inn on the site, for Thomas Salt and Co., Ltd., brewers, Burton-on-Trent. Copies of specifications, plans and form of tender may be obtained upon application at the offices, High Street, Burton-on-Trent. Tenders to be delivered to Edwin J. Knight, Secretary, at the offices.

Jan. 14. **ESSINGTON (near Wolverhampton).**—Erection and completion of a new Council school, for 130 infants, at Essington (near Wolverhampton), for the Staffordshire Education Committee. Quantities will be supplied upon receipt of a deposit of £1 1s., which should accompany the application to tender, which should be made to Graham Balfour, Director of Education, County Education Offices, Stafford.

Jan. 15. **NORTHWICH.**—Erection of a new school to accommodate 350 children, at Northwich. Plans and specifications can be seen at the Education Office, Verdin Technical School, Northwich, and quantities obtained on deposit of £1 1s. Tenders to be delivered to A. E. Thomas, Education Office, Northwich. Fair wages clause.

Jan. 17. **PONTYPRIDD.**—Erection of a cottage hospital at Pontypridd for the Executive Committee. Plans and specification can be seen, and bills of quantities obtained on deposit of £2 2s. with A. O. Evans, Williams, and Evans, Architects, Pontypridd, to whom tenders are to be sent.

Jan. 17. **CHELMSFORD.**—Erection of an elementary school at Trinity Road, Springfield, for the Corporation. Drawings and specification may be inspected, and copies of the bills of quantities obtained at the offices of the architects, Chas. and W. H. Pertwee, Chelmsford, on and after Dec. 30, upon deposit of £2. Tenders must be delivered to W. Smith, Town Clerk, Municipal Offices, 16, London Road, Chelmsford.

Jan. 17. **FLIXTON (near Manchester).**—Erection of an elementary school at Flixton, near Manchester, to accommodate 370 children, for the Lancashire Education Committee. Plans may be seen and bills of quantities obtained at the omce of the County Architect, Henry Littler, 16, Ribblesdale Place, Preston, by deposit of £2. Tenders must be delivered to J. W. Whitworth, Union Offices, Green Lane, Patricroft, near Manchester.

Jan. 17. **ENFIELD.**—Construction of pumping station buildings, together with chimney, stores, coal bays, cottage, roadway, drainage, and other contingent works, at Hadley Road, Enfield, for the Metropolitan Water Board. Drawings, conditions of contract, and specifications may be inspected at the offices of the Chief Engineer, Savoy Court, Strand, W.C., on and after Jan. 3. Contractors desirous of tendering may obtain forms of tender, conditions of contract, specifications, list of drawings, bills of quantities, etc., from the Chief Engineer, on production of receipt for £10, which must be deposited with the Accountant at Savoy Court, Strand, W.C. Tenders must be delivered at the offices of the Board, Savoy Court, Strand, W.C.

Jan. 18. **MACCLESFIELD.**—Erection of a detached villa for private patients at the Parkside Asylum. Plans and specifications can be seen at the office of H. Beswick, F.R.I.B.A., County Architect, Chester, and quantities obtained on deposit of £2. Tenders are to be delivered to Arthur C. Procter, Clerk to the Visitors, 23, King Edward Street, Macclesfield.

Jan. 18. **SPENNYMOOR.**—Erection of a new higher elementary school at Spennymoor, for the Durham C.C. Plans, specification, and general conditions of contract may be seen, and bills of quantities obtained at the office of W. Rushworth, Shire Hall, Durham. Tenders are to be sent to A. J. Dawson, Clerk to the Education Committee, Shire Hall, Durham.

Jan. 19. **NELSON, GLAM.**—Erection of 12 cottages for the Llancajach Building Club, on Caerphilly Road, Nelson, Glam. Drawings and specifications can be seen with the Secretary, H. Osborne, Commercial Road, Nelson, and at my office. Tenders are to be delivered to Idris Leyshon, Architect and Surveyor, 7, Hanbury Road, Bargoed.

Jan. 20. **TREHERBERT.**—Extension of Bethany English Baptist Chapel, Treherbert, Rhondda Valley, for the trustees. Plans and specification may be seen with W. R. Davies, 14, Bute Street, Treherbert, and at the office of W. D. Morgan, M.S.A., Architect, 194, Ystrad Road, Pentre.

Jan. 21. **DORCHESTER.**—Carrying out certain repairs, alterations, additions, at Stratton Manor, High West Street, Dorchester, in order to adapt the premises as County Offices, for the Standing Joint Committee. Plans, specifications, and forms of tender may be seen at the County Surveyor's Office, Shire Hall, Dorchester. Tenders to be sent to E. Archdall Ffooks, County Council Offices, Sherborne.

Jan. 26. **HALIFAX.**—Reinstating "Kingston Confectionery Works," belonging to John Mackintosh, Ltd. Plans and specifications may be seen and bills of quantities obtained of Medley Hall and Son, Architects and Surveyors, 1, Harrison Road, Halifax, to whom tenders are to be sent.

Feb. 7. **PETTAUGH (near Stowmarket).**—Erection of a new school for about 60 children at Pettaugh, near Stowmarket, for the East Suffolk County Education Committee. Builders who desire to tender should send in their names, accompanied by a deposit of £1 1s. (cheques to be made payable to W. E. Watkins), by 8th inst., to W. E. Watkins, Secretary, Education Office, County Hall, Ipswich, to whom tenders are to be sent.

ENGINEERING.

Jan. 10. **BRIGHTON.**—Supply, delivery, and erection of the following plant, for the Corporation:—(1) One 3,000 k.w. three-phase turbo alternator, complete with condensing plant, direct-coupled exciter, and all necessary accessories, at their generating station, Southwick, near Brighton. (2) (a) One 1,300 h.p., 8,000 volt three-phase induction motor, to be erected complete on a combination bedplate and coupled up to two 440 k.w. direct-current generators to be supplied by the Corporation; (b) one 300 k.w. induction motor-driven balancing set, and (c) high-tension switchgear of the self-contained iron-clad type, to control the above-mentioned three-phase induction motors, and the incoming high tension feeder. The above are to be delivered and erected in the North Road Sub-Station, Brighton. Specifications 1 and 2, with drawings and forms of tender, can be had on application at Town Hall, Brighton, on payment of a fee of £1, which will not be refunded, in respect of each specification. Tenders must be delivered to Hugo Talbot, Town Clerk, Town Hall, Brighton.

Jan. 11. **GLOUCESTER.**—Reconstruction of a portion of a bridge over the River Severn at Gloucester, for the Great Western Railway. Plans and specification may be seen and forms of tender and bills of quantities obtained at the Office of the Engineer, at Paddington Station. Tenders, marked outside "Tender for Bridge at Gloucester," to be sent to G. K. Mills, Secretary, Paddington Station, London.

Jan. 11. **LONDON (For Australia).**—Supply, delivery, c.i.f. Sydney, and erection (at the Lithgow Small Arms Factory, New South Wales, Australia), of a power generating station equipment, for the Commonwealth of Australia. Form of tender, specifications, and general conditions, may be obtained on application at the Commonwealth Office. Tenders must be delivered under sealed cover, endorsed "Tender for a Power Generating Station Equipment," to R. Muirhead Collins, Representative of the Commonwealth in London, 72, Victoria Street, Westminster, S.W.

Jan. 11. **MITCHAM.**—Partial reconstruction of the bridge carrying Mitcham Lane over the London, Brighton and South Coast Railway, for the L.C.C. Persons desiring to tender may inspect the drawings and obtain the specifications, bills of quantities, form of tender, and other particulars on application to the Chief Engineer of the Council, Maurice Fitzmaurice, C.M.G., at the County Hall, Spring Gardens, S.W., upon deposit with the Council of £3. Full particulars may be obtained on application at the County Hall before the payment of the fee for the specification, etc. Tenders must be sent to G. L. Gomme, Clerk of the London, County Council, County Hall, Spring Gardens, S.W. Fair wages clause.

Jan. 20. **LAXEY.**—Construction of intakes, filters, and reservoirs, near Laxey, also laying about 10,000 lineal yards of 4in. and 3in. cast-iron mains and branches, for the Commissioners of the village. Specifications, conditions, and forms of tender may be obtained from the Engineer, R. H. Crompton, on deposit of £2 2s. for each contract. Plans and drawings can be seen at the Commissioners' Office, Laxey, or on application to the Engineer, at 26, Ellerthwaite Road, Windermere, and at 11, Lowther Street, Whitehaven. Tenders to be sent to the Engineer, R. H. Crompton, Brantfell House, Bowness-on-Windermere.

Jan. 22. **ASHFORD (Kent).**—Erection of a minimum 50 b.h.p. suction gas engine and producer plant, and other works in connection therewith, at its Bybrook Sewage Works, for the U.D.C., in accordance with plan and specification which may be obtained from William Terrill, Surveyor, 5, North Street, Ashford, Kent, on deposit of £1 1s. Tenders to be sent to John Creery, Clerk to the Council, 11, Bank Street.

IRON AND STEEL.

Jan. 11. **LONDON (for India).**—Supply of: 1, metals; 2, wrought iron and mild steel bolts, nuts, rivets, etc.; 3, wood screws, pins, etc., for the Bombay, Baroda, and Central India Railway. Tenders must be made on forms, copies of which, with specifications, can be obtained of C. Crommelin, Secretary, Gloucester House, 2, 3, and 4, Bishopsgate Street Without, London, E.C., on payment of £1 1s. (not returnable).

Jan. 11. **TYBURN (near Birmingham).**—Supply and delivery of about 700 tons of 12in. pipes, about 350 tons of pipes ranging in size from 21in. to 36in., and about 1,400 tons of 60in. diameter pipes, for the Birmingham Tame and Rea District Drainage Board. Bill of quantities and form of tender will be furnished on application to John D. Watson, M.Inst.C.E., Engineer to the Board, Engineer's Office, Tyburn, near Birmingham. Tenders to be delivered at the office of Arnold E. Harris, Clerk to the Board, 117, Colmore Row, Birmingham.

Jan. 24. **LONDON (for Abroad).**—Supply of the following stores, for the Agent-General for the Cape of Good Hope:—1,500 tons rails, 80lbs. section, Bessemer or open-hearth steel; 2, 28,000 fish-plates, Bessemer or open-hearth steel, for 80lbs. section rails. Forms of tender and all particulars may be obtained on application at the office of the Agent-General, 100, Victoria Street, London, to whom tenders are to be sent.

PAINTING.

Jan. 17. **ERITH.**—Painting iron fencing at various properties of the Council. Forms of tender, quantities, specification, and general conditions, may be obtained at the Surveyor's Department, Council Offices, Bexley Road, Erith, on deposit of £1 1s. Tenders must be delivered to J. Kennedy Allerton, Clerk to the Council, Council Offices, Erith.

PLUMBING AND SANITARY.

Jan. 10. **NOTTINGHAM.**—Erection of a urinal and a store shed on the Nottingham Forest, for the Corporation. Plans may be seen and copies of the specification, and form of tender obtained from Frank B. Lewis, City Architect, Guildhall, on deposit of £1 1s. Tenders to be delivered to J. A. H. Green, Town Clerk, Guildhall, Nottingham. Fair wages clause.

Jan. 10. **WOKING.**—Construction of about one mile of 24in. concrete tube sewers, and about the same quantity of stoneware pipe sewers, together with manholes and gullies, for the U.D.C. Drawings, conditions of contract, specification, and bills of quantities, at the offices of G. J. Wooldridge, the Engineer to the Council, Council Offices, Woking. Copy of the specification, bills of quantities, and form of tender may be obtained from the Engineer on deposit of £5. Tenders must be delivered to R. Mossop, Clerk to the Council, Council Offices, Woking.

Jan. 14. **BRIGHTON.**—Alterations to the sanitary arrangements of the lavatories at the West Street Shelter Hall, for the Corporation. Specification and form of tender may be obtained on application at the office of the Borough Surveyor, Town Hall, Brighton. Tenders to be sent to Hugo Talbot, Town Clerk, Town Hall, Brighton.

Jan. 14. **DUBLIN.**—Execution of sewerage and outfall works, for the Joint Hospital Board, in connection with the new sanatorium at Crooksling, Brittas, Co. Dublin. Plans and specifications may be inspected, and full information obtained, from Board's Architect, George T. Moore, M.Inst.C.E.I., 1 and 2, Foster Place. Tenders must be sent to Patrick Nally, Clerk, Municipal Buildings, Dublin.

Jan. 18. **HUNSLET.**—Construction of about 250 yards of 9in. pipe sewer and manholes, in Woodlesford, near Leeds, for the R.D.C. Plans, specifications, and quantities may be seen, and forms of tender obtained of W. B. Pindar, Clerk to the Council, Council Offices, Leek Street, Hunslet, Leeds, to whom tenders are to be sent.

Jan. 18. **SOUTHEND-ON-SEA.**—Construction of sewage pump well, screening chambers, an outfall conduit and main sewer No. 6, all mainly in cement concrete, for the Corporation. The outfall conduit will be 33in. diameter, and the main sewer will vary from 27in. to 39in. in diameter. Both outfall conduit and sewer will be laid in one tunnel, at an average depth of 70ft., the length being approximately 3,000 yards. Plans may be inspected and duplicate copies of bill of quantities, copies of general conditions, specification and form of tender obtained, on application to Ernest J. Elford, M.I.Mech.E., Engineer, Municipal Buildings, Southend-on-Sea, on deposit of £5 5s. Tenders to be delivered to H. J. Worwood, Town Clerk, Town Clerk's Office, Southend-on-Sea.

Jan. 31. **YEOVIL.**—Construction of certain sewers, drains, and other works, within the borough and in the parish of Yeovil Without, for the Corporation. Drawings may be inspected and specifications and forms of tender, with schedules and quantities, can be obtained on payment of £2 2s., on application at the office of the Borough Surveyor at Yeovil, or at the office of T. and C. Hawksley, Civil Engineers, Caxton House, Westminster, S.W., on and after Jan. 10. Tenders to be addressed to the Town Clerk at his office, Yeovil.

ROADS AND CARTAGE.

Jan. 10. **ILFORD.**—Supplying and laying about 680 sup. yards of hard wood block paving to the tramway track in the High Road, Ilford, for the U.D.C. Specification and form of tender may be obtained on application to H. Shaw, M.I.C.E., Engineer and Surveyor to the Council, Town Hall, Ilford. Tenders must be delivered to Adam Partington, Clerk and Solicitor to the Council, Town Hall, Ilford.

Jan. 10. **GOLDTHORPE (Yorks.).**—Execution of footpath improvements to main road, Goldthorpe, for the Bolton-upon-Dearne U.D.C. The work includes about 65 yards cube digging, 145 yards sup. 3in. flag, 95 yards 12in. by 8in. kerb, 30 yards 12in. by 8in. kerb to radius, 138 yards 12in. by 6in. channel, 90 yards 6in. by 5in. setts, 306 yards 9in. pipes, various depth, manholes, junctions, gullies, etc. Specification, bill of quantities, and any other information may be obtained from the Surveyor upon deposit of £1 1s. Tenders to be delivered to J. Ledger Hawksworth, Clerk, Council Offices, Bolton-upon-Dearne, Rotherham

Jan. 12. **KINGSTON-UPON-THAMES.**—Levelling, paving, metalling, flagging, channelling, sewering and lighting Park Farm Road and Staunton Road, for the Corporation. Plans and specifications prepared by the Borough Surveyor, R. Hampton Clucas, can be seen at his office, Municipal Offices, where forms of tender can be obtained. Tenders, on a separate form for each road, to be sent to Harold A. Winser, Town Clerk, Municipal Offices, Kingston-upon-Thames.

Jan. 12. **CHELMSFORD.**—Supply of broken granite for the repair of the main roads in Essex, to be delivered at various railway stations and wharves as per schedule, which will be forwarded upon written application to the Chief Surveyor, Chelmsford. Tenders to be delivered to Percy J. Sheldon, M.Inst.C.E., Chief Surveyor to the Council, Office of the Chief Surveyor, Chelmsford.

Jan. 14. **CHELMSFORD.**—Supply of broken granite for the repair of the main roads in the county of Essex, to be delivered at various railway stations and whaves as per schedule, which will be forwarded upon written application to the Chief Surveyor, Chelmsford, on or before Jan. 12. Tenders to be delivered to Percy J. Sheldon, M.Inst.C.E., Chief Surveyor to the Council, Office of the Chief Surveyor, Chelmsford.

Jan. 15. **OVERSTRAND (Norfolk).**—Execution of the following works at Overstrand, Norfolk, for the Erningham R.D.C.:—Construction of a new road, sea wall, and gangway approach to the beach. Plans can be inspected and the specification and quantities obtained at the Post Office, Overstrand, near Cromer. Tenders are to be delivered to the Chairman of the Council, care of T. Ling, Northrepps, Norwich.

Jan. 22. **HAILSHAM.**—Supply of road materials and cartage of same, for the R.D.C. All materials must be delivered at the respective stations, or other places specified, before Sept. 30. Three forms of tender have been prepared, as follows: (a) supply of materials to be delivered by rail to stations; (b) supply of materials to be delivered to the sides of the roads; (c) cartage of materials from railway stations to the sides of the roads. Tenders to be sent to Edmund Catt, Clerk to the Council, Clerk's Office, 17, London Road, Hailsham.

MISCELLANEOUS.

Jan. 10. **LONDON.**—Execution of the work or supply of materials below described, for one year commencing April 1, 1910, for the Saint Pancras Borough Council:—1, removal of road-sweepings and gully soil; 2, horsing water vans; 3, horsing road sweeping and other machines; 4, cartage; 5, timber and joinery materials; 6, barrows, trucks, handles, etc.; 7, paints; 8, oils; 9, candles and other chandlery; 10, smiths' and founders' works; 11, general ironmongery; 12, tools and other hardware goods; 13, Yorkshire stone and artificial paving slabs; 14, granite kerbs, paving setts, broken granite, and Kentish rag; 15, gravel and other roadway materials; 16, sundry materials (lime, cement, bricks, stoneware pipes, and other glazed goods); 17, bass brooms and horse brush stocks; 18, tarpaulins, hemp and rubber goods; 19, pitch, tar, creosote oil, carbolic powder, and coke. Printed forms, with any further particulars, can be obtained on application to Wm. Nisbet Blair, M.Inst.C.E., Borough Engineer and Surveyor. Tenders, under endorsed covers, to be delivered at the Office of the Department of Works, Town Hall, Pancras Road, N.W.

Jan. 13. **WEST BROMWICH.**—New floors, partitions, dual desks, and ventilating hoppers in windows, etc., at the Walsall and West Bromwich District schools, Wigmore, West Bromwich. Plans, specifications, and conditions of contract may be seen at the office of J. W. Allen, Architect, High Street, West Bromwich, from 7th inst., to 12th Forms of tender may be obtained at the office of J. W. Allen. Tenders must be sent to H. Ward, Clerk, 1, Church Street, West Bromwich.

Jan. 17-22. **BIRMINGHAM.**—Supply of stores for one year, ending March 31, 1911, for the Public Works Committee: Lias lime, Portland cement, drain pipes, gullies, gully pans, brown bricks, timber, drysaltery, castings, iron and steel ware, clothing, lamps, glass, enamelling, brooms, hose pipe, rubber goods, incandescent mantles, and miscellaneous stores. Samples and patterns may be seen on application to the storekeeper at the Lamp Department, Park Street, and the Corporation Wharf, Sheepcote Street. Forms of tender copies of conditions, and specifications may be obtained at the City Surveyor's Office, Council House, Birmingham, on deposit of £1 for each copy. Samples of goods must be sent, carriage paid, to the undersigned; the samples of Portland cement, 4lb. in weight, to be delivered by January 17. Tenders must be delivered to Henry E. Stilgoe, City Engineer and Surveyor, The Council House, Birmingham.

Jan. 20. **GLASTONBURY.**—Supply and delivery of six D fire-clay retorts, 22ins. by 15ins. by 10ins., fire-bricks, and fire-clay and Ewell bricks; one clinkering door and frame, etc.; for the Corporation. Particulars from Jno. Morland, Wyrral, Glastonbury, to whom tenders are to be sent.

Insurance.

Free £500 Accident Insurance Coupons have this week been sent to the following:—

W. J. V. (Burslem), B. T. (Oldham), J. F. L. (Manchester), G. C. A. (Sheffield), T. B. (Bolton), J. E. D. (Sale), O. C. (Sale), E. W. S. (Altrincham), T. W. (Rochdale), G. L. D. (Manchester), R. B. (Liverpool), H. H. W. (Accrington), J. R. V. (Bolton), R. P. (Bolton), N. T. (Bolton), S. W. (Bootle), H. H. (Oldham), H. B. (Longsight), C. P. A. (Watford), A. B. (Ingatestone), E. C. (Guisboro'), A. D. (Accrington), H. W. E. (Highgate), S. T. (Llandudno), T. E. T. (Lanchester), W. E. H. (Strand, W.C.), W. B. (Keighley), W. H. (Liverpool), P. T. R. (Lymington), J. P. B. (Southampton), A. T. D. (Southampton), J. T. E. (Accrington), T. B. (Bolton), J. R. (Kilmarnock), A. W. L. (Plymouth), W. E. B. (Bridlington).

Late Tenders.

Long Eaton.—A detached house, Breedon Street, Long Eaton. Mr. Arnold Plackett, architect, Central Chambers, Long Eaton.

J. Bull, Long Eaton	£407 0 0
Donnelly and Sons, Kimberley	402 10 0
C. Marshall, Long Eaton	301 0 0
H. Annis, Long Eaton	382 0 0
T. W. Youngman, Long Eaton	380 0 0
J. Brown and Son, Long Eaton	375 0 0
F. Martin, Stapleford	375 0 0
E. E. Stevens, Long Eaton	300 0 0
F. Perks and Son, Ltd., Long Eaton	300 0 0
R. J. Warren*	349 0 0

*Accepted.

Leek.—Accepted for the erection of a golf house, Leek, for the Leek Golf Club. Reginald T. Longden, architect, Burslem and Leek:—
J. Heath and Sons (building), Leek.
Chas. Leek (heating), Leek.

Porthcawl (Wales).—For erection of a pavilion, etc., at Porthcawl, for the Porthcawl Winter Garden and Skating Pavilion, Ltd. Messrs. Geo. F. Lambert and Son, architects, Bridgend.

H. Smith, Wolverley, near Kidderminster	£1,986 0 0
Radford and Greaves, Drury Lane, Derby	1,925 0 0
R. Rankin,* Suffolk Place, Porthcawl	1,834 12 4

Architect's estimate, £1,748 16s.
*Accepted.

Reading.—For new offices, for the Berkshire County Council. Messrs. Warwick and Hall, architects.

Wheeler Bros.	£18,295
Collier and Catley	18,532
M. E. Fitt	17,937
F. Newberry	17,500
Cooper and Sons, Maidenhead	18,695
Cox and Sons, Maidenhead	18,731
Mussellwhite and Sapp, Basingstoke	18,230
Watson Bros., Ascot	16,444
Foster and Dicksee, Rugby	17,935
J. B. Seward, Wokingham	17,008
Hoskings Bros., Newbury	18,687
Hollis and Sons, Windsor	19,360
Killby and Gayford, London	16,958
Holliday and Greenwood, London	17,380
Holloway Bros., London	17,250
E. C. Hughes,* Wokingham	16,398

Alternative price for oakwork on ground and first floor in lieu of American white wood.

Wheeler Bros.	£625
Collier and Catley	540
M. E. Fitt	500
F. Newberry	450
Cooper and Sons	655
Cox and Sons	560
Mussellwhite and Sapp	450
Watson Bros.	332
Foster and Dicksee	704
E. C. Hughes*	354
J. B. Seward	323
Hoskings Bros.	548
Hollis and Sons	450
Killby and Gayford	365
Holliday and Greenwood	530
Holloway Bros.	510

Credit for old material.

Wheeler Bros.	£70
Collier and Catley	55
M. E. Fitt	65
F. Newberry	77
Cooper and Sons	63
Cox and Sons	60
Mussellwhite and Sapp	74
Watson Bros.	63
Foster and Dicksee	150
E. C. Hughes*	140
J. B. Seward	40
Hoskings Bros.	50
Hollis and Sons	40
Killby and Gayford	20
Holliday and Greenwood	30

Rest of Reading.
*Accepted.

Taunton (Somerset).—For alterations and additions to Taunton Castle, for the Somersetshire Archæological Society. Mr. J. Houghton Spencer, architect, Taunton.

H. J. Spiller and Son	£427 0 0
W. Potter	418 10 0
A. J. Spiller	399 0 0
C. Fox,* Taunton	385 0 0

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H.M. Office of Works, etc.,
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AND ARCHITECTURAL ENGINEER.

[This issue contains the Official Reports of the National Building Trades Federation, and articles of special interest to Builders and Contractors.

Caxton House, Westminster.

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Trade Improvement.

The returns of foreign trade for December encourage the hope that we have at length emerged from the cycle of depression. The month's imports amounted to £60,786,000, an increase of £3,960,000, or 6.9 per cent., and the exports to £33,790,000, an increase of £4,388,000, or 14.9 per cent. The month therefore shows a decided improvement on the bad December of 1908, and is even better than the same month of 1907. For the whole year 1909, the imports were £624,740,000, an increase of £31,787,000, or 5.3 per cent., and the exports £378,379,000, an increase of £1,275,000, or 0.3 per cent. The year, therefore, which seemed certain, on the showing up to the end of October, to fall below 1908, has, on its records for November and December, come out with a welcome increase. This is surely excellent news for all sorts and conditions of builders, who, if this rate of progress is maintained, may hope to share in the general prosperity. Whether they do or do not depends very largely on the degree of confidence which may return to the investor and the capitalist; but one may be fairly hopeful that when the General Election is over and done with, the property market will quickly recover its tone, and that, as a consequence, building operations will proceed at something more like the normal rate.

The Broader View.

It may be taken for a healthy sign that the leading British newspapers, magazines, and other periodicals are showing so much interest in architecture. The articles on the subject that appear with increasing frequency in the lay Press are, for the most part, naturally what is euphemistically termed "popular" in style and treatment; but they are better than nothing, and, while they may not convey much information to the architect and the builder, they must inevitably tend to increase the intelligent interest of a hitherto profoundly apathetic public. In this respect the "Times," in particular, may be supposed to be rendering excellent service. Its articles on architecture and cognate subjects appear at fairly short intervals, and are almost always thoroughly sound, as well as being "readable"—that is to say, they are free from the technicalities that could only baffle and bewilder the general reader, yet they are not purely journalistic. Not long ago, "An English Architect" was allowed to occupy fully two columns with an interesting account of the architecture of Buenos Ayres. The city, he shows, is not without interest for the students of town planning, in whose behalf, as our journal has been quick to recognise, the field of enquiry may be profitably expanded far beyond the old narrow limits. Whereas formerly the British architect was apt to be somewhat impatient of the exhibition and description of foreign examples, he is now eager to find out all he can as to what is being done abroad, and we have not been slow to minister to this growing recognition of the truth that art is cosmopolitan, and knows no boundaries, political or geographical. The city of Buenos Ayres, the writer observes, was founded in 1536, and is laid out in Roman fashion, as a city of squares and blocks, called locally *manzanas*, on a perfectly rectangular plan, and, though outside an area of about three miles each way, the axial lines of the streets are deflected so that they follow the bend of the river, the system of blocks of similar size, uniformly numbered, is as far as possible adhered to. The first houses were of one storey, and, shelter from the sun being an important consideration, the streets were kept narrow, some 32ft. between opposite frontages being about the maximum. With the growth of trade, it became necessary to increase the height of the buildings, which are now generally of three or four storeys in the centre of the town, and the tendency to increase the height grows with the increasing pressure of business and value of sites. Within the city, however, there are twenty squares and gardens, and the total space occupied by parks and public gardens is estimated at nearly six million square metres; the principal square, known as the Plaza de Mayo, adjoining the Government House and the Cathedral; and in this quarter are to be found tall and imposing hotels and business blocks; and not far from the harbour, steel-framed tall buildings on the American plan are springing up. The staple building material is red brick, for which there is abundant clay; but the brickwork is very skilfully covered—mostly by Italian workmen—with plaster, imitating freestone so cunningly that "it is often difficult to believe, even after due examination, that the apparent carved and moulded stone is only a sham." Stone is scarce, and frank brickwork is almost unknown; and "from the fact that in stucco and plaster the imitation of any given form and material is so easy, and from the cosmopolitan character of the population which has poured in and still pouring into the country, it results that no distinctive architectural style exists." But you get reminiscences of many styles—from the Pompeian house round its atrium to "the irregular, turreted, would-be picturesque style with high slate roofs and attic windows, such as exists in Grosvenor Gardens." Perhaps the finest building in the city is that which houses "the most magnificent and wealthy club in the world—the Jockey Club of Buenos Ayres." Although its stucco exterior is not noble, its interior shows a luxuriousness of decoration of which Pall Mall and St. James's know nothing. The Congress building is not yet finished. It is of Neo-Greek character, and its brick walls are to be faced with marble. Surrounding blocks of houses are being cleared away to give it an imposing plaza. The Teatro Colon is perhaps the largest opera house in the world; and, externally, "it is one of the most satisfactory theatre designs in existence." Its architect was a Belgian. A fine new station for the Central Argentine Railway is to be built by two English architects, Messrs. Chambers and Conder, in conjunction with an American, Mr. Thomas. Architecturally as well as in population, Buenos Ayres is perhaps the most cosmopolitan city in the world, and its description by an English architect is undoubtedly worth the space that the "Times" has given it. That this characteristic is not altogether pleasing to the writer is perhaps a sufficient reply to his delicate hint that London itself is in some danger of becoming, architecturally, too cosmopolitan. For our part, we have but little apprehension on that score; our chief fault has been hitherto the opposite extreme of dogged insularity. We have full faith that the prepotency of the national character will sufficiently safeguard us from the taint of mongrelism, however clearly we may see the advisability of a broader eclecticism.

A Lesson from Salford.

A short time back we had occasion to protest against several items in the "Form of Tender and General Conditions relating to the erection and completion of Annexe and Sundry Alterations and Additions to Existing Buildings" of Salford Town Hall. We are glad to know that, as a result of representations made by the federated builders of the district, whose cause we advocated no less cordially than tem-

perately, the most objectionable features of those conditions have been removed or modified. It is the result that might have been expected to accrue from the temperate presentation of a good case by an accredited representative body having among their resources a most effectual means of timely publicity. In all such cases, it is best to hold in check any natural feeling of indignation, and to try what can be done by studious moderation and courtesy, coupled with firmness. As an esteemed correspondent reminds us, "abuses creep in and become customary" because they are insufficiently considered by those whose interests are directly affected by them; and in such circumstances, anything in the nature of extravagant denunciation would not only do more harm than good, but would recoil on those whose past neglect of their plain duty towards themselves has been largely responsible for the encroachment. As, in effect, we remarked in the first instance, the Salford conditions were not unique; and as those who framed them were simply following—in the spirit, if not in the letter—a bad precedent that had been allowed to become common because of weak acquiescence in it, anything in the nature of bitter denunciation would have been beside the mark, and we are glad to know that the matter has been settled quite amicably and to the mutual satisfaction of both parties. That victory rests with the builders is not humiliating to the corporation, but is greatly to its credit; and our Salford friends are to be sincerely congratulated on having set so notable an example of the potency of "the reason firm, the temperate will," in matters which, in nine cases out of ten, justice can be secured by prompt action, courteous representation, and the well-nigh resistless forces of organisation and publicity.

One-room Flats.

The London County Council, it has been announced, "has gone a step further in municipal housing schemes, and decided to build one-room flats." The step appears to us to be retrograde. The flats, intended for workmen earning between 25s. and 20s. per week, will be rented at rates between 3s. 6d. and 10s. per week. Such accommodation may possibly be a boon to single persons who require cheap sleeping quarters; but we must confess to serious misgivings with respect to the statement that "young married couples are to be admitted on condition that they remove when their first-born reaches the age of three, or on the birth of a second child." The one-room system of family life is so repugnant that we are astonished to find the London County Council lending countenance to it. They will not, it is true, allow it to develop its most objectionable features; but we feel that they ought not to admit, and that they certainly should do nothing to encourage, a practice that is from almost every point of view so highly objectionable. Considering the many thousands of empty houses in the suburbs, the enormous acreage of building lands still available within easy reach of London, and the cheapness and convenience of transit in all directions, it seems to be quite unnecessary, as well as extremely undesirable and curiously inconsistent, to show even the slightest favour towards a practice against which, in its extreme forms, housing reformers have striven with passion and anguish. One-room family life is a blot on civilization, and that the London County Council should do anything whatever to perpetuate it is almost incredible. If public bodies *must* meddle in housing, we are at least entitled to look to them for a better example than that of providing accommodation for one-room families.

Obiter Dicta.

Great Britain Yet.

With a little faith in herself, England may very well prove herself in a better condition now than she was fifty years or a hundred years ago, not only absolutely, but in comparison with most of her rivals.—*Leading article in the "Morning Post."*

Renaissance, Intellectual and Spiritual.

We are still living in the Renaissance and the ideas of the Renaissance. It may be we are living too much in those ideas, are too immersed in them and bounded by them. The feeling that this is so, the feeling that the rational faculty in man has been too exclusively cultivated and developed, and that in consequence the spiritual faculty has suffered atrophy and decay, is penetrating men's minds to-day more and more. It is possible to overdo rationalism, we are beginning to think. Perceptions of another order than reason have been granted to man, and his nature has been so constituted that he cannot enjoy content and happiness unless these, too, are given scope. But yet, whatever development on that side may be in store for us, whatever spiritual Renaissance, dimly conjecturable now, as it seems to me, may await us in the future, it cannot be supposed that the value and significance of the great intellectual Renaissance will ever be seriously impaired. To say that reason is not all will never be to say that reason is not much. The power of the intellectual Renaissance is an abiding thing. It will always be with us, and will make, even in the spiritual sphere, its influence felt among us. And while this is so we must, if we allow to architectural representation its due weight, turn with sentiments of no common interest to those first struggles against heavy odds of the horizontal principle to re-affirm itself.—*Mr. L. March Phillipps, in the "Contemporary Review."*

Our Turn Next.

The year 1909 has been phenomenal for the building prosperity that has distinguished it throughout the United States. This enormous demand for architectural services and building materials will probably increase materially through 1910. It is a period that is distinctive in our architectural annals.—*"Western Architect" (Minneapolis).*

Mr. Ernest George on St. Paul's Bridge and St. Paul's Cathedral.

Mr. Ernest George has addressed the following letter to the "Times":—

SIR,—To those whose pride is in their city the scheme now before the Corporation is of the keenest interest; a new bridge and a new approach, opening up St. Paul's, provide the opportunity for beautifying a quarter of the town. Approached from the west the Metropolitan Cathedral forms an impressive picture, notwithstanding the iron railway bridge in the foreground. On other sides the great church is crowded upon by tall houses. There is now the chance of a south view by the proposed new street, which should have the dome in its vista.

It is the earnest hope, not only of architects and of other artists, but of all who desire beauty in our town life, that this great change shall be made, not only with a view to traffic, but at the same time with the wider consideration for all else that may be gained thereby. The new bridge should be a feature with architectural character, and should not be a clever arrangement of iron girders.

I trust that those in authority will admit, in consultation with them at the initiation of the scheme, the best talent to be obtained on its architectural or æsthetic bearing. The Bridge House Estates Committee graciously received a deputation of our Royal Institute which included Sir Lawrence Alma-Tadema and Sir George Frampton; the painters and sculptors also feeling that a great opportunity is with us.

If through your influence a wide public interest is taken in this matter the hands of the committee will be strengthened, and they will realise that a really noble scheme is expected of them. London has an unfortunate record of lost opportunities.—I am, sir, yours obediently, ERNEST GEORGE, President of the Royal Institute of Architects.

January 5.

Town Planning.

The National Housing and Town-Planning Council has decided to fix its headquarters in London. The Council has secured the co-operation of a very large number of local authorities, some 200 having agreed to assist in the development of the movement. It is now clear that a number of town plans will be submitted as the result of co-operation with landowners. That will be one of the greatest values of the new Town-Planning Act. The difficulty which many landowners have felt in developing their estates on right lines has been that they could not be sure how the adjoining landowners would take their proposals. It might, of course, easily happen that a small owner would completely block the proposals of a neighbour whose interests might greatly outweigh his own.—*"Manchester Guardian."*

A Plea for Artistic Decoration.

When one thinks of the many dull walls in London schools and mission-halls, and hospitals, and sees how refreshingly and suggestively they could be decorated, and at how small cost, one is half inclined to take hope for the revival of a craftsmanship that is something more than mechanical.—*"Times."*

Employers and Education.

Conferences between employers and education authorities are common in the North of England. In Newcastle they had held a conference at which every important firm on Tyneside were represented, and the advisory committee formed as a result were a real help.—*Mr. A. C. Coffin, secretary of the Newcastle-on-Tyne Education Committee.*

A "Towneries" Museum.

Unfortunately, the present movement of town-planning was too much broken up by specialists more eager to assert themselves than to co-operate with others, and important principles tended to be shouldered out. Civic exhibitions would guard against this. The speaker had in mind a great museum gallery which would be a kind of "Towneries." Here local collections could be sent, and again in turn might be borrowed. Such an exhibition would diffuse a wide interest and tend to increase inter-civic co-operation.—*Prof. Geddes.*

New Light on Spartan Art.

Dealing with the light thrown on early Spartan history by the recent excavations, Mr. M. S. Thompson has pointed out that the prevailing view that early Sparta was inartistic and uncultured as compared with other Greek communities must be largely modified in view of the examples of Laconian art of the 8th and 7th centuries B.C. now brought to light. Three periods of Spartan culture may be distinguished. In the earliest, extending from the Dorian invasion to about 800 B.C., the existence of foreign trade is indicated by the abundance of amber. During the next two centuries the finest specimens of Spartan art were produced, and numerous examples of carved ivories reveal intercourse with the East After 600 B.C. a period of decadence begins, and most of the extant accounts of Spartan history and life, all written from an Athenian or Ionian standpoint, relate to this epoch.—*Mr. M. S. Thompson, at the inaugural meeting of the British School of Archæology at Athens.*

THE RESTORATION OF SELBY ABBEY.

By Arthur R. Fairbairn.

The approaching re-opening of Selby Abbey draws attention to a work of restoration chiefly interesting because of its completeness. Not often is the public imagination so struck, as it was by the Selby disaster, that funds can be raised, sufficient not only to restore that which the fire destroyed, but also to put the building in a thorough state of repair from end to end. More than £40,000 has been spent, mostly in day work, owing to the nature of the repairs. As the roofs and ceilings of nave, choir, transept, and organ-chamber were burnt out completely, there has been reconstruction rather than restoration, in the case of the structural woodwork. The stonework repairs, however, were at first an unknown quantity, and only as the workmen "got down" to solid, uninjured walling, could the extent of the damage be known.

No new lessons were learnt after this fire as to the fire-resisting qualities, or lack of them, of such buildings. The flames from the blazing organ, confined for a while to the organ chamber, ignited the ceiling of the transept, even though that was at least 25ft. above the crown of the arch through which they passed. (A suggestion worthy of consideration has been made that where the organ is placed in a separate chamber, only a very light roof be built over it, so that in the event of fire it would rapidly burn out, without compelling the flames to pass into other parts of the church.) The stonework suffered severely, especially where the fire had been fiercest; being magnesian limestone it flaked and cracked to an appalling extent, so much so that in one case an arch could only be centred by being walled with brickwork on top of a timber centre, the mouldings having disappeared.

Three kinds of stone have been used in the Abbey, which are, however, geologically the same, quarried in different places on the band of magnesian limestone, which runs all along the Permian outcrop, forming the hilly country between Selby and Leeds. To a mason these stones are very different, the well-known Huddlestone being the hardest, so hard sometimes that it does not pay to work. This weathers usually beautifully clean and white. The equally famous Tadcaster stone, decidedly yellow, is far softer and easier to work, though greatly subject to shakes. The third, Monkfryston, has proved itself to be, though comparatively unknown and neglected, an excellent building stone. It is of a grey colour, very soft and somewhat "soapy" to work, sometimes spongy in texture; yet the Norman nave of the Abbey, entirely built of it, has weathered less than the other parts of the church. However, all three alike utterly failed to withstand the fire.

The stonework of the nave escaped largely because of the rapidity of the fire. The nave roof having two ceilings (an old one on top of the ceiling beams), the fire crept along inside from the tower unperceived, until when at last it broke out, the roof was alight practically from end to end. Evidence of the heat created was given by the melted lead in the top of the walls "grouting" the rubble filling, in some cases a yard down. Little else was required in the nave but the renewing of the Early English string, which formed the cornice, and the capitals in it to the wall-shafts. The new roof, like the old one, was constructed with king-post trusses, having massive oak cambered ceiling-beams as tie-beams, and an additional tie or collar across the heads of the struts.

The most difficult part of the restoration was the renewing of the stonework of the columns and arches in the choir arcade. Owing to the centering of the arches and the shoring of the columns, they were so surrounded with timber, that the workmen had very little room to work, and could use no tackle to place the stones in position. In addition to this, only the least possible portion of the calcined stone was cut away at once, for obvious reasons, and the openings always kept propped with short struts and wedges. The method adopted—the only possible one in most cases—was to insert the new stone in position laid dry on small strips of felt—old roofing felt was chiefly used—and then grout it with neat cement, chases having been cut in the back and bed of the stone so that the grout could run easily. This work of renewal proved to be more extensive than was anticipated. Much stonework, apparently sound, proved to be shattered when "rung" with a chisel.

The new choir roof is built on similar lines to the old one, though not identical in details. The old roof was of what may be termed "the groining type," i.e., without tie-beams, constructed of a series of trusses, having two members springing from the foot of one principal to intermediate points on the other. This was an unnecessary precaution, because the groining did not rise above the level of the wall-plate.

The present trusses are simply developed "collar-beams" formed out of 6in. by 6in. timber, with two members each springing from about a third of the distance up the principal to a point a similar distance from the top, they being halved at their crossing, and stiffened by a horizontal collar spanning the principals, made out of two 6in. by 2in. battens, bolted at their end to the principals, and at the centre to the intersection of the ties. These trusses are placed a foot apart and boarded upon direct, and they are also braced longitudinally. The framing of this roof is open to objection on account of the lower unbraced length of principal, but this objection has less weight than usual owing to the very steep pitch of the roof and the consequent approach to the vertical of the principal rafter. However, as the groining did not rise high enough to prevent it, tie-beams were fixed at intervals, and the wall-plate kept in from the inner face of the wall so as to allow of the fixing of short ashlaring, stiffening the unbraced length of principal. The oak groining, of the level-ridge type, with intermediate ribs, is fixed to the old stone springers, the centre bosses being bolted to the underside of the baulk tie-beams.

The most interesting feature of the whole restoration was the underpinning of the tower piers, and in considering this, one must remember the history of their foundations. Selby lies in that great alluvial plain, the vale of York, which in very few places is much above sea-level; in fact, the floor of the Abbey is less than 20ft. above normal high tide level in the Ouse a hundred feet away. Even now the water level is only about 6ft. from the surface, and of course it must have been considerably nearer when the building was commenced, owing to the undrained state of the country. It was evidently owing to that fact that the old foundations were found to be only a yard deep. Now so long as the land remained undrained, the building would have little



Photo: R. Swift.

SELBY ABBEY.

View of interior the morning after the fire: smoke and steam are still rising, and firemen still playing on debris. Remains of nave ceiling.

more than the normal settlement, or at any rate, only that amount which would result in a "balance" between the weight of the superstructure, and the hydrostatic pressure of the water-logged land at a slightly deeper level; a fine point for consideration, truly!

But, of course, as the surrounding district has been transformed from swamps into fine agricultural country by drainage, this has also drained the sandy strata under the tower foundations, with the result that it has slowly but continuously settled, and there occurred 200 years ago the collapse of the Norman tower. Evidently the building had been firmly founded on water—a paradoxical state of affairs, which was proved to be possible and actual a few years ago, when in the deepening of a stream in the town a bed of peaty sand was tapped and drained, with disastrous results to chimney-stacks and engine-beds. This state of affairs is also one which the lay mind finds difficult to apprehend rightly, as witness the remarks about the "dangling legs" of the tower, noticed in a previous issue of this journal, and also the serious statement that the tower stood upon a "vacuum."

At the commencement of the work of underpinning, concrete retaining walls were constructed in the ground around each pier, for a triple purpose—to retain the soil and avoid timbering the excavation, to form the foundations for the centreing of the tower arches, and to carry the ends of the girders, which as needles were put through the massive Norman tower piers. Fortunately below the running sand a solid bed of clay was found, at a depth of about 6ft., upon which the new concrete and blue-brick foundation was built, and finally the pier underpinned with masonry upon this.

Not only were the old foundations insufficient in depth and area, but the mortar used in them had perished and crumbled to a brown sand, with the exception of the south-west pier, which, with the two arches springing from it, was rebuilt in 1702 after the fall of the original tower.

When the tower fell, destroying the south transept and two bays of the choir—the north-west corner remained, as one side of Kirkstall Abbey tower stands now—and this was imitated as to the details of the Norman windows in it, but the upper stage was completed with a large circular-headed opening in each side, and crowned with a dentil cornice, baluster parapet, and imitation Gothic pinnacles. As, of course, the settlement still went on, and cracks appeared in the piers, this upper stage was taken down in 1902. In the fire of three years ago the Norman stonework which remained inside the north-west corner was completely shattered, but the bulk of the walling, being of brick, escaped uninjured.



Photo: R. Swift.

SELBY ABBEY AFTER THE FIRE.

Top of the choir walls, looking east, the morning after the fire. Note the melted lead on the walls; this, with the lead found in the debris below, was melted out and recast. Top of the gable leaning outwards; this was subsequently taken down.

The building of the new upper stage of the tower was commenced late in 1908, after the completion of the underpinning and renewal of the damaged stonework. On each side of the N.W. stair turret there are remains of the original jambs and cills to the window openings of the old belfry stage—plain jambs simply chamfered and recessed, the inner order or breast having a hollow instead of a chamfer—apparently Early English. However, while these are still visible, they have been departed from, and the tower finished with a decorated upper stage. This has moulded jambs to the window openings, with ball-flower ornament, the inner order of the head being cusped. The cornice has carved patterns in its lower half, gargoyles at the angles, and in the centre of each there is carved an angel holding a shield. The upper stage—24ft. high from cill to cornice—batters 2½ins.; the massive pinnacles at each corner of the tower batter again more than this, as they are tilted diagonally slightly more than 7ins. in their height of 27ft. This has caused the appearance of some letters in the Press, pointing out that the "pinnacles ought to be taken down, because they have not been built plumb!"

Each pinnacle has four smaller pinnacles at the angles of its spire, is crocketed, and ornamented by a diaper pattern up the angles of its shaft.

To carry out the principle of "architectural refinement" still further, each gablet face falls back to the axis of the pinnacles 1in. in its height.

The quatrefoil pierced parapet has a pedestal in each side of the tower, upon which stand figures of King Edward VII., the ex-Archbishop Maclagan, Abbot Hugh (the most famous builder of the Abbey), and William I. These figures are placed 120ft. above ground, and are 6ft. 3ins. high.

The new work of the tower is built of Tadcaster stone up to the cornice; the cornice and all above is of Huddlestone. A peal of ten bells is now in position, and a clock and chimes—to play tunes at intervals—is being fixed.

The new roof, with gable and pinnacles to the north transept, is an addition, for its predecessor was a flat pitched roof, with low gable to suit, but apparently the original Norman transept had a steep pitched roof, though at a lower level.

The Lathom Chapel—used as an organ chamber—had to be taken down to cill level, with the exception of the corner buttress, the arch opening on to the north aisle of the choir from the organ-chamber, and also the arch of the neighbouring window with the two and a half bays of groining which they supported, had to be pulled down and rebuilt, as they were utterly burnt away and incapable of renewal *in situ*.

The north wall of the choir has settled out of perpendicular from 6 to 8ins. This, of course, has let down the vaulting, making its exact reproduction a matter of some difficulty, owing to the consequent alteration of the sweep of the ribs. This stone groining, level-ridged with diagonal ribs, is re-built in cement, with plastered brick spandrils.

The gable of the east end, with its large "attic" window, was so shattered that it had to be taken down and rebuilt; the four turrets were also thoroughly repaired to make good the ravages of time as well as of fire. To strengthen them, eight copper bolts were let through each angle at the base of the spire, and screwed up to a ring in the centre. In doing this work a boss was discovered, finely carved, at the top of the spire internally, in a position practically impossible to be seen. The pinnacles of clerestory to aisle on the north side of the choir were also restored, and the whole of the walling grouted. To do this all joints and beds were raked out as far as possible

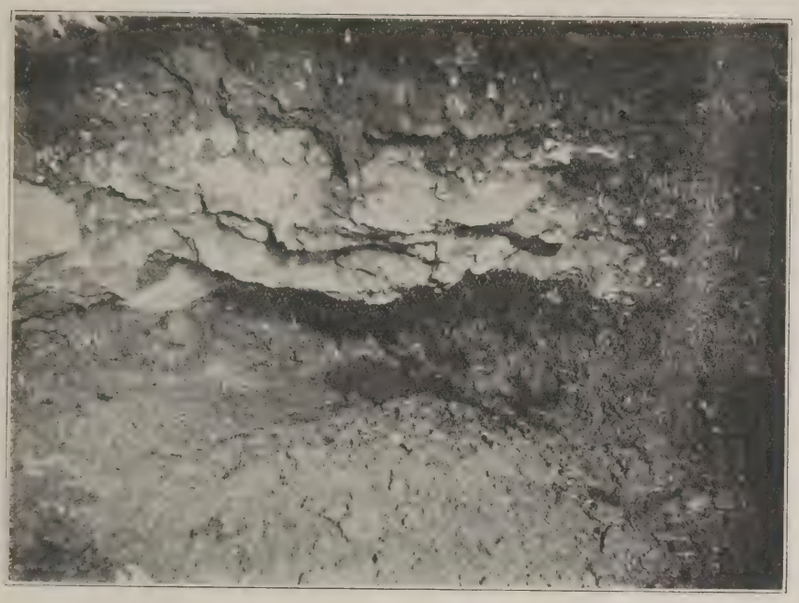


Photo: R. Swift.

SELBY ABBEY: EXCAVATION FOR UNDERPINNING.

This photo was taken immediately after opening out, showing *underside* of Norman foundation of south-west pier of tower only 3 feet down. Water accumulated in the hole from the loose sandy subsoil.

with a saw, and then pointed, leaving openings at suitable places at the top of joints. Round these a clay cup or "swallow nest" was made, and the grout poured in by tinfuls. There was no need for any grouting machine, generally speaking; the old wall was so hollow that the difficulty was, not to get the grout to run, but to get it to stop. A frequent source of trouble in this respect were the old putlog holes, which always went right through the wall or pinnacle, etc., having an opening on both faces about 6ins. square, fitted with a small piece of stone, but very often being a large cavity inside. In many cases the little filling piece had fallen out, making an excellent "desirable residence" for jackdaws, who had not been slow to take advantage of them.

While much has been said about the "loving care" and "ability" of the old builders, yet much restoration has been needed because the old builders were, after all, human, and could do "jerry work" like any 20th century contractor. An example of this is the east side of the north transept. The two tracery windows, like those on its west side, are poor copies of the somewhat Flamboyant tracery of the clerestory windows of the choir, but made to fit a less span with the same height, with a result that can be guessed. But, more than this, the whole construction is of the poorest, built of stones with little depth of bed and less bond. The respond to the transept arcade against the tower pier was merely a casing of the old Norman work, and the renewal of the arch above revealed remains of a painted Norman arch, which had evidently opened into the original apsidal end of the aisle. For some time it was undecided whether to take down the east side of the transept or not, but finally it was shored and renewed stone by stone.

The end of the transept, with its huge perpendicular window, was overhanging; so, as the foundations were defective, it was underpinned on the outside only, so that if more settlement occurs it will tend to revert to the perpendicular.

An interesting light on the methods of the old masons was thrown by the noticing of the perfectly preserved walling between aisle roof and groining. Here there is a fine collection of banker-marks, commonly called masons' marks. But not only that—on the cusped heads of the openings which lead on to the passage, in the wall, are to be seen the lines to which the stones were worked, not marked on as from a template, but run through with "tail-ends," as they only could be by being set out on each stone. This explains the often troublesome irregularity and variation of the stonework.

As can be understood, all the woodwork of the choir was destroyed. Only a screen to the north aisle of choir was left sufficiently intact to be restored. A replica of the aumbry cupboards has been placed in its position in the sacrarium, made out of the old oak, and is now one of the most pleasing features of the ornate chancel. The reredos, in general design similar to the old one, has carved panels by Peter Rendle, of Oberammergau--the Christus of the Passion Play—who personally superintended their fixing in position. The choir-stalls have now elaborate canopies instead of the plainer screen, with iron grilles which formerly existed. The organ, formerly confined to the Lathom Chapel, now is in three parts, one of which stands in each aisle, having a front that covers entirely an arch of the choir arcade. In addition to this, a chancel screen has been erected with a large rood cross upon it.

The flooring of the nave and transept is of wood blocks, the paving of the aisles squares of yellow limestone and blue York stone. The chancel is paved with black and white marble, executed by a Belgian firm.

While many of the windows suffered severely, the priceless Jesse window in the

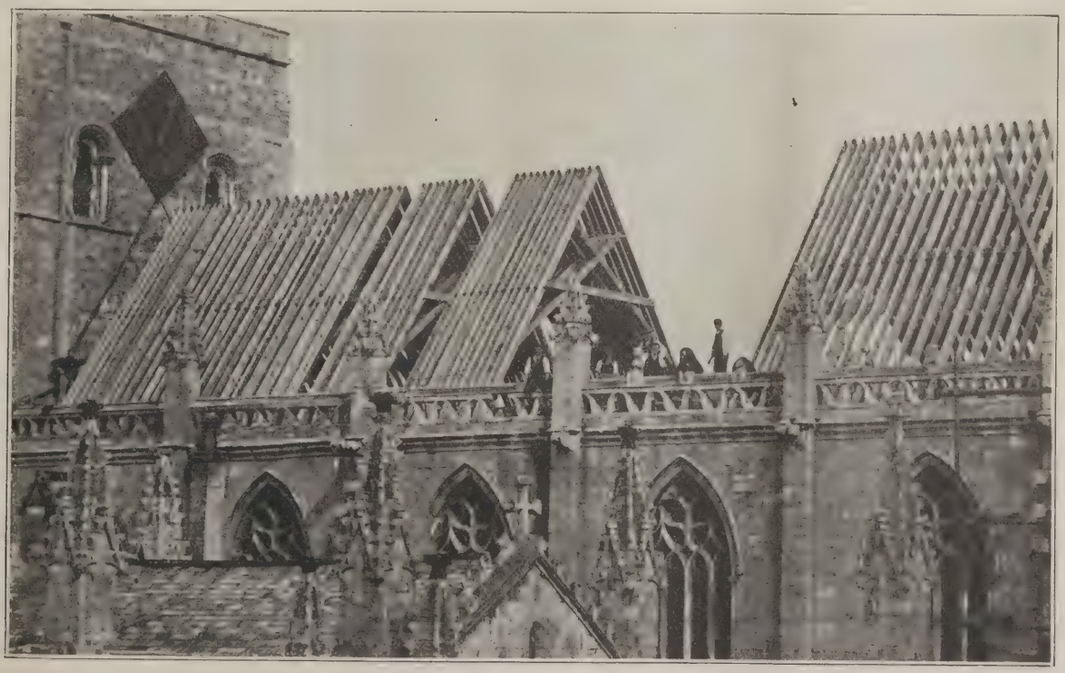


Photo: R. Swift.

SELBY ABBEY.

This view shows the new choir roof framing; also the old tower, minus the upper stage, with imitation Norman windows.

east end was not destroyed. With the exception of one or two small holes, the glass was intact, but the leading was damaged, and so the whole glazing was taken out and thoroughly restored before refixing.

The completion of the new tower shows in stronger contrast the bare ugliness of the wall that takes the place of the destroyed south transept, and it is to be fervently hoped that efforts now being made will be successful, so that the erection of the south transept being undertaken, the Abbey will soon stand in proportion and full beauty.

The architect for the restoration is Mr. J. Oldrid Scott, the contractor Mr. T. S. Ullathorne, who also carried out the previous restoration of 1890; the plumbing, including the casting on the spot of all lead for the roofing, was done by Mr. Braithwaite, of Leeds. Messrs. Thompson and Son, of Peterborough, have executed the choir-stalls and organ-screens, while the reredos, rood-screen, and pulpit are the work of Mr. Bridgman, of Lichfield. The clerk of the works is Mr. R. Searle.

Mr. A. C. Morton, M.P., has given notice of motion to the Corporation to consider the desirability of constructing a subway for pedestrians across Cannon Street by the Mansion House Station, and to confer with the Metropolitan Railway Company on the subject.

NEW ELECTRIC LAMPS AND THEIR APPLICATION.

About three years ago a change of some importance effected in the domain of electric lighting was brought about by the introduction of metal filament lamps. Not only has illumination by this means been rendered as inexpensive as with incandescent gas mantles, but the methods employed have altered to some extent, involving new ideas in regard to distribution of light and also of wiring. It is, therefore, not remarkable that many of those who are interested indirectly in these subjects have not been able to keep pace with the rapid progress that has been achieved, and have found some difficulty in adapting their previous knowledge of things electrical to the modern conditions. Not the least part of this difficulty is that presented by the large variety of metal lamps now on the market, combined with the many shapes and candle powers in which they are listed, and the different voltages that are found on the supply mains of the electricity undertakings. The carbon filament lamp need hardly be taken into consideration here; but although recent knowledge has shown that we were greatly deficient in our methods of using the light from this type of lamp to best advantage, at any rate everyone knew that lamps could be obtained for 8, 16, 32 and 50 candle-powers for all standard voltages, and therefore their employment was perfectly straightforward.



SELBY ABBEY. *Photo: R. Swift.*

Centering to tower seen from the choir. The columns have been made good; the raking shores have been removed. Large shores are in position at weak spots. Upper scaffold carried clear of lower work.



Photo: R. Swift.

SELBY ABBEY.

Statue of William I., west side of new tower, showing part of new pinnacle, 120 ft. above ground.

When the new lamps were first introduced, however, they were only made for low voltages, i.e., up to about 125 volts, and for comparatively large units of light, the lowest (at 100 volts) being 25 candle-power. As a result, those consumers who wished to take advantage of the increased efficiency and consequent saving in current by their use, were generally obliged to have more light than they required. This was especially the case where the voltage was 200 volts and upwards, when it was necessary to burn the lamps in groups of two or more, in order to absorb the available volts; thus, where a consumer may previously have had one 16 candle-power carbon lamp, he had to employ two or more metal filament lamps aggregating 50 candle-power. Many people were put to the expense of having their fittings rewired for this purpose. About a year, however, high voltage metal filament lamps have put on sale, and although they are still relatively expensive and are, with one exception, still sold for fairly high candle-powers, the time is not far distant when the prices will come down with a rush, as well as the size of the units of light.

The chief difficulty under which the consumer now labours is in the choice of lamps to suit his particular purpose. Considering that there are on the market some three dozen metal filament lamps having different names, and that the consumer is constantly receiving advertising literature about them, in which each particular brand is claimed to be the best, it is obvious that he should feel at times perplexed.

In reality, the question is a very simple one, for there are only two different types of metal filament lamps, namely, "Tantalum" lamps and Tungsten lamps, although there are many varieties of the latter. "Tantalum" lamps have a filament of the rare metal tantalum; they are the only lamps in which the filament is a drawn wire and in which it is in one continuous length. Tungsten lamps are provided with a filament which is composed of the rare metal of the same name, but which at present seems too fragile to be drawn. The filaments are, therefore, made by mixing a precipitated powder of the metal with colloids into a paste, and squirting this through a small orifice into a hardening solution. Afterwards the organic compounds are burnt out, but it is evident that a filament formed in this manner cannot

be so strong, mechanically, as a drawn wire, and this is proved in practice. The best known Tungsten lamps are the Osram, B.T.H., Auriga, Metfil, Sunbeam, Lenconium, etc. These and others are made in Great Britain (as well as the "Tantalum" lamp), but many Tungsten lamps are imported from abroad.

The "Tantalum" lamp, although stronger than the Tungsten type, is not so efficient, but still takes only 50 per cent. of the current of a carbon lamp for equal candle-power. Tungsten lamps of all kinds have about the same efficiency, namely, 30 per cent. of the current of a carbon lamp for equal light for low voltage. But if the voltage is 200 and upwards, the efficiency of Tungsten lamps is less. As a matter of fact, it may be stated that "Tantalum" lamps consume, under equal conditions, about 40 per cent. more current at 100 volts, and about 20 per cent. more current at 200 volts, than Tungsten lamps. Against this may be set the fact that Tungsten lamps are from 10 to 20 per cent. more expensive than "Tantalum" lamps; that they are more fragile; that their longer life can only be attained by not handling them or subjecting them to vibration; and that the life of a "Tantalum" lamp can generally be renewed by tapping it when the current is on, when the broken ends of the filament become fused together again. So that it will be seen that there is something to be said for and against each type of lamp, but on the whole there is not much to distinguish between them.

As regards candle-powers and prices, Tungsten lamps for 100-130 volts can be had for 2s. 9d. and 3s. (depending on the candle-power, which varies from about 14 to 44), and "Tantalum" lamps for 2s. 6d. and 3s. At 200-260 volts the prices are 4s. 3d. and 3s. 6d. for the two lamps respectively. The smallest lamp for 100 volts is about 14 candle-power, and for 200 volts, 22 candle-power, but the Lenconium lamp is made for 8 and 16 candle-power respectively, although the latter costs, at present, 5s.

All the lamps are made in bell form in many sizes, and the "Tantalum" lamp can also be had in spherical form. Tungsten lamps give a slightly whiter light than "Tantalum" lamps, and their filaments are spread out more; this is the controlling factor in their shape.

All the foregoing remarks refer to lamps for 100 volts and upwards, that is to say, lamps that can be used direct on public electricity supplies. But under suitable conditions, lamps for smaller voltages and candle-powers can be used for electric lighting with very great advantage, down to as low as 25 volts and 8 candle-power. The points in favour of such lamps are twofold, namely, smaller units of light and therefore better distribution, and higher efficiency. The conditions under which these lamps may be employed are, firstly, with a private generating plant, and secondly, with a transformer on an alternating current public supply.

If the private generating plant is designed to give 25 or 50 volts, it is clear that not only can lamps for these pressures be used, with considerable saving in candle-power and current (up to 20 per cent.), but the plant will be smaller and, therefore, cheaper. In addition, the premises may then be wired on the concentric system, that is, by employing metal sheathed wires such as "Stannos," using the sheathing for the return current, and "earthing" one pole of the dynamo. This arrangement effects a large saving in the wiring. In the second case referred to, a house transformer is employed, having one winding which is placed across the supply mains, and the low voltage circuits for the house are tapped off various points of this winding. Such an apparatus, which is relatively inexpensive (30s. and upwards), is called an "auto-transformer," and enables any consumer on an alternating current public supply to benefit by the use of small candle-power lamps. If a "double-wound" transformer is employed instead, which entirely disconnects the house circuits from the mains, the consumer may also have his premises wired on the concentric system, and benefit by the saving in labour and material.

In conclusion, metal filament lamps adapt themselves particularly for use with Holophane glass reflectors, which can be had in many shapes, to disperse or concentrate the light, as required. By a judicious selection of the right patterns for each particular case, surprising results in illumination may be obtained, and in many cases as much as four times the lighting efficiency, so that where four lamps were used previously, one will now suffice. Hence, it will be found to pay in the long run to discard silk smoked glass, frosted and opal shades and other light obstruction or absorbers, in favour of metal filament lamps with Holophane glass, simplicity and economy.

LYCH GATE, ST. OSYTH, ESSEX.

A lych gate has recently been erected at St. Osyth, Essex, designed by Mr. Harold S. Rogers, of Dean's Yard, Westminster. The structure is entirely of English oak, standing on a base of knapped flint, with Doulting stone quoins and sills, and is covered with old plain tiles. In the spandrils of the principal arches and of the side openings are carved the emblems of SS. Osyth, Peter and Paul, and the Arms of Canterbury, and of the several sees to which St. Osyth has at different times belonged. With the exception of the ornamental iron hinges and latch—by Messrs. Whiteside and Caslake—the whole of the work has been executed in the village by Messrs. Norman and Gardiner

The memorial to the officers, warrant officers, non-commissioned officers, including members of the special service companies, who died in the South African War, presented by Sir Carne Rasch, was publicly unveiled at Chelmsford at the end of December by Major-General T. E. Stephenson, who formerly commanded the Essex Regiment. The memorial consists of three bases of unpolished granite, forming three steps, and upon these are the plinth, name-stone, cap, and obelisk, all of polished grey granite. The inscription sets out the object of the memorial, and that it was erected by Sir Carne Rasch from funds subscribed as a testimonial to him by his friends in Essex in recognition of his services as a former member of Parliament. A short dedicatory service was conducted by the Bishop of Colchester.



LYCH GATE, ST. OSYTH, ESSEX. HAROLD S. ROGERS, ARCHITECT.

The structure is entirely of English oak, standing on a base of knapped flint, with Doulting stone quoins and sills. The roof is covered with old plain tiles.

SMALL IRON CASTINGS.

By H. J. Ash, A.R.I.B.A.

The method of producing small iron castings may be conveniently divided into (1) Pattern making; (2) Re-melting of pig iron; (3) Moulding.

Pattern Making.

For small castings, which are required in considerable quantities, it is usual to make about a dozen patterns of the article to be produced. The best patterns are made of gunmetal or brass, inferior patterns being formed of white metal composed of 80 per cent. of spelter and 20 per cent. of tin. The patterns are made larger than the required casting to allow for the shrinkage, which takes place as the iron cools from a molten to a solid state. When accurate castings are required an allowance of 1-10in. per foot should be provided for this shrinkage. The finished patterns are connected by soldering to a runner or ridge as illustrated in Fig. 1.

The next operation is the making of what is known as an "oddside." The latter (Fig. 2) consists of a light iron frame about 16in. long, 12in. wide, and 1¼in. deep, into which plaster of Paris is poured in a liquid condition around the patterns. The plaster, when set, is coated with shellac varnish, and is then ready for the use of the moulder.

Re-melting of Pig-iron.

Pig iron as obtained from the blast furnace is re-melted in a cupola and used for casting. The composition of the pig iron is important, and for making fine intricate castings a pig should be selected containing a low proportion of sulphur and a rather high proportion of silicon.

The cupola, as illustrated in Fig. 3, has an outer shell of iron plates with an internal lining of firebrick. The firebrick lining is also protected by a lining of ganister, a sandstone used in a powdered state for this purpose. The cupola has a charging door A about 12ft. from the ground, a tapping hole B and tuyers C. The tuyers are connected by pipes D to a fan or blower for the purpose of forcing air through the cupola when charged with coke and iron. The cupola is lighted at the bottom, and then charged with coke above the tuyers, after which iron and coke are charged in succession. A small quantity of limestone is also added as a flux. After the fire has burnt above the level of the tuyers, a strong blast of air is forced through the cupola, and the blast is continued until the iron is reduced to a molten state.

When a sufficient quantity of molten metal has collected at the base of the cupola, it is "tapped," the molten metal which issues in a thin stream being received into a metal ladle. The ladles (Fig. 4) are lined with ganister and hold about 35lbs. of molten metal; they are provided with a long metal handle, called a "bewel." The ladle is carried by the moulder, who pours the molten metal into the sand moulds, which have previously been made and placed on the floor of the foundry.

Moulding.

This is carried out by the moulder first placing the "oddside" (Fig. 2) on a stump or bench. On the top of the oddside is then placed one-half of a moulding box or "snap flask" (Fig. 5), into which sand is next riddled over the patterns to an even depth of about ½in. The sand used is mixed with about 10 per cent. of coal dust, and is finely ground in a sand mill. The snap flask is then filled with sand which is shovelled into it and afterwards rammed by the moulder by means of two wooden rammers or "dollies" held one in either hand. The surplus sand above the level of the top of the snap flask is now scraped away, and a board about an inch thick is bedded evenly on the sand contained in the snap flask. This half of the mould, including the oddside and patterns, is now turned over, the oddside is removed, leaving the patterns in the sand mould which is then dusted with finely-powdered coke dust to prevent the adhesion of the second half of the sand mould which has still to be made.

The second half of the snap flask is now clamped to the first and is filled with sand as before. A hole is made through the sand to the runner as an inlet for the molten metal.

The two portions of the mould are now separated and replaced after removing the patterns. The snap flask, which is hinged at one corner, is removed from around the sand mould, leaving the latter on the board (Fig. 6), the whole being then placed on the floor of the foundry.

Before pouring the molten metal into the sand mould the latter is covered with an iron weight about 1¼in. thick to prevent the top side of the mould lifting while pouring.

It may be mentioned that 100 moulds can be made in one day by a moulder using one snap flask.

After the metal has cooled in the moulds, the latter are tossed over and the castings removed from the sand. The castings are then placed in a shaking barrel (Fig. 7), which is kept revolving by machinery for about an hour. By this means all sand is removed from the castings. Fine intricate castings which are too fragile for barrelling may be cleaned by forcing a stream of sand or "sand blast" over the castings.

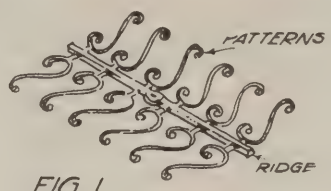


FIG. 1.

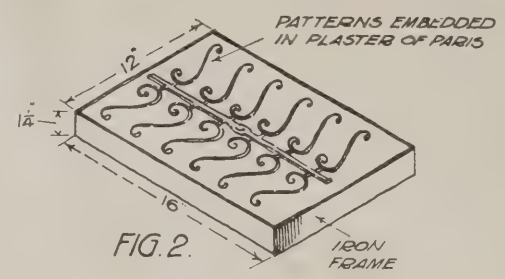
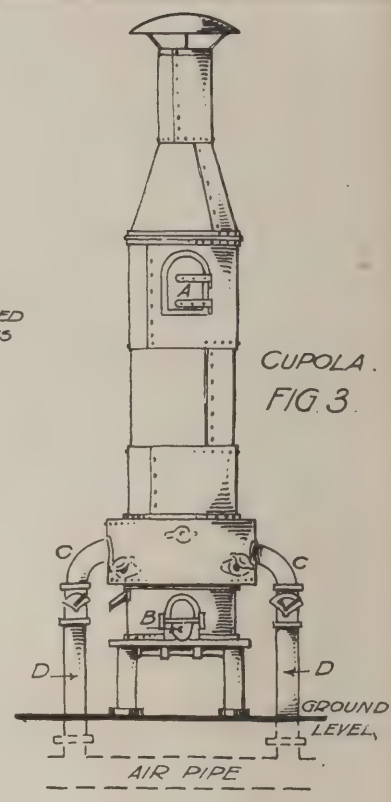


FIG. 2.



CUPOLA. FIG. 3.

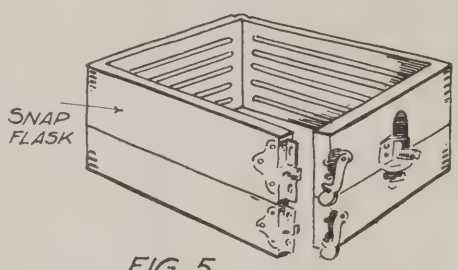


FIG. 5.

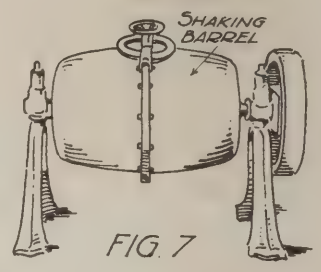


FIG. 7

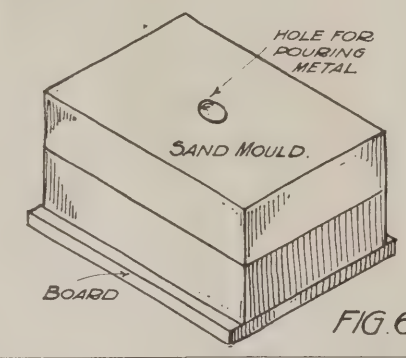


FIG. 6

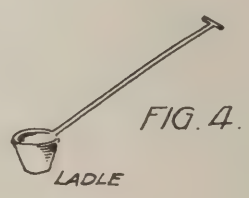


FIG. 4.

THE JAPAN-BRITISH EXHIBITION.

At the Administration offices of the Japan-British Exhibition, the first gathering of the Public Health and Sanitation Committee, has been held under the presidency of Mr. H. D. Searles-Wood. The committee itself is formed as follows: Mr. H. Adams, Mr. T. W. Aldwinckle, Mr. H. P. Boulnois, Professor H. E. Kenwood, Colonel J. Lane Motter, Dr. Samuel Rideal, Mr. H. Saxon Snell, Mr. W. C. Tyndale, Mr. J. E. Wilcox, Mr. J. E. Wroth, of the London County Council, and (ex officio), Sir John Cockburn. A classification for the section was agreed to which embraces schools, prisons, barracks, camps, building material, dairy appliances, apparatus for water supply, heating apparatus, lighting and ventilation, clothing domestic appliances, means for the development of the physique, etc. In order to carry out the enormous amount of work which this represents, it was decided to appoint provincial sub-committees for Leeds, Birmingham, Newcastle, Glasgow, Edinburgh, Cardiff, Liverpool, Manchester, Bristol, Dublin, and all the great industrial and mercantile centres.

SUGGESTIONS IN BRICKWORK.

By A. B. Searle.

Until some twenty-five years ago bricks were commonly considered as convenient substitutes for stone where the cost of a building was to be kept down, but during the last quarter of a century, and particularly during the last ten years, architects and builders have realised that there are possibilities in building with bricks which were formerly undreamed of, even by the most progressive men.

It used to be thought that bricks should be of as even and regular a texture and colour as possible, but of late years it has been found that a less mechanical effect can be produced, and in some instances really artistic results can be obtained by means of somewhat rougher bricks laid with a wider jointing or in mortar of a different colour from that usually employed.



BRICK OF EVEN COLOUR AND NARROW JOINTS

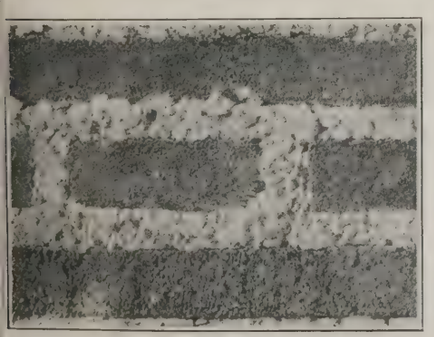


DETAIL OF BRICKWORK SHOWING ROUGH BRICKS AND WIDE MORTAR JOINTS.

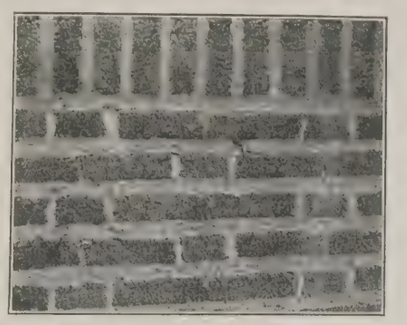
The accompanying illustrations show what is being accomplished by a progressive American firm of builders, who wish to impress on their customers the desirability of a greater variety, and the beautiful effects which may be obtained at comparatively little cost by the use of a little artistic taste.

Both in the States and in Great Britain architects are becoming keenly interested in getting away from the dull, monotony of ordinary brickwork, and the builder who can point to some of the designs shown in the accompanying photographs can often secure customers who would otherwise pass him. This is especially the case with residences in the provinces, particularly those of the smaller towns.

Nothing harmonises quite so well as a variegated brick set in an appropriate mortar for country residences; the surrounding green and the play of colour in the brick help to show each other off. On the other hand, few colours are more glaringly discordant than the beautiful green of the trees and grass and the ordinary dull and lifeless colour of monotonous bricks.



ATE FASHIONS SHOW RUGGEDNESS IN TEXTURE AND IRREGULARITY IN APPEARANCE.



BRICK OF VARYING SHADES, WITH WIDE JOINTS.

Modern bricks are no longer made in the same way as formerly, and the play of colours now obtainable, together with the more artistic texture of the surface, are such as to commend themselves in all places where stone is expensive or undesirable, and in many others where stone and brick are in competition.

A glance at the illustrations is sufficient to show the force of this argument, and in addition to the standard sizes further effects can be obtained by employing narrower bricks of the old "Roman" type.

A style of brickwork which is rapidly increasing in popularity in the States is made of vitrified bricks, or "pavers." These are remarkably dense and waterproof, and of a dark red or even bluish colour. The headers are often darker than the stretchers, but this is considered to increase the effect rather than diminish it. The blue bricks associated with Staffordshire are somewhat too harsh in appearance for this kind of work, but the redder varieties from that district are admirable, and may well be used in conjunction with a few bluer bricks.



TAPESTRY BRICK IN VARIABLE COLOURS LAID IN BLACK MORTAR.

The wide mortar joint requires considerable care, or it will offend by its coarseness rather than please by its rugged beauty. When properly used, however, it undoubtedly adds to the interest of buildings in which it is employed.

In spite of the general convenience of slates for roofing purposes, there can be no doubt that tiles are far more pleasing in appearance, and are generally preferable in country districts. They should be chosen to harmonise with the brickwork, and, like it, should have some variety of colouring, as a tiled roof, the whole of which is a bright brick red, is scarcely less ugly than the monotony of a slated roof. Fortunately, the roofing tile manufacturers appreciate this fact, and supply tiles which are admirable in every respect.

NATIONAL CO-OPERATIVE QUARRIES.

The creditors and shareholders of the National Co-operative Quarries, Ltd., of 59, Great Ormond Street, and Manchester, met on January 5th, at the London Bankruptcy Court to select a liquidator under the compulsory winding up order made recently on the petition of a creditor. Mr. H. M. Winearls, Official Receiver, reported that a statement of affairs had been lodged by Mr. John Hodge, M.P., the chairman of the company, showing the total liabilities £9,939, against assets £4,350, and as regarded shareholders a deficiency of £16,261. The liabilities included £5,368 due to loan stockholders. The society was registered in February, 1905, under the provisions of the Industrial Societies Act, 1893, with an authorised capital of £20,000, of which 9,674 was issued for cash and £994 as fully paid. It was formed by the New Co-operative Quarries Pioneer Society, Ltd., for the purpose of selecting a quarry in North Wales and establishing a working society to develop it on co-operative lines. According to the prospectus, the society was formed to acquire and work a slate quarry at Llanberis, to develop the property so that the workmen should receive a share of the profits earned, and to give permanent employment to as many of the locked-out Penrhyn quarrymen as the business engagements permitted. The purchase price of the lease, machinery, plant, and buildings was £5,000. In March, 1907, it was decided to open a depot of the society at Manchester, and arrangements were made to undertake contracts for slating in that district, though that involved the society in heavier expenditure, stock having to be bought and held. The directors hoped by means of those contracts to obtain for the society better prices and prompter payment for the slates, while avoiding the cost of advertising and the risk of bad debts. The trading of the society had been carried on at a loss throughout, any profit made by the Manchester depot having been insufficient to meet the loss incurred at the quarry, the management expenses of the London office, and interest charges. That result was stated by the directors to be due to insufficient capital, to depression in the building trade resulting in reduced prices, and to the unexpected expenditure on development at the quarry. In August last Mr. Stanley Pearson, of Manchester, was appointed receiver and manager on behalf of the stockholders, but an arrangement was made whereby the British Steel Smelters Mill and Tinplate Workers' Association (of which Mr. Hodge was secretary) entered into possession as mortgagees on August 6th. Assuming that the figures in the statement of affairs were realised, there would be very little for the loan stockholders and nothing whatever for the unsecured creditors or the shareholders.

Mr. Hodge said that his society had spent £745 in their efforts to preserve the interests of all concerned, and they still hoped that some arrangement would be made by which the business might be saved; otherwise the whole of the money expended on the development of the quarry would be sacrificed.

At the meeting of shareholders Dr. Campbell, Christ College, Cambridge, expressed great dissatisfaction with the manner in which the business of the society had been carried on.

Mr. Hodge justified the action of the directors, and asserted that throughout they had acted in the best interests of the society.

Resolutions were passed at both meetings for the liquidation to be left in the hands of the Official Receiver.

We are informed that the British Uralite Company have been successful in obtaining a large number of contracts for the supply of Uralite and Uralite Asbestone for the walls and roofs of roller skating rinks, etc. The company has recently placed on the market a solid plaster-asbestos partition.

D

Views and Reviews.

English Leadwork.

This is the first real treatise on a very beautiful and much neglected art, the possibilities of which, in our time, are only beginning to be realised. Mr. Weaver's volume cannot fail to stimulate its revival, and he has made his work one of the most complete and satisfying text-books that have come under our notice. Mr. Weaver wields a facile and captivating pen, and thus, apart from technical excellencies, presents his subject in a fresh and interesting manner. Indeed, the book is so exhaustive and so complete that we doubt whether it is open to anyone to write another, and "English Leadwork" should therefore take its place upon our shelves as *the* text-book on the art of the leadworker. For the perusal of the book or a mere glance at the illustrations will shatter the generally held conviction that the use of lead must be confined to the making of flashings or the formation of gutters. For those who hold a small opinion of the metal will be surprised to see to what uses the bygone leadworker has put it; and they will be more than a little astonished to learn that some works of art known to them are really of this despised metal, for Mr. Weaver has not spared the point of his penknife in discovering lead in unsuspected places. To what a pitch portraiture in lead may be carried is evidenced by Roubilliac's statue of Sir John Cass. The work is exquisitely clean, but without the suggestion of undue effort; nor is the sharpness of detail carried to an excess that would be subversive of the material. Lead garden figures are well known, but Mr. Weaver introduces many fresh examples to our notice. The book includes an interesting chapter on modern leadwork and a useful bibliography. A book to be heartily recommended.

English Leadwork: Its Art and History. By Lawrence Weaver, F.S.A., pp. xv., 268. Large quarto; 441 illustrations. Price 25s. net. London: B. T. Batsford, 94, High Holborn, W.C.

A YEAR'S BUILDING IN THE NORTH.

Yorkshire.

In Leeds things have been quiet all through last year. One or two firms have had fairly good contracts outside the city, but in Leeds itself big undertakings have been very scarce. One of the few contemplated large schemes is the teachers' training college and hostel in Beckett's Park, the plans for which, as we have already announced, have been adopted. The following table shows the falling off in the number of buildings of all descriptions, except detached and semi-detached villas, completed during the past twelve months:—

	Nov. 1908 to Nov. 1909.	Nov. 1907 to Nov. 1908
Villas	22	15
Semi-detached villas ...	69	54
Through houses ...	289	381
Back-to-back houses ...	321	413
Miscellaneous buildings	1,080	1,591
Sanitary conveniences	2,238	2,936

A similar discouraging report comes from Bradford, where, apart from the building of the new textile extension of the Technical College and the erection of new warehouse premises in Sunbridge Road, there is little activity except in the way of alterations here and there. Comparatively few dwelling-houses have been erected. With many mills working short time there is little prospect of further building operations in this direction, whilst the speeding up of machinery has diminished the need for larger works even with increased trade.

Huddersfield reports that trade has been quiet, but satisfactory compared with other towns. The only large work in course of erection has been a Baptist chapel and school. There has been a good deal of speculative house building, but it is falling off now. Such property has sold very well.

There has not been much activity in the Halifax district. The building of St. Hilda's new church at Kingston is the biggest contract that has been let, and the erection of the church was commenced two or three months ago. Additions to the Zoological Gardens have also provided work for builders. Some speculative building of dwelling-houses on the Greenroyd and Clapton estates has taken place, but there is no shortage of houses in the town.

At Harrogate the building trade, which is regarded as the staple industry, has been quiet. A few good villas have been put up, but there has not been much progress in smaller property. Speculators and builders have had little encouragement, for property has not sold well. The prospect of a large new hydro, and a couple of extensive school buildings and additions to the Corporation baths form a hopeful opening prospect for the new year.

The building trade in Hull is in a very unsatisfactory condition, and there is no prospect of immediate improvement. A vast number of unemployed are on the books of their unions. A large flour mill has been completed, and the only buildings of any note in progress are the Town Hall extension, which will occupy perhaps another two years; the City Hall and Art Gallery, which is approaching completion; and several Council Schools. There are few, if any, signs of extensive private enterprise.

The building trade in York has been dull during the year. No large buildings have been erected, with the exception of the Municipal Secondary School for Girls. The City Surveyor (Mr. Spurr) reports that during the year the plans approved for dwelling-houses numbered 101; plans for additions and alterations, 163; number of houses completed, 105; number of houses in progress at the present time, 88. In 1908 the figures were:—Plans approved for dwelling-houses, 118; houses completed, 84; and 104 in progress. The following are some of the principal works which have been completed during the past year, viz.:—The Nurses Home, County Hospital; skating rinks at Sycamore Terrace and Fishergate; pavilion and hall at Clifton Lawn; alterations at Adelphi Hotel; N.E. Railway Co.'s Garage, Leeman Road; additions to Messrs. Leetham and Son's flour mills, Hungate; additions to the Co-operative Society's premises; additions to Messrs. Hardy and Holgate's premises, Market Street; new stands, telegraph offices, refreshment rooms, entrance hall, saddling boxes, and lavatories, etc., at the Race Course, Knavesmire; new cocoa block, underground warehouse, box mill, etc., at Messrs. Rowntree's Works, Haxby Road; and alterations to the Exhibition Buildings. The following works will shortly be completed, viz.:—The New Secondary School for Girls at Sycamore Terrace, and the Wesleyan Chapel, Clifton. The following works are in hand or will shortly be commenced, viz.:—New Mission Hall, Swinegate; new tanks and additions to pumping plant for the N.E. Railway Company near Scarborough Bridge; new ferro-concrete stand to the 5s. enclosure, Knavesmire; garages for Messrs. Rowntree at the Works and in Wellington Row; new foundry for Mesrs. W. Dove and Sons in Piccadilly; new shops in Fossgate for Mr. Waudby. In addition to these the Corporation have in hand the construction of electric tramways and sheds; new street from Pavement to Piccadilly; widening of Acomb Road; strengthening of Lendal Bridge; private street works, etc.; and a scheme for the disposal of the whole of the York sewage on bacteriological lines.

Northallerton has developed to a large extent during the year. The building trade in the town has been very good, several large and important contracts having been carried out during the year, including the new Grammar School. To meet the requirements in connection with the staffing of these schools, several new houses have been erected. A long terrace of houses has been built opposite Arncliffe Terrace; and the building trade also received a fillip by the erection of additional elementary schools and the new police offices. The contract for the new sewerage works of the Urban Council is now in hand.

Newcastle.

Local builders declare that 1909 has been the worst year for business they have known for many years. The strikes in the shipbuilding and engineering industries in 1908, are considered to have had much to do with accentuating the depression, and now the coming general election is having a disturbing effect on prospective speculation. Trade generally has been so quiet, it is asserted, that tradesmen have been afraid to embark on undertakings of re-construction. One big firm of contractors, which in normal trade conditions employs about three hundred men, has less than one hundred employees at the present time. Other builders of note tell similar stories regarding the scarcity of work, although it is generally conceded that the prospect for the coming year is brighter than was the outlook at the end of 1908. Competition among the leading contractors is said to be keener than ever it has been, and for the smaller jobs there is an increasing number of competitors in the field. A large number of "small men" have sprung up in recent years, and the tendency is, it is stated, to cut prices in every direction.

The architectural features of Newcastle have been enriched during the year by several new blocks of business premises of handsome design and proportions. The attractiveness of Mosley Street has been supplemented by three new buildings of note, namely, those of the London City and Midland Bank, the Edinburgh Life Assurance Company, and the Alliance Insurance Company, the latter having just reached completion. Mosley Street, it may be remarked, is not one of the ancient streets of the town. It was begun in 1783, and was named after an alderman of that day. The street is advancing considerably as a business centre. Its past history is interesting from a dramatic and literary point of view. The old Theatre Royal was in Mosley Street. Bolbec Hall, in Westgate Road, has also been recently opened. It is the new quarters of the North East Coast Engineers and Shipbuilders and Shiprepairers' Associations, the business of which organisations was formerly carried on at Clarendon House, Clayton Street West. The North Eastern Railway Company intend to carry out extensions to their parcels department on land adjoining their present premises near Bolbec Hall. On the opposite side of the road large extensions and alterations are being executed at the Post Office. A good deal of old property has been demolished, and fine buildings erected on the site, and a storey has been added to the existing premises. Pilgrim Street will be improved by the imposing block of premises, now in course of construction for the Newcastle Conservative Club Company, and among trading developments it may be mentioned that Messrs. Bainbridge and Company intend to greatly enlarge their warehouse accommodation. Places of pleasure in the city and district have been augmented by the new skating rinks at the Old Grand Stand, Gosforth, and in Northumberland Road, where also is the White City. Adjoining the latter is the new Olympia, built by the Northern Cinematograph Company, to be used principally as a picture hall. New Market Street, connecting Pilgrim Street with New Bridge Street, is likely to develop into an important thoroughfare. On the south side of the street, near the New Bridge Street end, a large block of tenemented property was recently pulled down, and on the site Messrs. Tilley, restaurateurs, are having premises erected. The building will cover a quarter of an acre, and will have an equal frontage of 100 feet in Market Street, Carliol Street, and Croft Street. It will be faced with Kenton stone, supported

R. S. LORIMER, A.R.S.A., *Architect,* EDINBURGH.



Photo: T. Lewis.

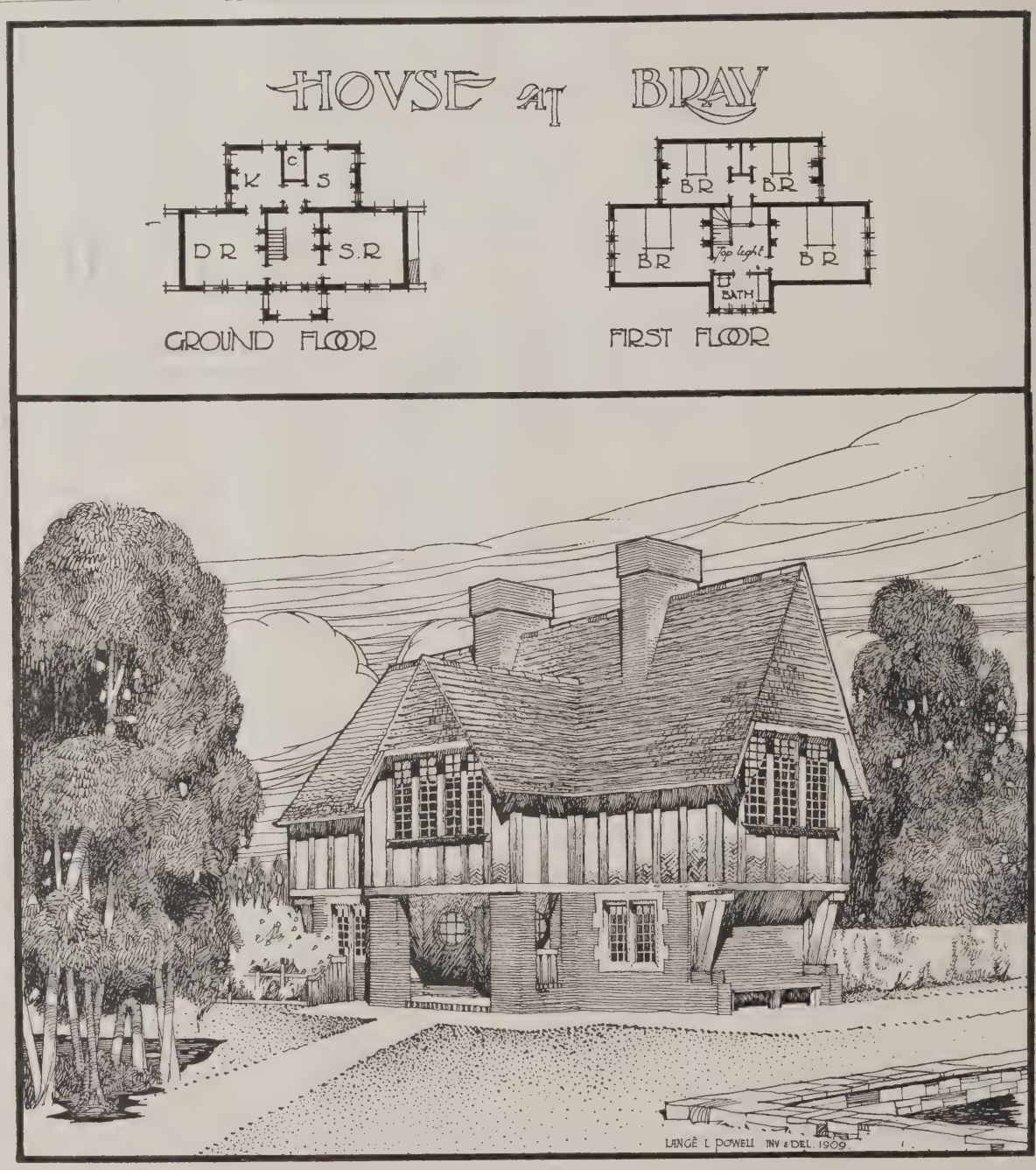
The walls are panelled in pine and painted French grey. The ceiling was modelled *in situ*.
The chimneypiece is Hopton Wood stone and verde antico panels. The grate is bright steel.

ARDKINGLAS, ARGYLLSHIRE
THE MORNING ROOM . . . .

on granite piers, and at the top there will be an open balustrade and flat roof. There will be five storeys. Shops will occupy the ground floor, and on the first floor there will be assembly, ball, and supper rooms. The upper rooms are to be used for storage purposes. Among the smaller jobs to be carried out in the ensuing year is the re-building of St. John's schools in Bath Lane, and the enlargement of Benwell Parish Hall; and there is also in contemplation the erection of a new hospital in connection with the Deaf and Dumb Institution, plans for which have already been passed by the Corporation.

Edinburgh.

All over Scotland for a number of years the building trade has been bad. Taking the number of houses to let all over the city, it is obvious the housing accommodation is a long way in excess of the demand, and there can be no remedy for this regrettable fact but expansion of labour. Given favourable conditions for the acquisition of sites, Edinburgh's geographical position, with the existing railway and seaport facilities, should promote its prosperity as an industrial centre. In the Portobello district there have been opened during the year large premises for a firm of horticulturists. In close proximity there are also in contemplation new premises for a wholesale manufacturing chemical firm. Plans for the first section of these premises have already been approved, and the whole scheme of buildings will be completed as the requirements of the firm demand. By the widening of bridges, erection of retaining walls, and the construction of new lines of railways, with the necessary increase of signalling boxes and storage sheds, the North British Railway Company have spent many thousands of pounds and given a large number of men employment. A large block of tenements at Seafield Road has also been erected, near the Marine Gardens. Skating rinks have sprung up all over the city, and the capital involved, as well as the labour and employment given, must represent a sum of considerable magnitude. In the centre of the city the most of the work has been confined to reconstruction and alteration of premises. New premises in George Street have been in operation during the most of the year, but some considerable time will elapse before the building is completed and ready for occupation as the organising centre of the United Free Church. Workmen have also been for some months engaged at the Art Galleries at the foot of the Mound, preparatory to a large scheme of reconstruction, which has been let to a city contractor for something like £20,000. There has been a large extension to the Law Courts in Parliament Square, the magnitude of which can only be seen from the Cowgate, where old buildings have been demolished to make room for the additions. Another interesting feature in this vicinity is the Chapel for the Knights of the Thistle, at present under erection. Another interesting building in course of erection is that of the Geographical Institute, situated at the corner of Duncan Street and South Gray Street. The feature of the front is the re-erection of the finely fluted columns, with richly carved capitals and moulded pediment, which formed the main entrance to Falcon House. Extensive alterations and reconstruction have taken place at the University. Many



HOUSE AT BRAY, BERKS, H. STANTON WEBBER, ARCHITECT.

The walls are faced with cherry red bricks, with stone dressings to windows on ground floor; above, half-timbered work has been employed, with similar bricks laid in herring-bone bond between the timbering. The roofs are covered with grey sand-faced tiles. All external timber has been treated with Solignum, and internally the joinery is of picked, stained deal. The ground-floor ceiling, in accordance with the wish of the client, has been kept fairly low, while on the bedroom floor the height of ceiling has been increased by several feet.

of the dark store rooms have been cleared out, and spacious classrooms constructed. To the new University there has also been an extension in the form of a new laboratory facing Middle Meadow Walk. The School of Art in Lauriston has been completed and opened during the year, and workshops are at present being constructed in conjunction therewith. An addition of very considerable magnitude is being completed, and a further extension contemplated, for the Church of the Sacred Heart in Lauriston Street, while adjoining their Presbytery in Falcon Avenue a new school is being erected for Roman Catholic children. For the clerical staff and show room the Edinburgh and Leith Gas Commissioners have made large additions to their premises in rear of Waterloo Place by the incorporation of tenement property. The extension to the General Post Office will soon take practical shape. The architectural features will be maintained, although the building will be considerably heightened. A new and thoroughly equipped police station at Torphichen Street has been built during the year—the ground floor for police purposes and dwelling-houses being arranged on the upper floors. In McLeod Street another police station is being erected. By the heightening and widening of the Caledonian Railway bridge at Tynecastle a great improvement has been effected. All over the city, but not to any special degree except in Warrender and Falcon districts, there have been dotted here and there tenements, villas, self-contained, and flatted villas. The latter seem still to be the more favoured class of buildings. New localities for flatted villas are Granton, Prestonfield, and South Lauder Road. For some time there have been houses of this class available in Piersfield district. All seem to find a ready market. In connection with the Cattle Market at Gorgie, the formation of roadways, bridges, Corn Exchange, auction marts, and slaughter-houses, a large number of skilled and unskilled men have been, and will be, employed for some time to come. The new barracks at Redford and the development at Rosyth should very considerably relieve the unemployed ranks in the city. The following are the Dean of Guild figures for the year, with a comparative statement for 1903:—From January 1st to the present date there have been passed through the Dean of Guild Court 681 warrants, 427 of these being for minor applications. In these warrants were comprised 11 villas, 142 self-contained and flatted villas, 95 public and other buildings, 531 alterations, 33 tenements of twelve shops and 241 houses. In the tenements were two houses of one apartment, 90 of two, 48 of three, 76 of four, 6 of five, and 19 of six apartments, the whole proceedings of the Court for the year representing an approximate value of £523,590. For the whole year of 1908 the warrants numbered 762, 461 being of a minor application. The warrants embraced 5 villas, 129 self-contained and flatted villas, 80 public and other buildings, 627 alterations, 33 tenements of 10 shops and 312 houses. In these tenements were one house of one apartment, 101 of two, 61 of three, 88 of four, 51 of five, and 10 of six apartments. The approximate value of the whole was £605,888.

Leith.

Mr. J. R. Findlay, burgh surveyor, Leith, in his annual report, states that depression in the building trade still continues, although the year just closing shows a slight improvement on the previous two years. The estimated value of buildings for which warrants were granted was £61,272, as compared with £56,200 in 1908, £58,674 in 1907, £179,000 in 1906, and £92,000 in 1905. The warrants include two new Doecker schools for the School Board at Balfour Place and Hermitage Park, and a new hall for the Salvation Army at Bangor Road. The tenements passed were for houses mostly of the two and three-roomed type, providing in all for 76 tenants. Of flatted villas there were altogether 21, in addition to 16 self-contained villas.

Elgin.

In Elgin there was a scarcity of money owing to the uncertainty produced by the Budget, and consequently building operations were somewhat slack. The chief event in the town was the opening up of the new street continuing Hay Street towards High Street through the Highfield grounds, which were purchased by the Town Council. Highfield House was at the same time renovated and modernised internally. The Town Council have fixed the feu-duties payable for the feus facing the new street at figures which are likely to ensure the erection of substantial buildings when the feus are taken up. Beyond this important addition little or no building was carried out during the year on the properties facing the principal streets. At the west end some new villas were completed for Mr. George Geddes, and a villa was also erected for Mr. W. Penny in Rose Avenue. Having purchased Murrayfield in the early part of the year, Dr. Stephen had the house almost completely gutted and extended. Dr. Stephen has also built a motor garage on the Moray Street end of his feu. At the upper part of the Deanshaugh ground on a few taken off by Mr. A. Macdonald, a modern villa has been erected to the order of that gentleman. It is anticipated that the extension of the water and gas supplies to this locality will be followed by the erection of other villas. The new Post Office in Commerce Street is one of the most complete and compact of its kind in the north of Scotland. The architect was Mr. John Wittet, Elgin.

Port-Glasgow.

Good progress continues to be made at Port-Glasgow with what is known as the Bay Area Building Scheme. At present the heart of Port-Glasgow consists mainly of narrow streets and old-fashioned buildings, but this new and ambitious scheme includes the sweeping away of the old to make room for the new. In other words, modernised tenements and wide streets are what is now aimed at. The first portion of what is really the biggest building scheme ever known in the neighbourhood is rapidly being pushed forward. This portion is intended to be fully completed by the month of May next, but the whole scheme will require about three years to finish. The housing conditions locally will be much improved, and one of the streets already shaping shows itself to be wide and airy. Altogether the scheme means that the central portion of the town will in course of time be thoroughly modernised and made bright and healthful. Messrs. P. MacBride and Co., Port-Glasgow, are the contractors.

Dunfermline.

While the building trade for the year has been far short of satisfactory, it shows a vast improvement on the previous year. Indeed, taking the municipal year—from September to September—the value of buildings erected in the city for the past year is more than double of what it was for the former year.



VESTIBULE, CHURCH OF ST. JOHN THE EVANGELIST, HERNE BAY.
T. W. WATKINS, ARCHITECT.

The vestibule is wholly of oak and was made in Belgium. It is the gift of the Children's Service.

During the year to September 21st there were 68 applications before the Court for warrant to erect buildings or alter existing structures. Of those 23 were for dwelling-houses, costing £23,400, and 25 applications were made to erect or add to buildings for business purposes, at a cost £10,144. One application was for the primary department of the High School, at a cost of £5,000, and another for an extension of the Technical School at a cost of £8,000. Eighteen of the applications were for small additions and improvements at a cost of £37,501. There is no doubt that a building boom would be begun in the burgh if feus could be obtained. But it is next to impossible to secure land on which to build within the burgh, as in nearly every direction the burgh is feued to the boundaries. Until an extension of the boundaries is obtained, therefore, there is likely to be a dearth of houses, especially for working-class tenants. The introduction of the tramways will, however, make speculators more ready to invest money in stone and lime. Such a scheme as that projected at Townhill would never have been thought of but for the fact of the tramways serving the district. Nor is it likely that there would have been so much building on the East Road, in which direction there is likely to be an enormous development in the course of a year or two, more especially if the boundaries of the burgh are extended in that direction, as they are likely to be. At the north-east end of the town, too, there is every possibility of all available land being secured for building purposes, and were the tramways in to the western extremity of the burgh, the available feuing ground there would soon be taken up. St. Leonards estate feuing and building are proceeding encouragingly on advantageous and convenient sites. To the south of the city Lord Elgin is ready to dispose of land for building purposes, and Mr. Henry Beveridge, of Pitreavie, is stated to have plans in progress for a space of ground being laid out on the garden city lines. Altogether, the building prospects for Dunfermline are bright for the next few years.

THE FARNESE PALACE.

It is not altogether surprising that the Italian Government should manifest some lack of enthusiasm at the proposal of France to purchase the Farnese Palace at Rome, which for the last five-and-thirty years has been occupied—by no means for the first time—as the French Embassy. France has long been thinking of buying a building, her associations with which go back on and off to the seventeenth century, and she has at last definitely decided upon the step to avoid having her rent raised by her landlords, the representatives of the Bourbon Kings of Naples, themselves the heirs of Elizabeth Farnese. Not Florence itself (says our Church contemporary, "The Guardian") contains a more noble or more sumptuous example of the Italian palace, and the possibility of its going the way of the Villa Medici and the Church of St. Luigi dei Francesi has produced a good deal of friendly murmuring in Italy which has hardly been quieted by a stipulation that the Government in Rome shall have a right of pre-emption at the price—£120,000—that is to be paid for it.

With the yellow Tiber and the Janiculan behind it, and the noble fountains from the Baths of Caracalla in front, the Farnese Palace stands in the very heart of Rome, a monument alike of its Renaissance extravagance and its antique splendours; for the huge blocks of travertine which give it the air of a fortress were quarried from the Coliseum and the Theatre of Marcellus by Cardinal Alexander Farnese, ere yet he had become Pope Paul III. Neither one lifetime nor one architect sufficed for so ambitious a work. Michelangelo was the greatest of the three designers who worked upon it, though it is to San Gallo that it owes its sombre distinction.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION
Jan. 15.	ELEMENTARY SCHOOL, KEIGHLEY.—The Education Committee invite competitive designs and estimates for a new Public Elementary School for older children to be erected at Highfield, Keighley. Printed instructions and conditions, with a lithographed plan of the site, may be obtained on application at the Education Offices. Designs and estimates to be sent by Jan. 15 to H. Midgley, Secretary, Education Offices, Keighley. Only architects residing or carrying on business within the Borough are invited to compete.
Jan. 31.	NATIONAL MUSEUM OF WALES. The Council desires to receive competitive designs for the erection of a new National Museum at Cardiff. Three premiums are offered of £200, £150, and £100, for second, third, and fourth. The Council have appointed Sir Aston Webb, R.A., Mr. John J. Burnet A.R.S.A., and Mr. Edwin T. Hall, F.R.I.B.A., as Assessors. Particulars and plans of the site will be supplied to competitors on payment of a fee of £2 2s., returnable if all papers are returned within 14 days. Inquiries to be addressed to Dr. Wm. Evans, Hoyle, Director of the Museums, City Hall, Cardiff.
Jan. 31.	PEMBROKE (Co. DUBLIN) LAYING OUT HERBERT PARK. The U.D. Council invite schemes with estimates of cost, for the laying out of above public park, which is about thirty-five statute acres in extent, within their district. A premium of £50, which is to include all expenses, will be paid to the person whose scheme may be selected. All plans, estimates, etc., sent in by the successful competitor to become the property of the Council. The Council will not be liable for any payment to a competitor, other than the above premium to the successful party. A plan of the lands as now existing can be obtained from on and after Monday, 3rd January, 1910. J. C. Manly, Clerk to the Council, Town Hall, Ballsbridge, Pembroke, Co Dublin.
Feb. 1.	OLDHAM, EXTENSION OF THE TOWN HALL. Restricted to Architects practising or residing in the Borough. Premiums of £50, £30 and £20, for the three designs placed 1st, 2nd and 3rd, and a sum of £5 will be paid to all unsuccessful competitors who send in a complete set of plans in accordance with the instructions. Plan of site, with instructions and suggestions for architects obtainable from E. C. Foote, Borough Surveyor, Town Hall, Oldham. Deposit: 21s.
Mar. 1.	GLAZED BRICKWORK DESIGNS AND ESSAYS. A committee of glazed brick manufacturers invite designs for works to be executed in glazed brickwork, also essays as to the advantages to be derived from the use of this material in accordance with conditions to be obtained from J. Johnston Green, 142, Liverpool Road South, Southport. Premiums of 100 guineas, 50 guineas and 25 guineas awarded to designs and essays jointly. Assessor Mr. Max Clarke, F.R.I.B.A., appointed by the President, R.I.B.A.
May 31.	MUNICIPAL OFFICES, KARACHI. The Municipality offer a premium of 7,500 rupees (£500) for the best design, detailed plans and estimates for new Municipal Offices. Cost not to exceed 500,000 rupees, and the style of architecture is left open to the designers. Ferrotype plans of the site and a general arrangement of the floors of the building showing the accommodation to be provided, together with a copy of instructions to architects, will be supplied to intending competitors on application to the Chief Officer and Chief Engineer, Karachi Municipality. A charge of Rs. 5 will be made therefor, which will not be refunded. Each set of drawings must be sent in anonymously, but accompanied by a sealed envelope containing the author's name and address. Each set of drawings and all the documents required, including the sealed envelope, must be securely packed in a wooden box addressed as follows:—The Chief Officer and Chief Engineer, Karachi Municipality, Karachi, India, and forwarded, at the competitor's own risk and charges, in time to reach the Chief Officer on or before the 31st day of May, 1910. It is proposed to apply to Government for permission for one of the chief architects to act as assessor to decide on the design to which the prize shall be awarded. The decision of the assessor will be final and not be open to dispute. The decision of the Municipality will be made within three months of the latest date for submission of designs, and payment of one-half of the premium will be made thereafter to the author of the selected design, the balance to be paid when the further details specified in the instructions to architects have been supplied. On payment of the premium the Municipality will have all rights in the design, with power to erect the building under its own agency, either according to the design selected or with such additions or alterations as it may deem necessary.

Peterborough.

The Soke Education Committee of the Northamptonshire County Council have decided to invite competitive plans for a secondary school for girls, to be built in Lincoln Road, Peterborough. The school will be a two-storey building, planned to accommodate 250 scholars, but allowing for enlargement, so that 300 scholars may be accommodated.

Workington Technical and Secondary School

The committee in charge of this competition have, after consultation with Mr. Wood, of the firm of Messrs. Oliver, Leeson and Wood, Newcastle, decided to recommend the Education Committee to accept the design submitted by Messrs. Clark and Moscrop, architects, Darlington, under the motto "Plan."

Plans were submitted by 42 competitors, and the first selection resulted in the five following plans being placed by the sub-committee in order of merit, as follows:—

1. Messrs. Clark and Moscrop, Darlington, "Plan."
2. Messrs. Cheers and Smith, Blackburn, "Zeus."
3. Mr. D. A. Beveridge, Liverpool, "Utility."
4. Mr. Henry Higginson, Carlisle, "Labor Vincit."
5. Messrs. Kelvey and Penlington, St. Annes-in-Sea, "Rex."

Our Plate.

Choir Stalls, Screens, etc, St. John the Evangelist, Herne Bay.

The views on our centre plate and on other pages in the text illustrate a general scheme of enrichment of the above church with carved oak fittings, the cost being defrayed by various gifts and bequests. The church was designed by the late R. P. Day, A.R.I.B.A., the chancel being added later by Mr. W. James, and the oak fittings have been designed by Mr. T. W. Watkins, of 23, Old Queen Street, Westminster. The oakwork comprises the screen to the narthex (1907-8), choir stalls (1903), vestibule (1904), and memorial screen (1906), given by Miss Watkins in memory of her sister, and bearing the coat of arms of the Watkins family. The vestibule, given by the children's service, was made in Belgium; but all the other work was executed by the Bromsgrove Guild.

Societies' Reports.

Birmingham Architectural Association.

A lecture was recently given to the members of the above association by Mr. E. Treglown on "The Art of Lettering." The lecturer traced the formation of letters from the early days, when the simplest forms were used (the only examples of which remaining to us now are those carved in stone on ancient Greek and Roman buildings) through the florid ornamental forms of the middle ages, to the present time. By means of lantern slides, the lecturer pointed out the great effect that the shape and the spacing of letters had upon the buildings where they were used. He suggested that architects, knowing the increasing extent to which

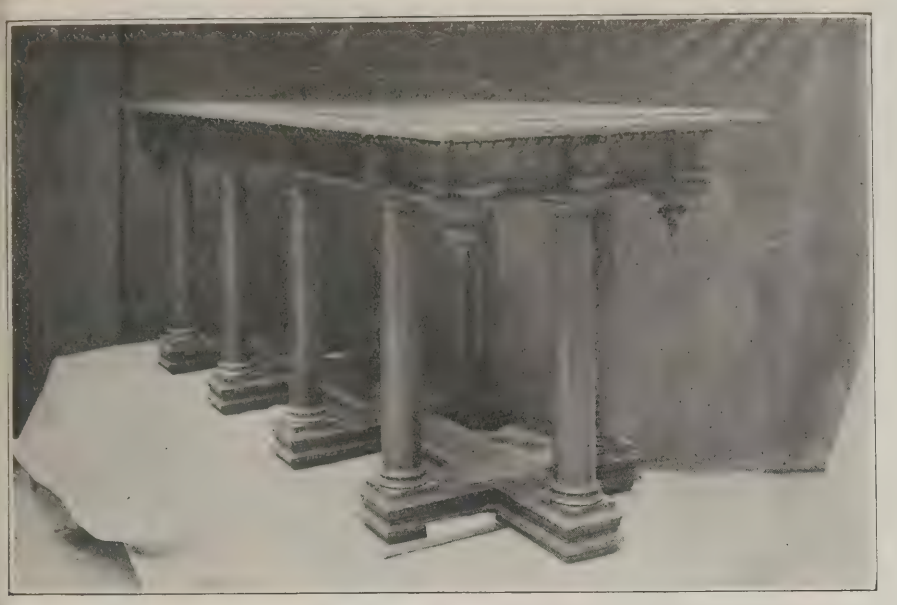
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SCREEN TO NARTHEX AND CARVED OAK CHOIR STALLS, CHURCH OF ST. JOHN THE EVANGELIST, HERNE BAY

T. W. WATKINS, ARCHITECT.



ALTAR-TABLE. ST. JAMES'S CHURCH, DOVER. T. W. WATKINS, ARCHITECT.

The table is made of Canadian walnut, the edge is carved with vine leaf and grape, and escallop shell, denoting St. James the Apostle of Compostella. On the frame is the text "As often as ye eat this bread and drink this cup *ye do show the Lord's death till He come.*" The words in italics come along the front of the table, which was made by J. Daymond and Son, Westminster.

dvertising signs are being used, should ive more thought to the subject of letter- ng, and should so design their buildings hat the signs may form a pleasing finish o the front, instead of leaving this matter o the tenant and a signwriter, who, between hem, often evolved a glaring, vulgar, and btrusive monstrosity which quite spoiled he effect of the elevation, and in many in- tances covered some of the choicest bits f carving and other architectural details. At the conclusion of the lecture, a discus- ion took place, which was ably summarised y the president of the association, A. S. Dixon, Esq., M.A., F.R.I.B.A.

Proposed New Works.

ANNFIELD PLAIN.—The U.D. Council as passed plans for the following:—Mr. W. . Fawcett, five houses, William Street; Mr. . T. Castle, two houses on the Fines House Estate, Annfield Plain; Mr. T. E. Taylor, ix houses in Mitchell Street, for Mr. J. J. Bulmer; bath-room in connection with dwel- ing-house at Carrmyers, for Mr. Matthew Henderson; temporary warehouse on land ear Syke View, for Mr. Joe Bates; Mr. T. Mordue, coal and coke house at the Ann- field Plain Girls' School.

BELFAST.—The L.G. Board, Ireland, has signified its approval of the plans of the new abbatoir, and has sanctioned the loan ap- plied for.

BLACKPOOL.—The Corporation has passed plans for the following:—2 houses, Corder Grove, C. Morrison; 2 houses, Queen Victoria road, Thomas Walsh; 6 cot- tages, St. Anthony's Place, James Eaves; 2 houses and stables, Henry Street, J. G. Har- rison; house, Rosebery Avenue, J. J. G. Hall; 10 houses and shops, Whitegate Drive, and Reads Avenue, John Fish; 2 houses, Reads Avenue, T. Singleton; 2 houses, Woodland Grove, Fred Cock; shel- ter, Duke of Cambridge, Warbreck Road, Daniel Thwaites and Co., Ltd.; 2, wash-houses, Waterloo Road, R. Cardwell; and 6 shop fronts, Warbreck Road, M. Dickinson.

BROMLEY, KENT. — An anonymous donor has signified his intention to complete the erection of St. Luke's Church by provid- ing funds for the erection of a handsome spire with provision for and completion of a four-faced clock, chiming the quarter-hours and illuminated at night by electricity. Also a first-class peal of bells. to be rung by the parishioners of the church.

CHELMSFORD.—The L.G. Board has held an enquiry into the application of the R.D. Council to borrow £20 to build two cottages for workmen at the pumping station, Ingatestone. The inspector, Mr. F. H. Tul- loch, drew particular attention to the great gap between the lowest tender received, £395, and the next above—a difference of 20 per cent.

CLACTON-ON-SEA.—A L.G.B. enquiry has been held regarding the application of the U.D. Council for sanction to borrow £562 for private street works in Pier Gap and £800 for improving the West Cliffs.

CROYDON.—A. L.G. Board enquiry has been held at the offices of the Croydon R.D. Council, with the joint application of that Council and the Merton U.D. Council for a provisional order forming the two districts into a united one for the provision of a hos- pital for infectious diseases other than small pox. The present hospital has a site of 17 acres, the total cost being £30,077, of which £4,649 was paid for the site. An enquiry has been held in regard to the proposed ex- tension which provide accommodation of 12 more patients on the cubicle system, also quarters for the resident medical officer, and apartments for eight extra nurses, and cot- tages for the engineer and the gardener.

HALIFAX.—The Town Council intend to erect a new police station at King Cross, to cost £2,045. This will supplant seven ex- isting house-stations.

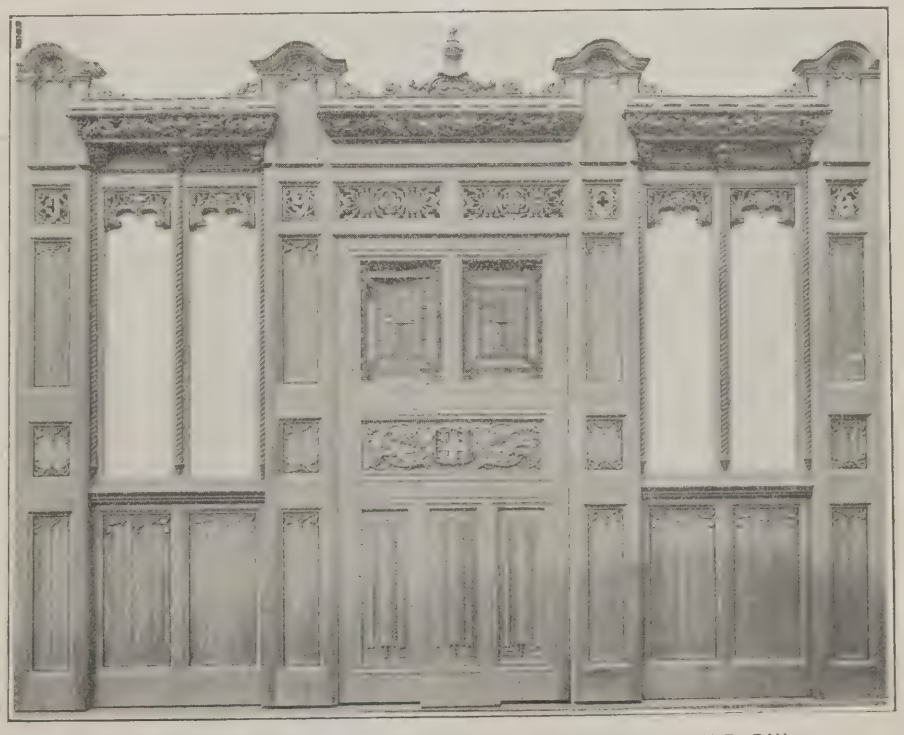
HENLEY.—The plans for a skating rink in Bell Street, submitted by Mr. F. Ellis, have been referred back by the Town Council, after recommendation by the General Pur- poses Committee, on the ground that the exits were insufficient, and that the public would be endangered in case of fire.

HORLEY.—The Hon. Secretary of the Horley Hospital Extension Committee writes to "The Surrey Leader," denying that the committee has accepted a tender for the work. The revised plans have yet to be considered and approved.

KILBARCHAN.—A committee of residents is being formed to collect funds to build a public hall here. Mr. A. W. Finlayson, of Mercheston, Johnstone, has started the fund with a gift of £500.

SOUTHEND-ON-SEA.—The L.G. Board has held an enquiry into the application of the Town Council to borrow £5,181 for pri- vate street works, and £310 to purchase land on the Westcliffs for public walks and plea- sure grounds. The streets proposed to be made up are Beedell Avenue, Grand Parade; Hainault Avenue; and Southview Drive.

STOKE.—The Board of Guardians is con- sidering the question of increased accommo- dation for its offices in view of the increase to 40 members in April next. The Building and Estates Committee having recommended that the architect prepare a sketch plan for a new Board-room, with accommodation for 60 members, offices, etc., the site to be the land adjoining the present offices. It was stated that the proposal was to submit the plan to the Local Government Board and endeavour to ascertain from them whether there was any likelihood of an amalgamation of the Wolstanton Union and the Stoke Union.



SCREEN, CHURCH OF ST. JOHN THE EVANGELIST, HERNE BAY. T. W. WATKINS, ARCHITECT.

This carved oak screen was erected in memory of Miss Watkins, and the coat arms of the Watkins family appears on the door.



TOWER ELECTRIC CRANE AT THE BRITISH MUSEUM EXTENSION WORKS: END VIEW.

TOWER CRANE AT THE BRITISH MUSEUM EXTENSION

The new type of crane in use at the above by Mr. W. E. Blake, the contractor for the extension, has rather novel features, viz., it has two jibs and, travels along the front of the building, and is made entirely of steel. The carriage is 21ft. by 19ft. 6ins., constructed of R.S. joist, angles, plates, etc., with six wheels. The track is 18ft. gauge, and has a 97-lb. rail, and is driven along by a 10-h.p. motor fixed on this carriage. The tower is built of angles, with flat bar bracings and stiffenings, gusset pieces, etc. The driving platform is 39ft. above ground, on which all the crabs and other gear for hoisting and slowing of jibs, etc. Each jib is controlled by a 20-h.p. motor, which work independently of each other. Both jibs are in use very often at one time. The jibs are capable of lifting eight tons to a height of 118ft. above track. The top of the tower is 98ft. 6ins. above track. The ballast is carried in the carriage.

Buildings in Progress and Completed.

BERKHAMSTED. — The Berkhamsted school extensions are now under way, the tender of Messrs. J. Honour and Co., of Tring, having been accepted for the new buildings, which have been designed by Messrs. C. H. and W. A. Rew, of Berkhamsted. The new buildings will be erected fronting on Castle Street. From their situation, they will, in conjunction with the chapel and science rooms, on one side, and the swimming bath, armoury, and class-rooms on the other, complete the quadrangle. The gymnasium is being removed from its present position—which the junior school will occupy—and is being re-erected further down. Three new Eton fives courts are to be erected between the north end of the swimming bath and that popular institution, the "tuck shop." The architectural features of the new buildings will be similar to those of the chapel, lecture hall, and chemical laboratories higher up the street. The buildings comprise the large hall, 90ft. by 45ft., with a raised platform at the Castle Street end, and a gallery at the other; a two-storey junior school of eight rooms; and a continuation to the junior school of the covered cloister which runs alongside the chapel, etc. There will be accommodation in the hall considerably in excess of that provided in the Town Hall, as on the ground floor there will be accommodation for 600. with 100 in the gallery. It will thus be seen that for the purposes of Speech Day, school concerts, and for gatherings requiring accommodation for a large attendance, the hall is eminently suitable. With it, Berkhamsted School will be further qualified to rank with bigger and more extensive establishments of a similar nature. The hall will have a range of ten three-light windows on each side, and a large ten-light window with Gothic tracery similar to the chapel windows facing Castle Street. The roof will have steel principals, carrying a panelled and plaster ceiling. The junior school, which will be joined to the hall by the vestibule, will give the younger scholars much needed additional accommodation as well as setting free for the seniors the rooms they have so far used. On the ground floor will be four class-rooms, three of them 24ft. by 20ft., and one a little smaller, and with a passage running through from the vestibule to the western end, with a door opening on to the playground. On the upper floor, which, with the hall gallery and all the stairs, will be of reinforced concrete, will be three more class-rooms, and a large drawing-room, 34ft. by 30ft., with a large northern light. The junior school will be faced with brown bricks, with stone dressings, and the hall will be faced with red bricks, to match the adjoining buildings. The cost of the new buildings will be between £6,000 and £7,000.

FRASERBURGH.—The new tower of St. Peter's Episcopal Church, in 15th century style, has been erected at a cost of £1,500 from the designs of Mr. John Kinross, R.S.A., of Edinburgh.

GLASGOW.—The new German Evangelist Church in Renfrew Street has just been opened.

KENNETHMONT. — The new Rannes Public Hall has been formally opened. Mr. Archibald is the architect.

LEWES. The new hospital, erected at a cost exceeding £6,000, will be opened by Princess Henry of Battenburg on February 2.

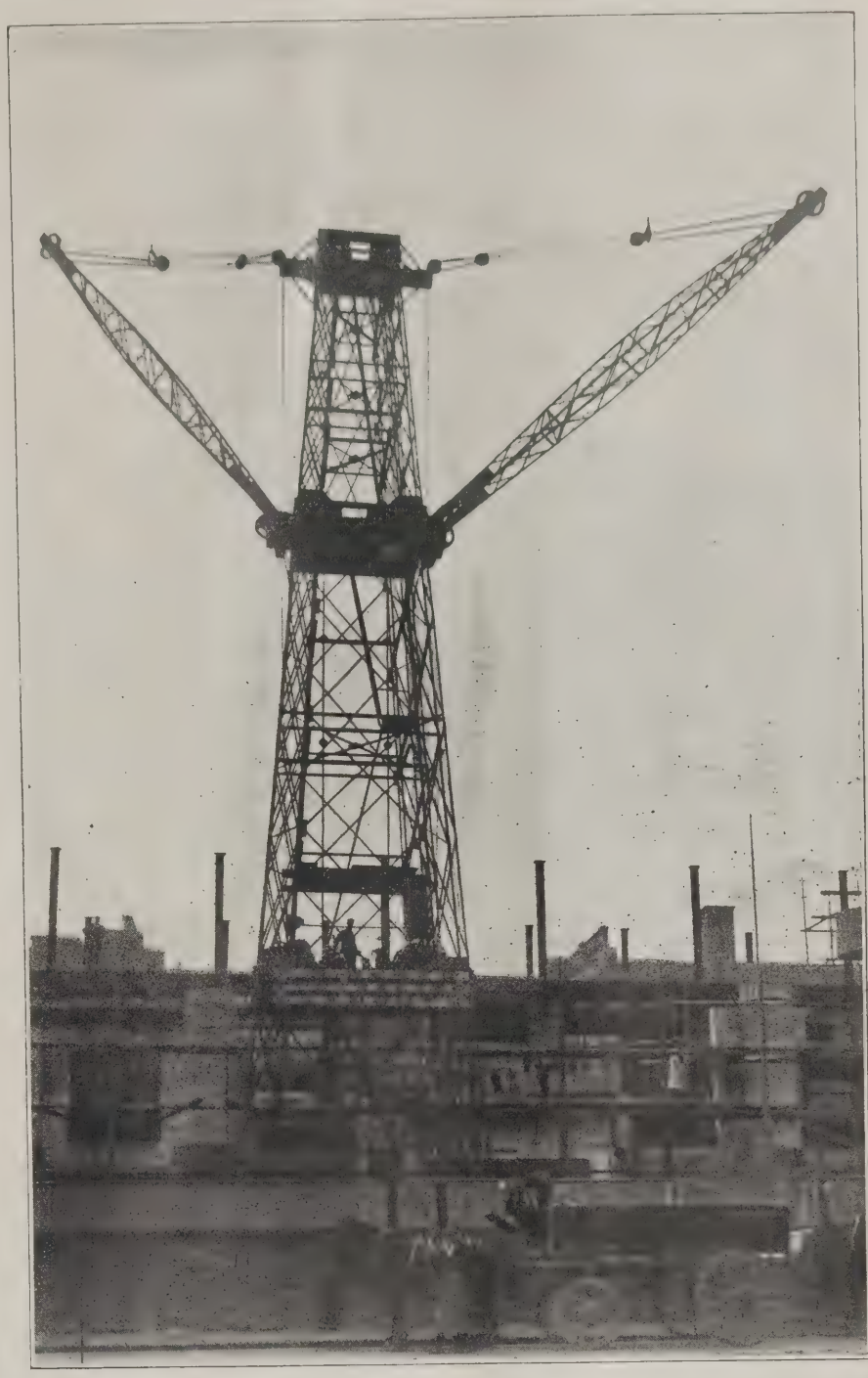
LONDON.—Mr. E. C. P. Monson is the architect of the new Sutton model dwellings now in course of erection in the City Road. The dwellings are arranged in nine blocks to accommodate 300 families. A porcelain enamel iron bath, with hot water available, will be provided in every tenement—from the three-room tenement at 8s. a week down to the one-room tenement (with scullery) at half a crown a week, including water rate

and other rates. Each tenement is fitted with a patent range by which the living room fire heats the copper in the scullery and also heats the water for the bath. Every tenement has its food cupboard outside the room, on the balcony. It has a window and a door, so that there is complete cross-ventilation.

The London County Council has accepted the tender of Messrs. Walter Scott and Middleton. 28, Victoria Street, Westminster, S.W., at £78,860 7s. 1d. for the construction of the Woolwich subway.

MARSHFIELD.—The restoration of the Parish Church is now complete, and the building has been re-opened. The church has a finely proportioned and lofty nave, dating from the 12th century, and a square turret in a dilapidated state, used as a flue for heating purposes, because the steps, which used to lead to the rood loft, had been removed. The chancel was of earlier date than the nave, there being a circular Norman curtain arch to one of windows. The building has also a 13th century embattled tower in such a ruinous state that the peal of bells could not be rung. It has a fine south porch, with a late Gothic entrance with ornamentation evidently wrought by the same hands that made many of the beautiful English column caps at Llandaff Cathedral. Nothing of archæological or antiquarian interest was found during the restoration, with the exception of a 12th century tombstone in the belfry, used as a door jamb, and this has now been built into the south wall of the nave next to the south doorway. A handsome carved Austrian oak holy table has been provided and a brass lectern, the eagle of which is a copy of that taken out of the lake at Newstead Abbey. A three-light window has been placed in the south side of the nave recording the restoration, and a two-light stained glass window has been placed in the south side of the nave recording the restoration, and a two-light stained glass window has been placed in the north side by Sir George and Lady Forestier-Walker, in memory of their youngest son Godfrey. The cost of the restoration was £4,650. The contractor was Mr. Wm. Clark, Llandaff.

MARTLEY (Worcestershire).—The ancient church has been restored under the supervision of Sir Charles Nicholson, Bart., F.R.I.B.A. During the restoration there were found on the walls various colour-patterns, heraldic work, and pictorial cartoons. The architect first discovered the existence of the mural paintings in the chancel, and it was while investigating the north wall of the nave for traces of the Mortimer coat-of-arms, that the Rector, the Rev. J. F. Hastings, discovered another large painting. This led to their being uncovered and restored. The Rector and churchwardens, acting under the advice of Sir Charles Nicholson, engaged the services of a lady expert (Miss Leslie Moore) to deal with them. The paintings were covered by many a coat of colour-wash and plaster. Miss Moore points out that strictly speaking they are not frescoes. They are on a surface of lime-wash, which has been applied direct to the stone, and in many cases to the hardened mud of the walls. The whole of the north wall of the chancel and part of the south wall are covered with "masonry." The east window and the window in the south wall afford examples of 13th century work. Round the arch of the door into the vestry is a cinquefoil design. Opposite this door, on the south wall of the chancel, is the Annunciation. In the nave two paintings alone remain, both on the north wall. One is the Adoration of the Magi. Alongside this is a figure on horseback, and little doubt is felt that it is St. Martin, the Soldier Saint, especially as the grateful beggar can be seen with clasped hands in the background. In every case throughout the restoration the old designs have been strictly adhered to, and in many places the work stands exactly as it was before it was covered by grey plaster and blue-wash.



TOWER ELECTRIC CRANE AT THE BRITISH MUSEUM EXTENSION WORKS: SIDE VIEW.

ROMFORD.—The new administrative block, etc., at the Union has been formally opened. The building has been designed by Mr. H. Harrington, A.R.I.B.A., of 65, Bishopsgate Street Without, whose plans were selected in open competition. The following particulars were furnished by the architect:—The new buildings which have been added to the workhouse, comprise three distinct and separate blocks, viz., the receiving wards, which are erected to receive the new inmates on their admission, and in which they will pass a probationary period before being admitted to the various wards; a large block erected to accommodate the very aged and infirm men; and a block of administrative buildings, to accommodate the clerk and other officials of the Union; and also a board room and committee rooms for the use of the members of the Board of Guardians. The receiving wards are erected immediately inside the entrance gates, and comprise two separate buildings, one side being for females, with a porter's lodge attached, and the other side for males, with a large clothing store attached. Each building is one storey high, and measures about 60ft. by 23ft., and the accommodation in each includes a six-bed ward and a smaller isolation ward for two beds, also a day room and a bath-room. The rooms are heated by open fires, and they are lighted by air gas. Externally these buildings are of simple design, and are faced with stock bricks and have slated roofs, and they are kept low in elevation so as not to be obtrusive in front of the old buildings. The new block of buildings for aged and infirm men is erected to the west of the old buildings, and consists of a two-storey building about 200ft. long by 25ft. wide, and the accommodation includes two 20-bed wards, four 10-bed wards, four 4-bed wards, two large day rooms, also four bath-rooms, rooms for officers, and store rooms. The construction of this building is of very simple character, and it is erected with fire-resisting materials, and has floors of reinforced concrete. The floors of the rooms are paved with pitchpine blocks, and the walls are decorated with water-paint.

The rooms are heated by open ventilating fire grates, and in addition the large rooms are supplementarily warmed by hot-water pipes. The ventilation of the rooms has been carefully provided for on the natural system. Externally the building is designed in the simplest possible manner, and has a symmetrical and suitable appearance. It is faced with stock bricks, and the roof is slated. The new block of buildings to accommodate the Union officials and the Board of Guardians is erected to the west of the old buildings and fronting to Oldchurch Road. It is a two-storey building, with an "E" shaped plan, and measures about 87ft. by 72ft. over all. The accommodation comprises on the ground floor five offices for the use of the clerk and other officials, and a large strong room for storing books; also a Relief Committee room and a large waiting-room for applicants. The two latter are arranged in connection with a side entrance for applicants. The main entrance is in the centre of the front, and leads into a staircase hall. The stairs are of concrete. The first floor contains a Board room, 42ft. by 27ft.; three committee rooms, about 29ft. by 20ft.; a ladies' room and a cloak-room and store-rooms. The Board room provides accommodation for 40 members, who will be seated round two semicircular tables, and each member will have his own chair and drawer. The interior of this building has been fitted up in a simple and effective manner. All the rooms are paved with pitchpine blocks, and the hall and corridors with Venetian mosaic. The walls are plastered and decorated with water-paint. The construction of the building is of a fire-resisting character, with ferro-concrete floors. The building is heated by low-pressure hot water on the direct-indirect system, and ample ventilation is provided for by the natural system. Open fires are also provided for supplementary heating. The lighting of this building is also by air gas. The exterior of this building is designed in a simple symmetrical manner, faced with stock bricks, and has slated roofs, in harmony with the other surrounding buildings. The contractors are Messrs. J. S. Hammond and Son, of Romford, and the clerk of the works, Mr. A. Brereton.

SABDEN.—A new Baptist Church and Schools are being erected here. The Sunday School, which is to be first completed, will contain a central hall, 38ft. by 32ft., around which will be grouped eight class-rooms, each to accommodate from 15 to 30 scholars, and at the north end a primary room and additional class-room for specially dealing with the infant scholars. By means of folding-back partitions, the primary room can be added to the central hall, making it 56ft. by 32ft., for public meetings. The church is planned to seat 400 worshippers. The gallery floor is supported on cantilevers and stanchions of steel, and all the upright supports leave an unobstructed view of the preacher from every sitting. The baptistery is planned immediately in front of the pulpit, with retiring rooms for robing and disrobing, vestries for minister, deacons, and choir under the choir and organ gallery. Both buildings are faced with local rubble, tuck pointed, and Whalley stone dressings, and the total contract amounts to about £4,800. The architect is Mr. Fred. J. Parkinson, 9, Richmond Terrace, Blackburn.

WARRINGTON.—The Town Council has accepted the tender at £14,310 of Messrs. Alfred Thorne and Sons, Westminster, for an eight-foot bridge and approaches. The bridge will be of reinforced concrete.

WASHINGTON. (Co. Durham).—Messrs. John Clark and Son, builders, of Ryhope, near Sunderland, members of the Sunderland Association, have secured the contract for building here the Alexandra Theatre for the Alexandra Theatre Co., Ltd.

Coming Events.

Wednesday, January 12.

THE CARPENTERS' COMPANY LECTURES.—Professor Beresford Pite on "What is Artistic Craftmanship?" Carpenters' Hall, 7.30 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Council meeting, 7. p.m. Ordinary meeting, 7.30 p.m. Two nominations for membership. Paper by Mr. Frank W. Rich postponed on account of the General Election.

MANCHESTER SOCIETY OF ARCHITECTS.—Mr. A. E. Corbett on "Concrete and Concrete Tests."

Thursday, January 13.

THE SURVEYORS' INSTITUTION.—Students' preliminary examination.

R.I.B.A.—Science Committee Meeting.

Friday, January 14.

THE SURVEYORS' INSTITUTION.—Students' Preliminary Examination.

THE ARCHITECTURAL ASSOCIATION.—Mr. J. Starkie Gardner on "A Comparison between English and Continental Ornamental Ironwork," 7.30 p.m.

Monday, January 17.

WOOLWICH HOUSE-OWNERS' ASSOCIATION.—Committee meeting, 7.30 p.m.

R.I.B.A.—Mr. S. D. Kitson on "Carr of York." Award of prizes and studentships, 8 p.m.

Tuesday, January 18.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCHITECTURE. — Mr. Banister Fletcher on Roman Architecture (Circular and Polygonal Temples, Basilicas), British Museum, 4.30 p.m.

MANCHESTER SOCIETY OF ARCHITECTS.—Students' meeting, 6.30 p.m. Discussions on Architecture in general, Mr. J. H. Worthington; chairman, Mr. J. H. Sellers.

R.I.B.A.—Practice Committee Meeting.

Wednesday, January 19.

THE CARPENTERS' COMPANY LECTURES.—Mr. M. H. Baillie Scott, on "The Art of Building, with special reference to the use and abuse of materials," Carpenters' Hall, 7.30 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—The students' meeting to hear Mr. S. Ash on "A Holiday in Belgium," is postponed on account of the General Election.

R.I.B.A.—Exhibition of Prize Competition Drawings opens at the Alpine Club, and continues until Jan. 29.

Thursday, January 20.

R.I.B.A.—Literature Committee Meeting.

Friday, January 21.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—Professor S. D. Adshead on "Tone and Colour in Towns."

Saturday, January 22.

ABERDEEN ARCHITECTURAL ASSOCIATION.—Mr. Alex. McGibbon on "Architectural Forms not influenced by material: a Popular Opinion Confuted," 7.30 p.m.

BUILDERS' FOREMEN'S ASSOCIATION. — Annual dinner, King's Hall, Holborn Restaurant, 6.30 p.m.

Monday, January 24.

THE SURVEYORS' INSTITUTION.—Adjourned discussion on Mr. Davidge's paper, "Town-planning Systems," and on Mr. Willmott's paper, "Housing and Town-planning, etc., Act, 1909," 8 p.m.

Tuesday, January 25.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCHITECTURE. — Mr. Banister Fletcher on Roman Architecture (Thermae), British Museum, 4.30 p.m.

Wednesday, January 26.

THE CARPENTERS' COMPANY LECTURES.—Mr. Banister Fletcher on "The Carpenters' Craft," 7.30 p.m.

MANCHESTER SOCIETY OF ARCHITECTS.—Professor S. H. Capper on "Truro."

Friday, January 28.

THE ARCHITECTURAL ASSOCIATION DEBATING SOCIETY.—Church Architecture—Gothic v. Classic. Mr. W. G. B. Lewis and Mr. A. E. Bullock, 7 p.m.

Saturday, January 29.

R.I.B.A.—Exhibition of Prize Competition Drawings, at the Alpine Club, closes.

Monday, January 31.

R.I.B.A.—President's address to students. Presentation of prizes and studentships. Announcement of Council's nomination for the Royal Gold Medal. Announcement of nomination of candidates for membership. Election, February 28.

Tuesday, February 1.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCHITECTURE. — Mr. Banister Fletcher on "Roman Architecture—Theatres and Amphitheatres," British Museum, 4.30 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Council meeting, 7 p.m. Ordinary meeting, 7.30 p.m. Paper by Mr. George Hubbard.

Wednesday, February 2.

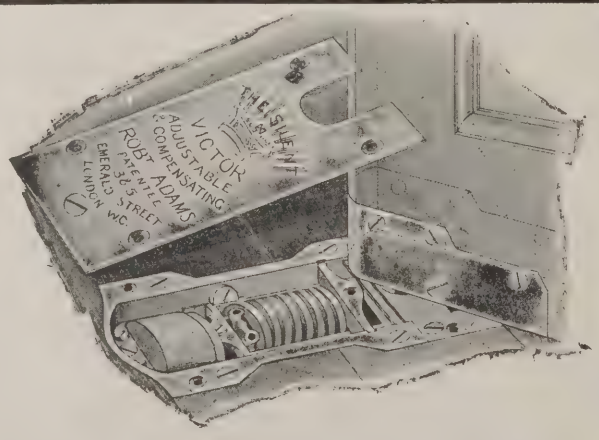
CARPENTERS' COMPANY LECTURES. — Sir Brumwell Thomas, on "The Joiners' Craft," Carpenters' Hall, 7.30 p.m.

Friday, February 4.

ARCHITECTURAL ASSOCIATION.—Mr. W. H. Ward, on "Renaissance Church Architecture in France during the 16th Century," 7.30 p.m.

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THE NATIONAL FEDERATION OF BUILDING TRADE EMPLOYERS OF GREAT BRITAIN AND IRELAND.

MONTHLY REPORTS.

THE NATIONAL FEDERATION.

Meetings of Executive Council and Annual General Meeting.

The Council meetings on January 25th will take place at the Trocadero Restaurant, in the Balmoral Room, at 10.30 a.m. and 2.30 p.m. The General Meeting on the 26th will take place in the same room at 10.30 a.m.

In addition to the usual formal business, the

Agenda

includes the consideration of a recommendation that in future only the annual report be printed, the report to the half-yearly meeting to be a short interim report, read at the meeting, and reported in Journal only.

A recommendation in regard to the New Federation Supplement to the Journal is also made.

At the suggestion of a Country Federation, a discussion will take place on matters of considerable trade importance, such as labour exchanges, unemployment insurance, appointment of permanent medical referees, etc. This is the outcome of a desire to add greater interest to the proceedings of the General Meeting, and if found to effect this, the practice will no doubt be continued.

Amendments to the Conciliation Board Rules proposed by the operatives will be discussed, and the report of the Employers' Parliamentary Council will also be before the meeting.

The New Federation Supplement

will give special prominence to matters of interest to local associations. This object will be materially assisted if secretaries and members will promptly forward to the general secretary, or to the editors, information in regard to all matters of local interest. Part of the local interest is connected with advertisements appealing to local wants of our members. Secretaries are requested to study these, and try to enlist the help of advertisers to make the advertisements as representative of the wants of members as possible. Advice in regard to this will be willingly given by the general secretary to those who desire it.—A. G. WHITE, secretary.

Yorkshire Federation.

The annual general meeting of the Yorkshire Federation was held at the new offices of the Federation, West Bar Chambers, 38, Boar Lane, Leeds, on Thursday, December 16th, 1909. Mr. A. J. Forsdike (junior vice-president) occupied the chair at the commencement, and 44 delegates were present from affiliated associations. A letter was read from Mr. W. R. Thompson, of Dewsbury, regretting that illness prevented him from attending the meeting. The Federation heard with great regret of the serious illness of their president; and it was resolved to tender to him their sympathy, together with an expression of their relief at hearing of the satisfactory progress he is making towards recovery. It was resolved to send a vote of sympathy to Mr. W. Irwin, the president of the Leeds Association, who also was unfortunately absent on account of illness.

The annual report and balance-sheet of the Executive Council for the year ended November 30th, 1909, was presented and considered. The report and balance-sheet were adopted, and the printing of 1,500 copies was approved for circulation among the members, the final printing to be left over to January, until the new representatives are appointed.

The best thanks of the Federation were tendered to Mr. W. T. Ledgard for his painstaking and energetic services as hon. treasurer during the past year.

Alderman W. H. Jessop, J.P., having thanked the members for the many expressions of sympathy extended to him in his recent illness, said that it gave him much pleasure to submit the name of Councillor W. G. England, J.P., of Barnsley, as president of the Federation. Councillor England was a most capable man; had taken an active and deep interest in the work of the Federation; had been regular in attendance, and, he was certain, would justify his selection. The motion was seconded by Mr. T. Lindley, of Barnsley, and carried with acclamation. Alderman Jessop then invested Councillor England with the insignia of office, and tendered congratulations on his appointment.

Councillor England, in taking the chair, expressed his deep gratitude for the many kind remarks which had been made. He also acknowledged the presence of five past presidents of the Federation, which was a sign of the continued interest and active support which the Federation obtained from their leading members. He asked the members to cultivate a spirit of loyalty and of mutual confidence, and to give active support and regular attendance at the meetings both of the local associations and the Federation. He recognised the value and importance of an active and forward policy. They should go forward with all the power and might which they possess, being determined to exercise their power and assert their right with reasonableness and discretion, but above all things to seek higher attainment and wider recognition of the aims and objects of the Federation.

Mr. Broley, the president of the Barnsley Association, tendered to the president the congratulations of his members, and said that the association was also honoured by the appointment which had just been made. He was sure Councillor England would maintain with credit and distinction the high traditions of the office to which he was just appointed, and assured him of the loyal support of the members of his native town.

On the motion of the President, seconded by Mr. J. Dawson, it was unanimously resolved to tender to Mr. W. R. Thompson, the retiring president, the best thanks of the Federation for his unfailing courtesy, assiduous attention, and valuable services during the past year, and also to add his name to the list of ex-officio members of the council.

Mr. A. J. Forsdike, of Sheffield, was appointed senior vice-president, and Mr. J. Townsley, of Hull, junior vice-president; Mr. W. T. Ledgard, of Leeds, was re-appointed treasurer.

It was reported that no further nominations for appointment of committees and representatives had been received. It was thereupon resolved that the recommendations of the Executive Council be approved as follows: National Administrative Committee, president; Finance and Emergency Committee, president, two vice-presidents, treasurer, Councillor Mallinson, and Messrs. A. Moulson, W. R. Thompson, and W. E. Biscomb; National Federation and Northern Centre, president, and Messrs. A. J. Forsdike, W. T. Ledgard, W. R. Thompson, and A. W. Sinclair; National Conciliation Board, president, and Messrs. A. J. Forsdike, and A. W. Sinclair; Northern Centre Conciliation Board, president, and Messrs. A. J. Forsdike, W. R. Thompson, and R. Finch.

The treasurer reported receipt of £3 10s. from Selby Association, since the publication of the annual report.

It was reported that, at the request of the Lancashire, Cheshire, and North Wales Federation, the local associations had been asked to co-operate loyally in not tendering for the Salford Town Hall annexe extension, owing to the objectionable character of many of the first issued conditions; but a letter was read stating that, as the result of representations made from the Manchester Association, the committee of the Salford Corporation had now agreed to issue amended conditions, which it was believed would be acceptable to members.

Members were reminded that all who are subscribers to the "Builders' Journal," at the special Federation rates, would receive a copy of the Edition de Luxe in due course. It would not be necessary, therefore, for them to apply for copies.

The expediency of approaching candidates for Parliamentary honours on matters of trade interest and importance was considered, and the Finance and Emergency Committee were requested to give every assistance to any local association desirous of approaching candidates with a view to ascertaining their opinion on such matters.

The conditions of contract issued by the West Riding County Council were considered. It was resolved to request the West Riding solicitor and architect to meet a deputation to consider the conditions of contract now in use, and the president, vice-president, Aldermen Jessop, and Judge, and Mr. J. Biggin, with power to add to their number, were requested to represent the Federation.

Councillor W. G. England, J.P., stated that, at the request of Mr. Thompson, he had attended the meeting of the National Administrative Committee in London on December 14th, and gave a résumé of the business transacted.

The expediency of holding the annual dinner in January, in view of the general election, was considered. It was resolved that the annual dinner be held at Barnsley on Thursday, February 17th, and that a meeting of the Federation be not held in January.

Mr. Broley, on behalf of the Barnsley Association, invited the Federation to hold the February meeting in that town, and the invitation was cordially accepted.

The president and members of the Leeds Association afterwards entertained the delegates to tea, and a hearty vote of thanks was accorded to them for their generous hospitality.

Several members expressed their pleasure and delight at the central position and suitability of the offices, which had been jointly acquired for the work of the Federation, and expressed the hope that now that it had an official address its prestige would be enhanced and its influence increased.—J. J. DAVIDSON, Secretary.

In presenting their twelfth annual report for the year ended November 30th, 1909, the Executive Council express their pleasure at the growing interest which is being manifested in the monthly meetings of the Federation, and their satisfaction at the increased attendance of representatives from the affiliated associations.

The work of the Federation is steadily growing; its influence with architects and local authorities is being freely admitted; whilst its representations are not only received more readily, but find greater acceptance. The number of public welcomes extended to the Federation by local authorities is very gratifying, and affords opportunities for a few words being said on matters of public interest and trade importance.

During the year the Federation accepted invitations from local associations and held meetings in Wakefield, Leeds, Bradford.

Huddersfield, Dewsbury, Hull, Barnoldswick, Scarborough, Bridlington, Selby.

It is earnestly hoped that the building trade may soon participate in a larger volume of business at better prices.

So far as the Yorkshire Federation is concerned, the relations of the local associations with the operatives have been entirely friendly and harmonious. Only in one or two towns have matters been brought before the local Conciliation Board, and it is pleasing to note that a settlement was mutually effected.

The agreement between the National Federation, the National Association of Master Plasterers, and the National Association of Operative Plasterers is recorded.

The subject of municipal works departments is receiving the close attention of the Federation, whose assistance can be confidently relied upon in any town where an agitation is being worked up for an undue extension of municipal trading.

It is advisable that local authorities should not engage the unemployed to do works which have hitherto been let by contract. This procedure is likely to displace skilled workmen merely to afford relief of a very transient character for unskilled workmen. The consequences will be that the cost of the work will be largely increased, while the quality will be lowered. The risk of accidents will be considerably greater if workmen are employed who are not accustomed to either the plant or work.

The serious disadvantages which accrue from priced schedules being sent with tenders have again been discussed, and the Federation most earnestly appeal for the loyal support of every member in protesting against this practice. Where it is absolutely impossible to obtain this recognition, the priced schedules should be sent under protest and under seal, on the definite understanding that only the one of the successful contractor will be opened, and the others returned unopened.

One or two cases have been reported to the Federation of the final certificate being sent by the architect direct to the proprietor. This is contrary to the procedure laid down in the approved form of contract, and also to ordinary professional custom. Members are requested to bring the matter to the notice of architects who adopt this practice, with a view to inducing them to conform to the general custom.

With regard to conditions of contract, the chief lessons to be learnt from the experience of the year are: (a) to urge the use and adoption of the approved form of contract; (b) not to sign any contract which (1) requires the contractor to guarantee the accuracy of the quantities; (2) does not contain an independent arbitration clause. (c) Before commencing extensive extras to obtain an authoritative order in writing, or, in the alternative, to confirm any verbal variation in writing to the architect. (d) To request architects to supply blank copy of quantities to the contractor to whom the contract is let, in order that he may make a copy of his original quantities and deposit same when signing agreement.

The Federation has been in communication with the architect of the West Riding County Council, with respect to the terms and conditions of the contract form at present used, and will make further representations when the department is again placed on a permanent basis.

There have been one or two legal decisions of considerable importance to contractors during the year. In the case of Blackwell v. the Derby Corporation, the Court of Appeal held that an engineer engaged by a corporation should not act as sole arbitrator.

Considerable attention has been given by the Federation and local associations to the preparation of an equitable sub-contract form. The observations of the local associations were submitted to Mr. W. H. Hope, solicitor, of Sunderland, who has drafted a form of sub-contract which is at present receiving the consideration of the local associations. It is hoped to have this finally approved at an early date, when its use and adoption by members is earnestly recommended.

The absolute necessity of employers being affiliated with a strong and representative Federation is becoming year by year more abundantly manifest. The Federation again cordially recognise the valuable work of the Employers' Parliamentary Council, and the immense importance and benefit to the trade of the publication and distribution of the "Weekly Observations on Bill in Parliament."

The Federation strongly opposed clause 30 of the Housing and Town Planning Bill, which contained a most objectionable provision for registration of houses. This clause, which might have caused considerable inconvenience and annoyance to owners of property, was defeated. The Bill, after much consideration and considerable amendment, has now become law, and its provisions demand careful attention.

The Home Secretary has introduced this Bill in order to give effect to the report and recommendations of the Departmental Committee on Building Accidents. The Federation recognised the reasonableness of some of the provisions of the Bill, and were prepared to support it. This, however, was one of the Bills which had to be withdrawn by the Government owing to the exigencies of public business.

The representatives of the building trade and other industries had an interview with Mr. Winston Churchill, M.P., with respect to the Trade Boards Act, which provides for the establishment of Boards, with power to fix a minimum wage and official conditions of labour in certain specified trades. The deputation obtained a definite promise that the provisions would not be extended, without the sanction of Parliament, to industries which were sufficiently organised, and especially to those in which conciliation agreements had been made between employers and employees.

The National Federation has prepared draft clauses as to "fair wages," which should be brought before local authorities, when the matter is under consideration, in substitution for those usually submitted by the Labour Party or Trade Unionists. Local authorities often overlook the fact that, so far as the building trade is concerned, federated members are under an honourable obligation to pay the standard rate of wages and observe the recognised conditions of labour for private as well as for public work.

The Federation gratefully acknowledge the sympathetic and generous consideration of claims by Lloyds' Underwriters. In some cases compensation has had to be paid out of all proportion to the injury sustained; and this, with the growing charges for workmen's medical and legal expenses, has necessitated a slight increase in the premium. A sum of £54 16s. 1d. has accrued to the Federation as their proportion of commission received.

Several cases have occurred in which claims have been made against members by third parties. Special arrangements at reasonable rates have been made for insurance of members against this risk, which will probably grow in number and amount as the public are educated to the liability of owners and contractors for negligence resulting in injury to a third party.

Several cases have been brought before the Federation in which the interests of federated members were concerned, and the intervention of the Federation invoked. In the case of one such member, the Federation sought and obtained the consent of the National Federation to the member being protected and assisted in the event of proceedings being instituted. A case was prepared for counsel's opinion, but on account of the withdrawal of the claim against the member the necessity to proceed further was obviated.

The Federation again appeal to members to become subscribers to the "Builders' Journal," which is the official organ of the

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ational Federation and its affiliated anches. Members will not only find arti- es of considerable interest, but will find e journal the only medium for circulation Federation news and proceedings.

The Council are pleased to report that a eeting of builders was recently held at Skip- n, when a resolution was unanimously opted to form a local association for Skip- n and district, and a strong and represen- tive committee was appointed to prepare aft rules for submission to a further meet- g.

At the invitation of the Federation, the ational Conference of Secretaries was held the Hotel Metropole, Leeds, on Tuesday, ctober 19th. Mr. E. J. Brown, president the National Federation, took the chair, nd gave an interesting address. Several apers of practical value were read, and the port of the proceedings will be found in e "Builders' Journal" of October 27th.

A conference of Yorkshire Secretaries was cently held when valuable exchange of pinions took place on several subjects and formation was given on many points of terest.

During the year a further issue of the ederation directory has been published. The les of the Federation are now being re- ised, and a further issue of the directory ill not take place until the rules can be corporated.

In view of the growing work of the Fed- ation and the necessity for careful custody nd classification of its documents, the Coun- il have recognised the necessity of joining ith the Leeds Master Builders' Association nd the secretary, in obtaining larger offices nd increased storage accommodation. It is oped that a permanent and official address ill increase the prestige of the Federation nd afford better facilities for meetings of ommittees and the conduct of its business.

The report is signed, on behalf of the xecutive Council, by Mr. W. R. Thompson, resident, and Mr. J. Davidson, secretary.

ARNSLEY ASSOCIATION.

Secretary: J. Denton.

The annual meeting of the Barnsley Fed- ration was held at the King's Head Hotel n Wednesday, December 8th, when Coun- illor G. Haigh, occupying the chair, was upported by eighteen members.

Councillor G. Haigh, the retiring presi- ent, vacated the chair after thanking the nembers generally for their support and ourtesy during his two years of office. The resident-elect (Mr. E. Broley) was then uly installed in his new official dignity midst acclamation. The new president, in is inaugural address, referred to the great ervices of the retiring president, Coun- illor Haigh, who had given without stint oth time and money in the execution of his est endeavour to promote the welfare of he Federation.

Councillor W. G. England, J.P. (the presi- ent-elect of the Yorkshire Federation) ffered his congratulations to the incoming resident, and proposed a vote of thanks to he retiring president. This was seconded y Mr. H. Ashworth, supported by Mr. T. indley, and carried enthusiastically.

The secretary (Mr. J. Denton) submitted is second annual report, in which he eferred to the good state of the building rade as regards the Barnsley district, in ontrast with the depression in most other arts of the country, and to the growth in he membership (a gain of six members on he previous year). He produced statistics referring to the increase and decline of the ercentages of attendances at the monthly neetings during the past four years, and asked the members to do their utmost to ac- ord the new president a full measure of support in this respect. The Yorkshire president, he said, had remarked, at the neeting of Yorkshire Secretaries, held in Wakefield, that the decline in attendances was due in some cases to the inability of he secretary to place before the members an instructive and interesting agenda. The Barnsley secretary, however, said he thought he might venture to claim that the members had invariably an interesting agenda placed before them.

The secretary's report was unanimously adopted, and a vote of thanks was accorded him.

The treasurer (Mr. H. Ashworth) submitted his sixth annual financial statement. The Federation was now financially in a record position, the funds in hand being greater than they had ever been before during his term of office as treasurer, and, he was glad that, after hard work, he had accomplished the self-set task of building up the finances to a record position. The auditors (Messrs. F. Goodyear and C. W. Squire) verified the treasurer's financial statement, and remarked upon the business-like way in which the books were kept. A vote of thanks was accorded the treasurer (Mr. Ashworth), and his balance sheet was unanimously adopted.

The Building Section of the committee was unanimously elected as follows:—Councillor G. H. Mellor, Councillor G. Haigh, and Messrs. S. Walker, P. Dalby, J. Higham and C. K. Taylor.

Messrs. Lee and Priestley, painters, were unanimously elected as members of the Federation.

Owing to the length of the agenda, the meeting was adjourned till December 15, when Mr. E. Broley, the president, occupying the chair, was supported by seventeen members.

The principal business, the new sub-contract agreement form as amended, received considerable attention. After the clauses had each been thoroughly discussed on its own basis, the sub-contract agreement as amended was approved in its entirety by the Barnsley Federation, and a copy of the resolution to that effect was to be forwarded to the Yorkshire secretary (Mr. J. Davidson) forthwith, the members present being of opinion that the various clauses were fair and equitable to both parties.

BRADFORD ASSOCIATION.

Secretary: J. Davidson.

The annual meeting of the Bradford Association was held at the Talbot Hotel on Tuesday, December 21st. Mr. T. E. Taylor, the retiring president, occupied the chair, and was well supported by members.

The president cursorily reviewed the work of the year, and called special attention to the exceptional loss caused by the death of several old and respected members. Mr. J. Moulson, treasurer, presented the cash statement, which was considered very satisfactory, and was adopted; and the best thanks of the association were tendered to Mr. Moulson for his painstaking and valuable services as treasurer, and to Messrs. C. W. Booth and T. Obank for auditing the accounts.

Mr. T. E. Taylor, in proposing the election of Mr. R. Raper as president, drew attention to his long and valued connection with the association, the high respect in which he was held in the city, and his recognised position in the trade. The motion was seconded by Mr. C. W. Booth, and carried unanimously.

Mr. Raper then took the chair, and, in returning thanks, called the attention of the members to the benefits which they derived from the local association and its complementary federations. The active members of the association had necessarily to carry out its work, while all members and non-federated employers were subject to the agreements which they made with the operatives. In the circumstances, he appealed to the members to take a greater and more active interest in the work of the association, and pointed out many instances in which assistance and information had been given which proved of great and material value.

A cordial vote of thanks was accorded to Mr. T. E. Taylor, the retiring president,

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for his valuable services during the past year.

Mr. C. W. Booth (Messrs. M. Booth and Sons) was appointed senior vice-president, and Mr. J. Moulson (Messrs. J. Moulson and Sons, Ltd.), junior vice-president. Mr. J. Moulson was also re-elected treasurer. The usual trade committees and representatives on the Conciliation Board and to the Yorkshire and National Federations were also appointed.

Mr. Taylor reported the result of a recent interview with the Master Plasterers, and stated that many misunderstandings had been removed, and a more friendly spirit engendered. The secretary read correspondence and reported the result of a conference with the Bradford glass merchants. Mr. Taylor gave a report on the procedings of the recent annual meeting of the Yorkshire Federation.

Northern Counties Federation.

The annual general meeting of the Northern Counties Federation was held at the Palatine Hotel, Sunderland, on December 16th, 1909, Mr. J. Davison (Stockton-on-Tees), president, in the chair, when there were present 35 representatives.

Arising out of the minutes, the Tees-side secretary reported that his association were prepared to give the Stockton and Middlesbrough labourers ¼d. more per hour, making 6½d. per hour, the same as the Hartlepool labourers, and the association anticipated securing uniformity of working hours in all branches of the trade throughout the district.

The auditors' balance-sheet for the past year was submitted by Mr. J. C. Hope, which was seconded by Mr. P. Bray, and agreed to unanimously.

The secretary presented his annual report, which stated that the local associations had maintained and strengthened their position and increased their membership. A canvass of the members of the sub-trades and merchants had been most successful, a good many having joined. Many improvements in conditions of contracting had been effected. An agitation was proceeding for fair conditions of tendering, and steps had been taken by the Federation to approach the engineers and surveyors upon the matter. The report concluded by alluding to the proposed invitation of the National Federation to Newcastle in 1911.

On a recommendation from the Executive Council, "That the Board of Representatives be recommended to increase the secretary's salary by £30, and that a grant of £30 be made to him in addition to his salary for the current year," Mr. J. T. Armstrong spoke in very eulogistic terms of the services rendered to the Federation by the secretary, as did Mr. W. T. Weir, and Mr. R. J. Huntley, and the recommendation was carried unanimously. Mr. Hope returned thanks.

The estimated income and expenditure for the coming year was considered, and on the proposition of Mr. A. Ross, seconded by Mr. Brown, it was resolved: "That the subscription for 1910 from the local associations be at the rate of 1s. 6d. per cent. of wages paid during 1909, and that one-third of the subscriptions received from the honorary members be forwarded to the Federation."

A letter from the retiring president (Mr. J. Davison) in reference to the presidency for 1910 was read. The wish of the meeting was that Mr. Davison should allow his name to be put forward again, but this he refused to do, and moved that the senior vice-president, Mr. Alex. Ross, of South Shields, be elected as president, which was seconded by Mr. W. J. Ross, and agreed to unanimously.

Mr. Ross said he had great pleasure in accepting the honour, and moved that a vote of thanks be accorded to Mr. J. Davison for his services during his term of office. This was carried with acclamation.

Mr. J. Davison thanked the members, and Mr. Fred W. Ranken, of Sunderland, the junior vice-president, was unanimously elected senior vice-president. Mr. J. Proud, of West Hartlepool, was unanimously elected junior vice-president. Mr. J. W. White was unanimously re-elected honorary treasurer. Mr. J. C. Hope, of Newcastle-on-Tyne, and Mr. Percy Bray, of Middlesbrough, were re-elected honorary auditors. The following were re-elected upon the Executive Council: J. Davison (immediate past president), A. Ross (president), F. W. Ranken (vice-president), J. Proud (junior vice-president), S. Easten, W. T. Weir, W. Foster, W. J. Robertson, J. Pelton, J. Simpson, R. J. Huntley, W. B. Cooper, J. W. White, R. Johnson, W. Masters.

The following were re-elected upon the National Council; Stephen Easten, T. Wilkinson, J. Proud; J. W. White being a member ex-officio, and also upon the Northern Centre Council. The National and Northern Centre Conciliation Boards representatives, Messrs. T. Wilkinson and J. W. White, were re-elected. The president (Mr. A. Ross) and the secretary (Mr. W. H. Hope) were appointed as representatives of this Federation to attend the annual meeting of the National Federation to be held in London on January 26, 1910.

The secretary reported upon the proceedings at the annual meeting of secretaries held at Leeds on October 19th, 1909.

The South Shields secretary (Mr. J. G. Robertson) reported that he had attended before the Departmental Committee upon Railway Agreements, and given evidence upon railway facilities on the north-east coast. Mr. Robertson was thanked for his services.

It was decided to hold the next quarterly meeting at North Shields.

A report was received from the deputation appointed by the Executive Council in conjunction with a deputation from the Quarry Owners' Association to wait upon those quarry owners who were alleged to be violating their association's rules. The deputation had met with no success, the members in question refusing to fall in with the representations made to them that they should stand by the Quarry Owners' Association and reduce the wages they were paying in accordance with the notice given. The Quarry Owners' Association asked the Federation what further steps the Federation proposed to take, and it was decided that the matter be referred to the Executive Council, with full power to act as they deem advisable.

Mr. J. Morice Wright, the president of the Sunderland Association, invited the representatives present from the affiliated local associations to be the guests of the Sunderland Association at their annual dinner, and they subsequently dined together.—W. H. Hope, solicitor, secretary.

COVENTRY AND DISTRICT ASSOCIATION.

The annual meeting of the Coventry and District Association was held at the White Lion Hotel, on December 15th, 1909. The president, Mr. C. Garlick, occupied the chair.

After the usual routine business, the election of officers took place, the whole of the officers being unanimously re-elected for the year 1910.

The Secretary reported that he had received a deputation from the L. and N.W. and Midland Railway Company, as to the question of demurrage; the railway company are now desirous of clearing up these demurrage accounts, which were incurred for the most part between 1906 and 1908, and offered to forgo all claims previous to June, 1907. A long discussion took place on the matter, and several members mentioned cases of inconvenience and loss through the inability of their carters to get at wagons after being duly advised, and the secretary was instructed to send a letter to that effect to the L. and N.W. Railway and Midland Railway.

The business portion of the proceedings was followed by a smoking concert.

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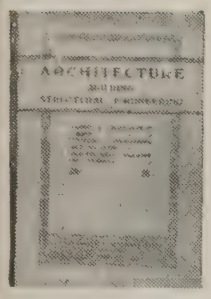
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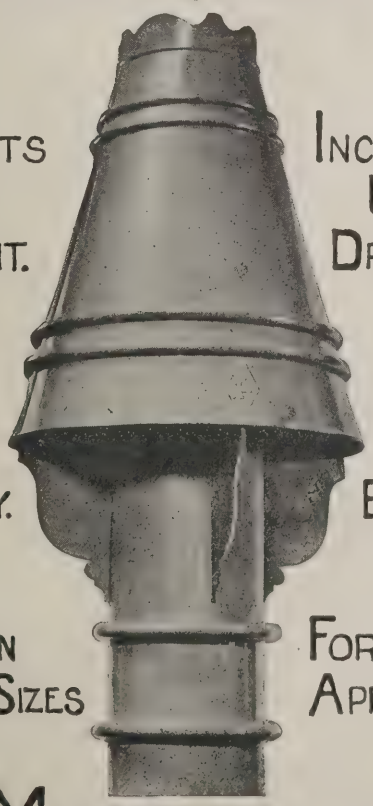
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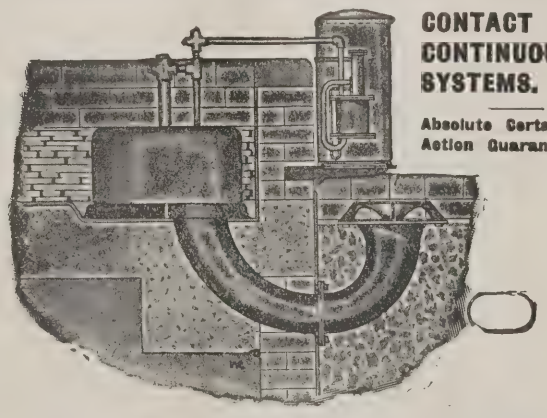
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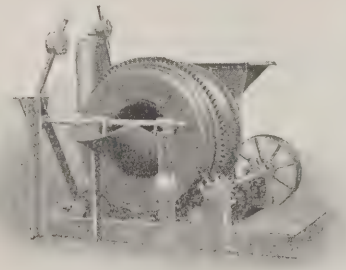
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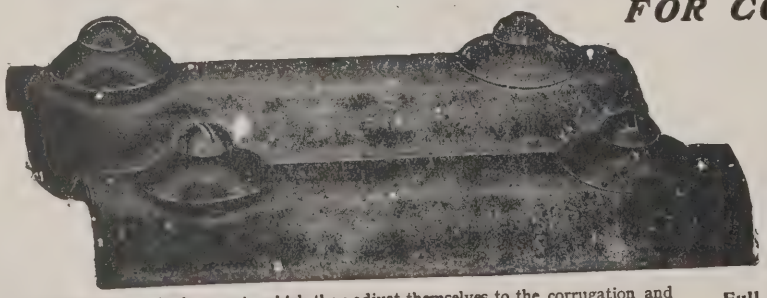
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In this list are included, as a rule, only those contracts for which tenders are returnable about **five days** after the date of this issue.
Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders.
The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Jan. 1-17. **WEST HAM.**—Extension of the existing West Silvertown schools, and erection of the boys' new department, for the Corporation. Contractors are requested to make written application to William Jacques, A.R.I.B.A., Architect to the Education Committee, 2, Fen Court, Fenchurch Street, E.C., for copy of quantities, conditions, and form of tender, not later than Jan. 1. Each application must be accompanied by a deposit of a £5 Bank of England note. Plans and particulars may be seen at the Architect's Office. Tenders at the Education Department, 95, The Grove, Stratford, E. Fair wages clause.

Jan. 1-21. **EXMOUTH.**—Alterations and additions to the Exeter Road Council Schools, Exmouth (boys' and girls' departments), for the Devon County Education Authority. Bills of quantities for the work will be available in due course on deposit of £1 1s. Contractors desiring to tender must apply to the County Architect (Education), 1, Richmond Road, Exeter, not later than the first post on Jan. 1, enclosing a crossed cheque drawn in favour of the County Treasurer. Quantities will be issued about Jan. 8, and sealed tenders must be delivered at the Architect's Office not later than Jan. 21.

Jan. 3-17. **LONDON, S.W.**—Execution of the following, for the Secretary of State for War:—Reappropriation of A.S.C. block and erection of additions to provide accommodation for the Royal Army Medical Corps, Millbank, London, S.W. Plans, specification, and conditions of contract may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., on Jan. 3, 4, and 5, to whom application must be made by Jan. 7., accompanied by deposit of 10s. Cheques or orders to be made payable to the Assistant Financial Secretary, and crossed "Bank of England for credit to Army Funds." Tenders to be sent to H. De La Bere, Director of Army Contracts, War Office, Whitehall, London, S.W.

Jan. 13. **LEEDS.**—Contractors desiring to estimate for the various works (except brick and mason) required in the erection of three pairs of semi-detached houses, Beeston Hill, Leeds, for W. Preston, are requested to send their names by above date to W. S. Braithwaite, Architect, 6, South Parade, Leeds.

Jan. 13-25. **CHATHAM.**—Erection of balconies at the Workhouse Infirmary, Chatham, for the Guardians of Medway Union. Applications for bills of quantities, accompanied by deposit of £1 1s., to be made to the architect, E. J. Hammond, Balmoral Road, Gillingham, by the 13th inst. Tenders to be delivered by post at the Guardians' Offices, Medway Workhouse, Chatham.

Jan. 15. **NORTHWICH.**—Erection of a new school to accommodate 350 children, at Northwich. Plans and specifications can be seen at the Education Office, Verdin Technical School, Northwich, and quantities obtained on deposit of £1 1s. Tenders to be delivered to A. E. Thomas, Education Office, Northwich. Fair wages clause.

Jan. 17. **TALKIN (near Carlisle).**—Repairs to school and house, for the Managers of Talkin school. Plans and specifications to be seen with R. Routledge, Talkin. Tenders to be sent to Rev. W. Powell, Hayton Vicarage, How Mill.

Jan. 17. **HALIFAX.**—Various works required in erection of workshop at Highroad Well. Plans may be seen and bills of quantities obtained of Jackson and Fox, Architects, Rawson Street, Halifax, to whom tenders are to be sent.

Jan. 17. **PONTYPRIDD.**—Erection of a cottage hospital at Pontypridd for the Executive Committee. Plans and specification can be seen, and bills of quantities obtained on deposit of £2 2s. with A. O. Evans, Williams, and Evans, Architects, Pontypridd, to whom tenders are to be sent.

Jan. 17. **FARTOWN.**—Contractors and others desirous of tendering for any of the various works required in the erection of two semi-detached residences, must send in name and address by above date to James H. Hall and Son, Architects and Surveyors, 10, Market Street, Huddersfield.

Jan. 17. **CHELMSFORD.**—Erection of an elementary school at Trinity Road, Springfield, for the Corporation. Drawings and specification may be inspected, and copies of the bills of quantities obtained at the offices of the architects, Chas. and W. H. Pertwee, Chelmsford, on and after Dec. 30, upon deposit of £2. Tenders must be delivered to W. Smith, Town Clerk, Municipal Offices, 16, London Road, Chelmsford.

Jan. 17. **FLIXTON (near Manchester).**—Erection of an elementary school at Flixton, near Manchester, to accommodate 370 children, for the Lancashire Education Committee. Plans may be seen and bills of quantities obtained at the office of the County Architect, Henry Littler, 16, Ribblesdale Place, Preston, by deposit of £2. Tenders must be delivered to J. W. Whitworth, Union Offices, Green Lane, Patricroft, near Manchester.

Jan. 17. **ENFIELD.**—Construction of pumping station buildings, together with chimney, stores, coal bays, cottage, roadway, drainage, and other contingent works, at Hadley Road, Enfield, for the Metropolitan Water Board. Drawings, conditions of contract, and specifications may be inspected at the offices of the Chief Engineer, Savoy Court, Strand, W.C., on and after Jan. 3. Contractors desirous of tendering may obtain forms of tender, conditions of contract, specifications, list of drawings, bills of quantities, etc., from the Chief Engineer, on production of receipt for £10, which must be deposited with the Accountant at Savoy Court, Strand, W.C. Tenders must be delivered at the offices of the Board, Savoy Court, Strand, W.C.

Jan. 18. **MACCLESFIELD.**—Erection of a detached villa for private patients at the Parkside Asylum. Plans and specifications can be seen at the office of H. Beswick, F.R.I.B.A., County Architect, Chester, and quantities obtained on deposit of £2. Tenders are to be delivered to Arthur C. Procter, Clerk to the Visitors, 23, King Edward Street, Macclesfield.

Jan. 18. **SPENNYMOOR.**—Erection of a new higher elementary school at Spennymoor, for the Durham C.C. Plans, specification, and general conditions of contract may be seen, and bills of quantities obtained at the office of W. Rushworth, Shire Hall, Durham. Tenders are to be sent to A. J. Dawson, Clerk to the Education Committee, Shire Hall, Durham.

Jan. 19. **OLDHAM.**—Reconstruction of roof over gentlemen's swimming bath at Central Baths, for the Corporation. Particulars may be obtained at the Borough Surveyor's Office. Tenders to be addressed to the chairman of the Baths Committee.

Jan. 19. **BROCKHOLES.**—Erection of six dwelling houses at Brockholes, for the Co-operative Society (Ltd.). Plans may be seen and bills of quantities obtained of J. Berry, Architect and Surveyor, 3, Market Place, Huddersfield, to whom tenders are to be sent.

Jan. 19. **NELSON, GLAM.**—Erection of 12 cottages for the Llancaiach Building Club, on Caerphilly Road, Nelson, Glam. Drawings and specifications can be seen with the Secretary, H. Osborne, Commercial Road, Nelson, and at my office. Tenders are to be delivered to Idris Leyshon, Architect and Surveyor, 7, Hanbury Road, Bargoed.

Jan. 19. **COVENTRY.**—Enlarging the Radford Council school, for the Corporation. Drawings and specification may be inspected at the office of the Architects, G. and I. Steane, 22, Little Park Street, Coventry. Forms of tender, with schedule of quantities, may be obtained on deposit of £1 1s., at the Education Offices, Priory Row, Coventry. Tenders must be delivered to Geo. Sutton, Town Clerk, 10, Hay Lane, Coventry.

Jan. 19. **HORNCHURCH (Essex).**—Structural alterations to the school at the Cottage Homes, Hornchurch, near Romford, Essex, for the Guardians of the Poor of the parish of Saint Leonard, Shoreditch. Plans may be inspected, and a copy of the specification, together with forms of tender obtained at the office of the Architect, F. J. Smith, F.R.I.B.A., Parliament Mansions, Victoria Street, S.W. Tenders must be delivered to the guardians at the board room, 204, Hoxton Street, N.

Jan. 20. **TREHERBERT.**—Extension of Bethany English Baptist Chapel, Treherbert, Rhondda Valley, for the trustees. Plans and specification may be seen with W. R. Davies, 14, Bute Street, Treherbert, and at the office of W. D. Morgan, M.S.A., Architect, 194, Ystrad Road, Pentre.

Jan. 20. **MALTON.**—Builders desirous of tendering for the completion of the nave, etc., of Norton Church, Malton, can inspect the drawings and specification on application at Norton Vicarage, from 11th to 20th inst., when tenders are to be sent to C. Hodgson Fowler, F.S.A., Architect, The College, Durham. Quantities may be obtained on application to W. Morton, Quantity Surveyor, 45, John Street, Sunderland.

Jan. 21. **PENTRE.**—Erection and completion of three houses at Pentre, for J. E. Morris. Plans and specification may be seen with W. D. Morgan, M.S.A., Architect, 194, Ystrad Road, Pentre, to whom tenders are to be sent.

Jan. 21. **DORCHESTER.**—Carrying out certain repairs, alterations, additions, at Stratton Manor, High West Street, Dorchester, in order to adapt the premises as County Offices, for the Standing Joint Committee. Plans, specifications, and forms of tender may be seen at the County Surveyor's Office, Shire Hall, Dorchester. Tenders to be sent to E. Archdall Ffooks, County Council Offices, Sherborne.

Jan. 21. **WOMBRIDGE, SALOP.**—Erection of a new infants' Council school at Harts Hill, Wombridge, Oakengates, Salop, for the Salop County Council. Drawings and specification may be seen, and bills of quantities and form of tender obtained, at the offices of the Architects, Dickens-Lewis and Haymes, Talbot Chambers, Shrewsbury, on deposit of £2 2s. Tenders to be delivered to H. E. Wale, Secretary, County Buildings, Shrewsbury.

Jan. 21. **WAKEFIELD.**—Execution of the following works at Oxenhope Horkinstone Provided school, for the West Riding Education Committee:—Alterations and additions—builder, joiner, slater, plumber, plasterer, painter, asphalter, heating engineer. Plans may be seen and specifications with quantities obtained on application to the West Riding Architect, County Hall, Wakefield. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders to be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

Jan. 22. **NATLAND (Kendal).**—Whole or separate trade contracts, for erection of proposed residence, Natland, for Ismay Barnes. Plans may be seen and quantities and specifications obtained at the offices of John F. Curwen, F.S.A., Architect and Sanitary Engineer, 26, Highgate, Kendal, to whom tenders must be sent.

Jan. 24. **PONTYPRIDD.**—Alterations and additions to premises in Morgan Street, for the Committee of the Pontypridd and District Club. Plans and specification can be seen with A. O. Evans, Williams, and Evans, Architects, Pontypridd, to whom tenders are to be sent.

Jan. 24. **BLACKWOOD (Mon.).**—Erection of two shops and premises at Blackwood, Mon., for J. F. Chappel. Plans and specifications can be seen and form of tender obtained at the office of D. J. Thomas, Architect, High Street, Blackwood, Mon., to whom tenders are to be sent.

Jan. 24. **DERBY.**—Structural alterations at the Union Workhouse, Derby, for the Board of Guardians. Plan and specification may be seen on application to, and bill of quantities obtained, from F. C. Coulthurst, Architect, 4, Tlbert Street, Derby. Tenders must be sent to N. Twigge, Clerk to the Guardians, Poor Law Offices, Derby. Derby builders only invited to tender.

Jan. 25. **MERTHYR TYDFIL.**—Erection of a Masonic Temple for the Loyal Cambrian Lodge of Freemasons (No. 110), at Merthyr Tydfil. Plans and specifications to be seen with C. M. Davies Architect, 112, High Street, Merthyr. Tenders are to be delivered to James Fraser, 37, Thomas Street, Merthyr.

Jan. 25. **BELFAST.**—Erection of the proposed abattoir in Stewart Street, Belfast, for the Corporation. General conditions, specification, and drawings can be seen at the office of the City Surveyor, City Hall, Belfast, and bills of quantities obtained from W. H. Stephens and Sons, Surveyors, 13, Donegall Square North, on deposit of £5 5s. with the City Chamberlain, City Hall. Tenders to be lodged with R. Meyer, Town Clerk. The minimum rate of wages paid to labourers engaged on the contract shall be not less than 20s. per week. Fair wages clause.

Jan. 25. **LONDON, E.**—Erection of a coroner's court at High Street, Poplar, E., for the L.C.C. Persons desiring to submit tenders may inspect the drawings, and obtain the specifications, bills of quantities, form of tender, and other particulars, at the Superintending Architect's department, General Section, 19, Charing Cross Road, W.C., upon deposit with the cashier of the Council, at the County Hall, Spring Gardens, S.W., of £2. Full particulars of the work may be obtained on application at the County Hall, before the payment of a fee for the specification, etc. Tenders must be delivered to G. L. Gomme, Clerk of the London County Council, County Hall, Spring Gardens, S.W.

Jan. 26. **AVONMOUTH.**—Erection of ten cottages at Avonmouth, for the City and County of Bristol. Plans and specifications may be seen at the offices of Peter Addie, City Valuer, The Exchange, Bristol. Quantities can be obtained on deposit of £1 1s. Tenders must be delivered at the above offices.

Jan. 26. **HALIFAX.**—Reinstating "Kingston Confectionery Works," belonging to John Mackintosh, Ltd. Plans and specifications may be seen and bills of quantities obtained of Medley Hall and Son, Architects and Surveyors, 1, Harrison Road, Halifax, to whom tenders are to be sent.

Jan. 26. **ALLOSTOCK.**—Alterations and additions to present buildings at the Cheshire County Council school at Allostock, for the C.C. Plans and specifications can be seen at the office of H. Beswick, F.R.I.B.A., County Architect, Newgate, Street, Chester, and quantities obtained on deposit of £1. Tenders are to be delivered to J. H. Cooke, Solicitor, Winsford.

Jan. 26. **SPURSTOW (near Tarporley).**—Alterations and additions to the school buildings, Spurstow, near Tarporley, for the Cheshire C.C. Plans and specifications can be seen at the office of H. Beswick, County Architect, Newgate Street, Chester, and quantities obtained on deposit of £1. Tenders to be sent to C. E. Speakman, Clerk, Education Office, Crewe.

Jan. 28. **CORK.**—Execution of proposed new additions and alterations to the existing fitter's shop and store, for the Corporation. Drawings, general conditions, and specification may be seen and tender form and all information obtained at the City Engineer's Office, City Hall, Cork. Intending contractors must first lodge with the City Treasurer £1. Each person tendering must also lodge with his tender £10. Tenders must be deposited in the Town Clerk's Office, City Hall, Cork. Fair wages clause.

Jan. 29. **LLANDILO, S. WALES.**—Erection of the following:—(1) Entrance lodge, Abermarlais Park, for Mrs. de Rutzen; (2) residence at Llanedy, for Rev. B. Morris. Particulars may be obtained from W. D. Jenkins, F.S.I., A.R.I.B.A., Architect, George Street, Llandilo, S. Wales.

Jan. 29. **TREHERBERT.**—Erection of new premises at Treherbert for the Conservative Club. Plans and specification can be seen at the offices of J. Rees, Architect, Pentre, and bills of quantities obtained upon deposit of £2 2s. Tenders to be addressed to the "Chairman of Committee," Conservative Club, Treherbert.

Feb. 7. **PETTAUGH (near Stowmarket).**—Erection of a new school for about 60 children at Pettaugh, near Stowmarket, for the East Suffolk County Education Committee. Builders who desire to tender should send in their names, accompanied by a deposit of £1 1s. (cheques to be made payable to W. E. Watkins), by 8th inst., to W. E. Watkins, Secretary, Education Office, County Hall, Ipswich, to whom tenders are to be sent.

No date. **HONLEY (Huddersfield).**—Several works required in the erection of a new Congregational Church, with spire, at Honley, Huddersfield. Persons desirous of tendering should send their names to W. J. Morley and Sons, Architects, 269, Swan Arcade, Bradford, when quantities will be supplied.

ENGINEERING.

Jan. 17. **SOUTH FARNBOROUGH.**—Installation of low-pressure hot-water apparatus, at South Farnborough Council school (570 children), for the Southampton C.C. Plans, specification, and general conditions of contract, and all other information, on deposit of £10 10s. at the office of W. J. Taylor, County Surveyor, The Castle, Winchester. All deposits must be by cheque, made payable to Hants County Council and crossed Bank of England. Tenders to be delivered to H. Barber, Clerk of the County Council, The Castle, Winchester.

Jan. 18. **DEVONPORT.**—Dry-docking, repairing, and re-decking the Pontoon at Northcorner Quay, for the Corporation. Specifications and conditions may be seen, and form of tender and bills of quantities obtained, at the Surveyor's Office, Municipal Offices, 29, Ker Street, Devonport, on deposit of £1 1s. Tenders must be delivered to John F. Burns, Borough Surveyor, Municipal Offices.

Jan. 20. **LAXEY.**—Construction of intakes, filters, and reservoirs, near Laxey, also laying about 10,000 lineal yards of 4in. and 3in. cast-iron mains and branches, for the Commissioners of the village. Specifications, conditions, and forms of tender may be obtained from the Engineer, R. H. Crompton, on deposit of £2 2s. for each contract. Plans and drawings can be seen at the Commissioners' Office, Laxey, or on application to the Engineer, at 26, Ellerthwaite Road, Windermere, and at 11, Lowther Street, Whitehaven. Tenders to be sent to the Engineer, R. H. Crompton, Brantfell House, Bowness-on-Windermere.

Jan. 22. **ASHFORD (Kent).**—Erection of a minimum 50 b.h.p. suction gas engine and producer plant, and other works in connection therewith, at its Bybrook Sewage Works, for the U.D.C., in accordance with plan and specification which may be obtained from William Terrill, Surveyor, 5, North Street, Ashford, Kent, on deposit of £1 1s. Tenders to be sent to John Creery, Clerk to the Council, 11, Bank Street.

Jan. 31. **CARDIFF.**—Construction and maintenance of an elliptical skew-arch bridge, 60ft. span, over the River Rumney, in lieu of the existing masonry bridge, which is to be removed, and execution of certain road works in connection therewith, for the C.C. Contract drawings and deed of contract may be inspected and form of tender, specification, and bill of quantities obtained at the City Engineer's Office, City Hall, Cardiff, upon deposit with the City Treasurer of £3. Tenders are to be delivered at the office of the Town Clerk, City Hall.

IRON AND STEEL.

Jan. 17. **ELY.**—Supply and delivery of 12in. cast-iron water pipes, for the U.D.C. Copy of specification, bill of quantities, and form of tender may be obtained from the City Surveyor, Waterside, Ely, on receipt of P.O. for £1 1s. deposit. Tenders must be delivered to Geo. Martin Hall, A.K.C., Clerk, Market Square, Ely.

Jan. 18. **MANCHESTER.**—Supply of steel tramway poles, for the Corporation. Specifications and forms of tender may be obtained on application to J. M. McElroy, General Manager, Corporation Tramways, 55, Piccadilly, Manchester, on deposit of £2 2s. Tenders are to be addressed to the Chairman of the Tramways Committee, 55, Piccadilly, Manchester.

Jan. 20. **PLYMOUTH.**—Supply of the following goods and materials for the period of one year, for the Corporation:—Fire hydrants, lead pipe and pig lead, stopcocks, ferrules, etc.; cast-iron work, sluice valves. Particulars and forms of tender can be obtained of Frank Howarth, M.Inst.C.E., Water Engineer, Municipal Buildings, Plymouth, to whom tenders are to be sent.

Jan. 22. **SOWERBY BRIDGE.**—Supply of 20 tons (9ft. lengths) of 6in. spigot and socket water pipes, coated and delivered at the Lancashire and Yorkshire Station, Sowerby Bridge, for the U.D.C. Further particulars can be obtained on application to John Hopkinson, Waterworks Manager, Town's Buildings, Sowerby Bridge. Tenders to be sent to R. W. Evans, Solicitor and Clerk to the Council, Commercial Bank Chambers, Halifax.

(Continued on next page.)

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RAILINGS, GATES, BANDSTANDS,
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Jan. 24. **LONDON (for Abroad).**—Supply of the following stores, for the Agent-General for the Cape of Good Hope:—1,500 tons rails, 80lbs. section, Bessemer or open-hearth steel; 2, 28,000 fish-plates, Bessemer or open-hearth steel, for 80lbs. section rails. Forms of tender and all particulars may be obtained on application at the office of the Agent-General, 100, Victoria Street, London, to whom tenders are to be sent.

Jan. 25. **LONDON (for Madras).**—Supply of structural steelwork, etc., carriage lifting shop and shelter for steam-hammer boilers, as per the specification which may be seen at the offices of the company, for the Madras and Southern Mahratta Railway Company, Limited. The charge for the specification is £1 1s., which will not be returned. Tenders must be sent in to H. Bonham-Carter, Secretary, Offices: 91, York Street, Westminster, S.W.

PAINTING.

Jan. 17. **ERITH.**—Painting iron fencing at various properties of the Council. Forms of tender, quantities, specification, and general conditions, may be obtained at the Surveyor's Department, Council Offices, Bexley Road, Erith, on deposit of £1 1s. Tenders must be delivered to J. Kennedy Allerton, Clerk to the Council, Council Offices, Erith.

Jan. 17. **ABERTRIDWR (Wales).**—Painting ninety-five cottages at Abertridwr, for the Windsor Building Club, Porth. Full particulars may be obtained on application to W. D. Thomas, Architect, Tydfil Crescent, Porth. Tenders to be sent to the Secretary, Porth Hotel, Porth.

Jan. 19. **ELTHAM.**—Painting and repairs at the Public Library, High Street, Eltham, for the Metropolitan Borough of Woolwich. Persons or firms desirous of tendering may obtain a copy of the specification and form of tender at the office of J. Rush Dixon, M.I.C.E., Borough Engineer, Town Hall, Woolwich. Tenders must be sent to Arthur B. Bryceson, Town Clerk, Town Hall, Woolwich. Fair wages clause.

Feb. 1. **MANCHESTER.**—Painting at the undermentioned places, for the Lancashire and Yorkshire Railway:—1, Liverpool Exchange Station; 2, Mill Hill to Preston, Preston Junction to Lostock Hall, etc.; 3, Bolton to Euxton Junction, and Horwich Branch; 4, Bolton passenger and goods stations; 5, Pendleton to Crow Nest Junction, and Dobbs Brow Junction to Hindley and Blackrod Junction; 6, Manchester to Bolton, including ship canal and Kearsley branches; 7, Bolton to Castleton and Heap Bridge branch; 8, Oldham Road branch and goods station; 9, Clifton Junction to Accrington; 10, Halifax to Bradford; 11, Wakefield to Normanton. Specifications and separate forms of tender may be obtained on personal application at the Engineer's Office, Hunt's Bank, Manchester. Tenders to be sent to R. C. Irwin, Secretary, Hunt's Bank, Manchester.

PLUMBING AND SANITARY.

Jan. 17. **CHESTER.**—Construction of a main drain from the Upton Asylum to the Liverpool Road, for the C.C. Plans and specifications can be seen at the office of H. Beswick, F.R.I.B.A., County Architect, Newgate Street, Chester, and quantities obtained on deposit of £1. Tenders are to be delivered to Alexr. Hornby, Clerk to the Visitors, Upton Asylum, Chester.

Jan. 17. **HAM (Surrey).**—Construction of additional works at the sewage disposal works, Lock Road, Ham, for the U.D.C. The contract will comprise effluent water drain, contact filters, automatic syphons, alterations to tanks, channels, and other works. Specification and drawings may be inspected at the office of William Fairley, Civil Engineer, 69, Victoria Street, Westminster, and form of tender and copy of the bill of quantities obtained on personal application, and deposit of a crossed cheque for £2 2s., made payable to the Council. Tenders must be sent to H. J. Mannings, Clerk to the Council, Council Offices, Ham, Surrey.

Jan. 18. **HUNSLET.**—Construction of about 250 yards of 9in. pipe sewer and manholes, in Woodlesford, near Leeds, for the R.D.C. Plans, specifications, and quantities may be seen, and forms of tender obtained of W. B. Pindar, Clerk to the Council, Council Offices, Leek Street, Hunslet, Leeds, to whom tenders are to be sent.

Jan. 18. **SOUTHEND-ON-SEA.**—Construction of sewage pump well, screening chambers, an outfall conduit and main sewer No. 6, all mainly in cement concrete, for the Corporation. The outfall conduit will be 33in. diameter, and the main sewer will vary from 27in. to 39in. in diameter. Both outfall conduit and sewer will be laid in one tunnel, at an average depth of 70ft., the length being approximately 3,000 yards. Plans may be inspected and duplicate copies of bill of quantities, copies of general conditions, specification and form of tender obtained, on application to Ernest J. Elford, M.I.Mech.E., Engineer, Municipal Buildings, Southend-on-Sea, on deposit of £5 5s. Tenders to be delivered to H. J. Worwood, Town Clerk, Town Clerk's Office, Southend-on-Sea.

Jan. 27. **LEEDS.**—Erection of a urinal in Meanwood Road, Leeds, for the Corporation. Drawings and specification can be seen, and forms of tender and bills of quantities obtained of W. T. Lancashire, City Engineer, Municipal Buildings, Leeds. Tenders must be received at the Town Clerk's office.

Jan. 29. **NEWMARKET.**—Laying about 260ft. of 6in. glazed socketted pipes with inspection chambers, etc., at Lode, Cambs, for the R.D.C. For particulars apply to Thomas Gardner, Highway Surveyor, Woodditton, Newmarket. Tenders to be delivered to Sidney J. Ennion, Clerk to the Council, Newmarket.

Jan. 31. **YEOVIL.**—Construction of certain sewers, drains, and other works, within the borough and in the parish of Yeovil Without, for the Corporation. Drawings may be inspected and specifications and forms of tender, with schedules and quantities, can be obtained on payment of £2 2s., on application at the office of the Borough Surveyor at Yeovil, or at the office of T. and C. Hawksley, Civil Engineers, Caxton House, Westminster, S.W., on and after Jan. 10. Tenders to be addressed to the Town Clerk at his office, Yeovil.

ROADS AND CARTAGE.

Jan. 14. **CHELMSFORD.**—Supply of broken granite for the repair of the main roads in the county of Essex, to be delivered at various railway stations and wharves as per schedule, which will be forwarded upon written application to the Chief Surveyor, Chelmsford, on or before Jan. 12. Tenders to be delivered to Percy J. Sheldon, M.Inst.C.E., Chief Surveyor to the Council, Office of the Chief Surveyor, Chelmsford.

Jan. 15. **OVERSTRAND (Norfolk).**—Execution of the following works at Overstrand, Norfolk, for the Erningham R.D.C.:—Construction of a new road, sea wall, and gangway approach to the beach. Plans can be inspected and the specification and quantities obtained at the Post Office, Overstrand, near Cromer. Tenders are to be delivered to the Chairman of the Council, care of T. Ling, Northrepps, Norwich.

Jan. 17. **SOUTHFIELD.**—Executing necessary works of repair upon Inner Park Road, Southfield, for the Council of the Metropolitan Borough of Wandsworth. Specification and drawings may be seen, and forms of tender obtained, at the Borough Engineer's Office, New Streets Department, 56, East Hill, Wandsworth, S.W. Tenders must be delivered at the Council House, East Hill, Wandsworth, S.W., and may be placed by the person tendering in the box provided. Fair wages clause.

Jan. 18. **LONDON.**—Supply of Jarrah Paving blocks and creosoted deal paving blocks in accordance with conditions of specification, for a period of twelve months from April 1, for the St. Pancras Borough Council. Official forms with any further information, can be obtained on application to Wm. Nisbet Blair, M.Inst.,C.E., Borough Engineer and Surveyor. Tenders to be delivered at the offices of the Works Department.

(*Continued on next page.*)

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Telephone: 611 Loughborough. Telegrams: Bricks, Hathern Station.



Jan. 20. **CHESTERTON.**—Paving the footways throughout Alpha Road, situate in the Urban District, with Atlas artificial stone paving slabs, according to plan and specification prepared by the Surveyor to the Council, and to be seen (by appointment) at the Council Offices, Chesterton Road. Tenders are to be delivered to John D. Bland, A.R.I.B.A., Surveyor, Council Offices, Chesterton.

Jan. 22. **CHELMSFORD.**—Supply of Norway granite kerb and setts, for the Essex County Council. Forms of tender and all information and particulars can be obtained of Percy J. Sheldon, M.Inst.C.E., Chief Surveyor, Office of the Chief Surveyor, Chelmsford, to whom tenders are to be sent.

Jan. 22. **HAILSHAM.**—Supply of road materials and cartage of same, for the R.D.C. All materials must be delivered at the respective stations, or other places specified, before Sept. 30. Three forms of tender have been prepared, as follows: (a) supply of materials to be delivered by rail to stations; (b) supply of materials to be delivered to the sides of the roads; (c) cartage of materials from railway stations to the sides of the roads. Tenders to be sent to Edmund Catt, Clerk to the Council, Clerk's Office, 17, London Road, Hailsham.

Jan. 22. **BIRMINGHAM.**—Supply of materials for one year, ending March 31, 1911, for the Public Works Committee:—Granite kerbs, setts, crossing stones, chippings, flags, paving bricks, wood paving blocks, ragstone, gravel, sand, and slag. Forms of tender, copies of conditions, and specifications may be obtained at the City Surveyor's Office, Council House, Birmingham, on deposit of £1. Samples of materials tendered for must be sent, carriage paid, to Henry E. Stilgoe, City Engineer and Surveyor, The Council House, Birmingham, to whom tenders are to be sent. The person whose tender may be accepted will be required to provide approved sureties in sums of £300 each for the due performance of the contract.

Jan. 22. **NORWICH.**—Supply of gravel, flints, and chalk, team labour, tools, wheelbarrows, and handcarts, for the main roads for the year ending March 31, 1911, for the Norfolk County Council. Specification, lists of stations, staithes, pits, and sections of roads and tender forms, may be obtained from T. H. B. Heslop, M.Inst.C.E., County Surveyor, The Shirehouse, Norwich, or from the following district surveyors:—R. G. Coates, Acle; M. Brown, North Walsham; D. Johnson, East Dereham; W. W. Gladwell, North Buckenham; H. G. Kaines, Loddon; J. Garratt, Fakenham; A. Fowler, Wymondham; R. Gibson, Gayton; J. Kennedy, Docking; A. E. Peake, Stoke Ferry, S.O.; R. Nelson, Watlington; T. Brown, Ashill. Tenders to be sent to the Clerk to the Council, The Shirehouse, Norwich.

Jan. 25. **KINGSTON-ON-THAMES.**—Supply of high-class granites, basalts, and tar macadam, at railway stations or wharves, also flints and fine gravel for footpaths, either at stations or wharves, or at the roadside, for the Surrey County Council. Also hauling from stations or wharves, and for day work upon the several main roads. Specifications, schedules, and forms of tender may be obtained on application to the County Surveyor, County Hall, Kingston-on-Thames, to whom tenders must be sent.

Jan. 7. **ROTHERHAM.**—Making-up of the following streets for the Corporation:—Alsing Road and Pembroke Street ,including 2,910 super yards of gritstone sett paving. Drawings and specifications may be seen, and forms of tender, schedule of quantities, and other particulars, obtained from Ernest B. Martin, Assoc.M.Inst.C.E., Borough Engineer, Town Hall, Rotherham. Tenders must be forwarded to W. J. Board, Town Clerk, Town Hall, Rotherham. Fair wages clause.

Jan. 27. **WANDSWORTH.**—Forming new roads and paths and laying out grounds at the new infirmary, St. James Road, Wandsworth Common, in accordance with the drawing and specification prepared by the Architect, J. S. Gibson, 5, Old Bond Street, W., for the Guardians of the Union. Drawings, specification, and conditions of contract may be inspected, and form of tender obtained, at the Architect's office, upon deposit of £10 Bank of England note. Tenders to be delivered to F. W. Piper, Clerk to the Guardians, Guardians' Offices, St. John's Hill, Wandsworth, S.W.

Feb. 2. **HATFIELD.**—Supply of broken granite and slag required for the main roads during year ending March 31, 1910, for the Hertfordshire C.C. Forms of tender and conditions of contract may be obtained upon receipt of a stamped addressed foolscap envelope, by Urban A. Smith, M.I.C.E., County Surveyor, County Surveyor's Office, Hatfield, to whom tenders are to be sent.

Feb. 2. **HATFIELD.**—Supply of the under-mentioned materials, cartage, etc., required for the main roads during year ending March 31, 1911, for the Hertfordshire C.C.:—Hand-picked surface flints, dug gravel, hoggin, shingle and sand, team labour. Also purchase and removal of road drift accruing from the main roads for the like period. Further particulars and forms of tender can be obtained of Urban A. Smith, County Surveyor, County Surveyor's Office, Hatfield, to whom tenders are to be sent.

Feb. 16. **GLOUCESTER.**—Supply of stone for use on main roads, for the year beginning April 1, 1910, and ending March 31, 1911, for the C.C. Forms of tender can be obtained from the County Surveyor on and after Jan. 22. Tenders must be sent to E. S. Sinnott, M.Inst.C.E., County Surveyor, Shire Hall, Gloucester.

MISCELLANEOUS.

Jan. 17. **ST. AUSTELL.**—Erection of a concrete cottage at Trewoon, St. Austell. Plans, etc., may be seen with J. M. Best, to whom tenders should be sent.

Jan. 17. **MOLD.**—Execution of the following works, for the Flintshire County Council:—1, painting and repairing Mold police station; 2, paving Mold Council schools; 3, repairs and improvements, Buckley police station. Particulars can be obtained from the County Surveyor, County Offices, Mold, to whom tenders are to be delivered.

Jan. 17-22. **BIRMINGHAM.**—Supply of stores for one year, ending March 31, 1911, for the Public Works Committee: Lias lime, Portland cement, drain pipes, gullies, gully pans, brown bricks, timber, drysaltery, castings, iron and steel ware, clothing, lamps, glass, enamelling, brooms, hose pipe, rubber goods, incandescent mantles, and miscellaneous stores. Samples and patterns may be seen on application to the storekeeper at the Lamp Department, Park Street, and the Corporation Wharf, Sheepcote Street. Forms of tender copies of conditions, and specifications may be obtained at the City Surveyor's Office, Council House, Birmingham, on deposit of £1 for each copy. Samples of goods must be sent, carriage paid, to the undersigned; the samples of Portland cement, 4lb. in weight, to be delivered by January 17. Tenders must be delivered to Henry E. Stilgoe, City Engineer and Surveyor, The Council House, Birmingham.

Jan. 20. **GLASTONBURY.**—Supply and delivery of six D fire-clay retorts, 22ins. by 15ins. by 10ins., fire-bricks, and fire-clay and Ewell bricks; one clinkering door and frame, etc.; for the Corporation. Particulars from Jno. Morland, Wyrral, Glastonbury, to whom tenders are to be sent.

Jan. 20. **LONDON.**—Services and materials required for one year from March 31, 1910, for the Corporation of Lambeth:—Supply of men, horses, and carts, cartage of materials, etc., removal and disposal of house refuse from the three outer wards, smith's work, wheelwright's work; also broken granite, broken flints, gravel ballast, sand, tar paving, stock bricks, Portland cement, lime, brooms, brushes, oils and colours, tarpaulins, disinfectants, sewer castings, ironmongery and tools, timber for sewer work. Specifications and forms of tender may be obtained from Henry Edwards, C.E., Borough Engineer, Town Hall, Brixton Hill, S.W., or will be forwarded upon receipt of a stamped addressed foolscap envelope. Tenders must be delivered to Henry J. Smith, Town Clerk, Lambeth Town Hall, Brixton Hill, S.W.

(Continued on next page.)

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Jan. 22. **ST. AUSTELL.**—Erection of six houses at Tregonissey, St. Austell, for W. Tyzzer, according to plans and specifications, which can be seen at the "Seven Stars," East Hill, St. Austell.

Jan. 22. **PLYMOUTH.**—Supply of the following goods and materials for one year, from April 1, 1910, for the Corporation:—3, Paints; 5, ironwork; 7, petroleum oil; 8, broomheads, 9, household brushes; 11, iron and steel; 14, carbolic powder; 15, Portland cement; 16, lubricating oils; 17, tar and pitch; 18, painters' brushes; 19, explosives; 22, soap; 23, wood blocks, soft; 24, creosote; 27, road metal; 28, disinfecting fluid (bacteriological test); 29, granite, kerbs, setts, etc.; 30, white lead, red lead, linseed oil and turpentine; 31, refilling machine revolving brooms; 33, benzoline and motor spirit; 34, tools; 35, India rubber and asbestos goods. Schedules may be obtained on deposit of £1 each. Tenders to be delivered to James Paton, Borough Engineer and Surveyor, Municipal Offices, Plymouth.

Jan. 24. **LONDON.**—Supply of the undermentioned stores and the execution of works, etc., for the 12 months ending March 31, 1911, for the Metropolitan Water Board:—1, Brushes; 2, cast-iron pipes; 3, bricks and cement; 4, clothing; 5, cotton waste; 6, hemp rope; 7, ironmongery; 8, iron and steel; 9, lead pipe; 10, oils (lubricating and lighting); 11, oilman's sundries; 12, paints; 13, pipe laying; 14, ferrules, etc.; 15, sluice valves; 16, small castings; 17, wood plugs; 18, plumbing work; 19, scrap iron; 20, mutton cloths; 21, repair of meters; 22, cartage; 23, tackings and rubber goods; 24, maintenance of weighing machines. Tenders must be made on official forms, which may be obtained from the Clerk, Savoy Court, Strand, W.C., by personal application or on receipt of a stamped addressed envelope. Tenders must be sent to the Clerk, Metropolitan Water Board, Savoy Court, Strand, W.C.

Jan. 24. **CAMBERWELL.**—Execution of work, or supply of stores, materials, etc., contracts to commence April 1, 1910, and terminate March 31, 1911, or alternatively for three years, for the Corporation:—(a) Timber for carts, vans, etc.; (c) white lead, colours (in oil and dry), varnishes, oils, turps, lubricants, soaps, candles, cotton waste and oilman's sundries, tar, pitch, creosote, etc., leather belting, various packings, rubber goods, glass; (d) brooms, brushes and combs; (e) picks, hammers, shovels, forks, gully tools, axes, handles (various), piles, brands, pails, skips, etc., etc., screws, nails, bolts, nuts, and washers, wrought-iron, mild steel, tool and spring steel, cast-iron foundry goods, coach and builders' miscellaneous ironmongery, lead pipe, sheet, etc., unions, valves, etc., W.I. gas, water, and steam tube and fittings, rainwater goods, etc.; (f) hire of horses, harness, driver, carts, vans, brougham, etc.; (j) flints, ragstone, hoggin, hardcore, Thames and crushed ballast, broken granite, York and other pavings, tar materials, lime, cement, and miscellaneous building materials; (k) asphalt paving work; (l) removal of street refuse, trade refuse, and excavation by barge, and house refuse by rail; (n) stoneware drainpipes and sewer ironwork; (o), dininfectants, etc.; (s) electric lamps, incandescent and other gas fittings. Forms of tender may be obtained on application to the Borough Engineer's Office, Town Hall, Camberwell, S.E., by specifying sections desired. Sealed samples may be inspected at Grove Vale Depot, opposite East Dulwich Station. Tender must be delivered at the Town Hall.

Jan. 29. **CHELTENHAM.**—Supply of the following for the year ending March 31, 1911, for the Corporation:—1, Portland cement; 2, forage; 3, stoneware pipes; 4, broken stone; 5, kerbs and setts; 6, coal for boilers, etc.; 7, disinfectants; 8, oils, colours, etc.; 9, castings (for two years); 10, ironmongery; 11, timber; 12, India rubber goods; 13, lead pipes, brass fittings, etc.; 14, tools for highways, etc.; 15, wrought iron, steel, files, etc.; 16, electric light fittings; 17, household goods, sundries, etc.; 18, lias lime, bricks, etc.; 19, cast-iron pipes (for two years). Forms of tender may be obtained from J. S. Pickering, Borough Surveyor, Municipal Offices, Cheltenham, to whom tenders are to be delivered.

Feb. 2. **NORTHALLERTON.**—Execution of the work proposed to be done in connection with alterations and improvements at the Yarm Council School, for the North Riding of Yorkshire County Council. Plan and specification and forms of tender at the school on application to the master or caretaken. Tenders to be delivered to J. C. Wrigley, Secretary, County Hall, Northallerton.

Late Tenders.

London, N.—Accepted for the erection of schools at Crowland Road, for Tottenham Education Committee:—

Rowley Bros., £21,015. Note.—Previously accepted tender withdrawn.

Maryport.—For materials to be supplied and work to be executed in the laying, making, and construction of works of water supply, for the Urban District Council. Mr. J. C. Boyd, A.M.I.C.E., engineer, 18, Bank Street Carlisle.

T. Mandle and Co., Maryport	£15,625 0 0
J. Dawson, Whitehaven ...	14,147 14 4
A. E. Nunn and Co., Bloomfield Street, London, E.C. ...	12,435 8 0
Gilfeather and Beaty, Carlisle	11,684 12 5
C. E. Gibson, Marsden, near Huddersfield	11,523 10 8
H. Arnold and Son, Doncaster and Leeds	11,463 15 1
J. Mackay, Derby	11,182 3 9
R. C. Crawford, Uddingston, N.B.	11,174 15 3
J. Laing and Son, Carlisle ...	11,097 7 10
J. B. Wickstead and Co., Adelphi, London	10,952 11 0
W. Jackson, Edinburgh ...	10,849 16 0
G. W. Deakin, Stacksteads, Manchester	10,837 1 10
R. C. Brebner and Co., Edinburgh	10,608 0 5
C. Bushby and Sons,* Headingley, Leeds	10,586 16 9

*Accepted.

Newton Abbot (Devon).—For erection and completion of the following works, for the Newton Abbot Urban District Council, viz.:—(a) Boundary walls, gates, and railings, etc.; contract No. 1. (b) Sexton's lodge, store, etc.; contract No. 2. (c) Mortuary chapel; contract No. 3; at the new cemetery, Wolborough. Mr. Colebridge D. White, surveyor.

Contract No. 1.

J. H. Pomeroy, Ashburton ...	£1,977 11 3
Parker Bros., Newton Abbot ...	1,622 13 6
F. Stacey, Newton Abbot ...	1,530 0 0
H. C. Jackman, Torquay ...	1,386 5 1
L. Bearne,* Newton Abbot ...	1,424 7 0

Contract No. 2.

J. H. Pomeroy	£814 1 4
Parker Bros.	517 1 1
F. Stacey	496 0 0
H. C. Jackman	497 14 3
L. Bearne*	488 11 4

Contract No. 3.

J. H. Pomeroy	£1,001 3 2
Parker Bros.	915 15 0
F. Stacey	910 0 0
H. C. Jackman	777 5 10
L. Bearne*	788 3 0

*Accepted.

Pudsey (Yorks). — For erection of new infant school in connection with the Primrose Hill School. Mr. C. S. Nelson, architect, Sun Buildings, 15, Park Row, Leeds:—

Accepted tenders:—W. J. Kendall and Co., mason and bricklayer; J. Hargrave, joiner; J. Walker, plumber; Wood and Williams, plasterers; F. Thompson, Stanningley, slater; J. Nicholson, painter. Total, £1,913 7s. 8d. Rest of Pudsey. Note.—78 separate tenders received.

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AN Architect's Assistant, 28; good draughtsman; varied experience; contract drawings, design, details, perspectives, etc.; excellent references; moderate salary.—Box 5405, BUILDERS' JOURNAL Office.

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ARCHITECT, Surveyor, Civil Engineer, P.A.S.I., desires engagement; nine years' varied experience, take charge of office; salary, 50s., or commission on work done.—Box 5450, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (24), with excellent references, urgently asks appointment with architect, builder, or manufacturer. Travelling Studentship winner.—Please reply Box 5426, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's junior Assistant; 5 years' experience, neat draughtsman, details, working drawings, assist with quantities, surveying, and levelling; excellent references; moderate salary.—Box No. 5420, BUILDERS' JOURNAL Office.

ARCHITECT'S and Surveyor's, or Builder's Assistant (21): neat draughtsman, tracer, and colourist, plans and details; good practical knowledge of construction; supervising; assist surveying and levelling; first-class freehand drawer; moderate salary.—F. J. Lester, 51, Redstone Road, Hornsey, N. 5416

ASSISTANT (28), disengaged; good, rapid draughtsman, competent, all branches; varied experience; moderate salary.—E. L. F., "Dunsmore," Horeham Road, Sussex. 5457

BUILDER'S General Foreman (age 42); 12 years' references; quick and energetic with new or alterations; good timekeeper, and abstainer; carpenter. — S., 36, Ecclesbourne Road, Thornton Heath.

BUILDER and Decorator or Estate Manager; sound practical knowledge of all branches; age 43; town or country; 7 years present position; good references. — W., 122, Winchester Road, Highams Park, Chingford.

DRAWINGS, perspectives, quantities, measuring, and estimates, at moderate fees. Architects or builders assisted whole or part time.—G. R. Weeks, 82, Devonshire Road, Ealing, W. 5452

EXPERIENCED, quick, able Draughtsman, 12 years with present firm, 6 as chief, leaving through depression, requires situation; quantities; age 30; state salary.—Noakes, "Coombe Bank," Springfield Road, Bexhill. 5443

GENERAL Foreman seeks re-engagement; town or country; experienced in all branches; carpenter by trade; energetic and reliable; keen on variations; first-class references; abstainer; age 40.—Foreman, 67, Stroud Green Road, Finsbury Park, N.

MANAGER requires appointment, extensive experience in fireproof construction; good connection among architects; references to Government and other work; technical training office and works.—Apply, Box 5458, BUILDERS' JOURNAL Office.

PAPERHANGING, etc., wanted, any quantity, best work at moderate prices; experienced in all latest productions, reliefs, fabrics, emdeca, etc.; best references.—Lane, 24, Faraday Road, North Kensington, London, W. 5421

QUANTITIES, estimates, specifications, fire claims, reports prepared, by experienced man; low charges.—Apply, Surveyor, 20, West Hill, Highgate, N.W. 5444

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WORK'S Inspector (Buildings), London surveyor's representative, estimates, redecorations, experience in sanitation, plumbing, concrete construction, work at least cost; good manager, timekeeper; trustworthy references.—Robert, 119, Felsham Road, Putney. 5463

Appointments Vacant.

APPLICATIONS for Appointments arranged effectively; appreciated by recipients; numerous unsolicited testimonials. — Write now, Herbert Greatorex, Hackney, Matlock.

COUNTY OF LONDON.

The London County Council invites APPLICATIONS for the appointment of ASSISTANT INSPECTORS in HANDICRAFT (woodwork) in London County Council elementary schools.

The scale of salary will be £80 a year, rising by annual increments of £5, to a maxamum of £100 a year.

Applications should be made on the official form, to be obtained, together with the particulars of the appointments, from the Education Officer, London County Council, Education Offices, Victoria Embankment, W.C., to whom they must be returned not later than eleven a.m. on 15th January, 1910, accompanied by copies of three testimonials of recent date.

All communications on the subject must be endorsed "Handicraft," and a stamped addressed foolscap envelope must be enclosed.

Canvassing, either directly or indirectly, will be held to be a disqualification for employment.

G. L. GOMME,
Clerk of the London County Council.
Education Offices, Victoria Embankment, W.C.
3rd January, 1910.

CLERK of Works (temporary) required by Egham Urban District Council.—Applications, stating age, qualifications, and salary required, to be sent to the Clerk, of the Council, 50, High Street, Egham, not later than 15th January, 1910. Canvassing will disqualify.

GENERAL Foreman wanted in large country jobbing business; not over 40; of good address; all-round knowledge of the trade; former experience in the same position most necessary.—Apply, letter only, A. B., 10, Norton Folgate, London, N.E.

JUNIOR Clerk wanted for jobbing builder's office for time; sheets, invoices, and general routine; write, stating age, terms, and experience.—C. K., 136, Blackfriars Road, S.E.

JUNIOR Assistant wanted at once in a quantity surveyor's office for checking, working up; state salary required and give references.—Address, T. Marcus Houghton, 311, Clapham Road, S.W.

WANTED practical energetic young architect, well up in estates development and speculative work, also young Carpenter and Joiner, and a young Bricklayer, accustomed to quick or piece-work, with £200 capital each, well secured at good interest; Free-churchmen and abstainers preferred; good salary or wage with other prospects to suitable men.—State fully, age, experience, etc., to Estates, care of Yeoman, Photographer, Bedale, Yorks.

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REINFORCED Silicate Tubes, 3ft. diameter, suitable for sewers, cesspools, or wells, quite new, will sell; a bargain to clear.—Green, 10, Warwick Court, Holborn.

MIDDLETON'S "Modern Buildings," six volumes, new, offers wanted.—Reginald Tinker, Hartwood Road, Southport. 5456

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Contracts Open.

WAR DEPARTMENT CONTRACT.

The Secretary of State for War hereby invites Tenders for the following work:—The re-appropriation of A.S.C. Block and erection of additions to provide accommodation for the Royal Army Medical Corps, Millbank, London, S.W.

Plans, specification and conditions of contract may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., on Monday, Tuesday, and Wednesday, January 3rd, 4th, and 5th.

Those desiring to Tender and to receive a copy of the bills of quantities must apply to the Director of Barrack Construction not later than Friday, January 7th, 1910. The application must be accompanied by a deposit of ten shillings, which will be returned if a bona-fide Tender is received from the applicant. Cheques or orders to be made payable to the Assistant Financial Secretary and crossed "Bank of England for credit to Army Funds."

Tenders, on the form supplied with the bills of quantities, must be delivered in sealed envelopes, marked "Tender for Reappropriation of A.S.C. Block, Millbank, S.W.," not later than twelve noon on Monday, January 17th, 1910, addressed to the Director of Army Contracts, War Office, Whitehall, London, S.W. The Bill of quantities should accompany Tender in a separate sealed envelope, similarly addressed and marked, "Bills of Quantities, Reappropriation of A.S.C. Block, Millbank, S.W.," with the contractor's name and address thereon.

The Secretary of State does not bind himself to accept the lowest or any Tender.

(Signed) H. DELA BERE,
Director of Army Contracts.

War Office,
Whitehall, London, S.W.,
December, 1909.

Partnerships.

ADVERTISERS, having capital and large timber stocks, would like to negotiate with some practical builder, with a view to letting a large, well-lighted Workshop, replete with modern machinery; or would supply timber and undertake the manufacture of joinery, on profit sharing terms.—Apply to Box 5455, BUILDERS' JOURNAL Office.

ARCHITECT, with capital, desires to meet another with an established practice, London preferred, view to partnership.—Box 5449, BUILDERS' JOURNAL Office.

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MESSRS. BUCKLAND AND SONS have received instructions from H. Wingfield, Esq., the Official Receiver, to SELL by AUCTION, at the DE BURGH ARMS, West Drayton, on THURSDAY, JANUARY 27, 1910,

About 3¼ acres of FREEHOLD BUILDING LAND at Horton Road, Yiewsley, FREEHOLD BRICKFIELD, with plant and large deposit of gravel in Trout Field, Cowley, about 6¾ acres.

FREEHOLD BALLAST PIT and SPOIL BANK near last, now made suitable for agricultural and market garden purposes, about 5½ acres.

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THE BUILDERS' JOURNAL

AND ARCHITECTURAL ENGINEER.

This issue contains Articles on Fire-resisting Construction and Fire Prevention.

Caxton House, Westminster.

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Minimising Fire Risks.

Recent great fires—some of them attended by appalling loss of life—by emphasizing the inadequacy of the older methods of so-called fireproof construction, and the futility of the regulations imposed by municipal authorities and fire insurance corporations in the absence of thoroughly up-to-date structural precautions, should convince all observers of the need that still exists for more complete and more widespread study of the problems of fire-protection. There is still prevalent, we fear, a quite unnecessary counsel of despair in this matter—a disposition to suppose that such calamities are inevitable, and that it is not within the power or ingenuity of man to prevent them. This is a false impression that we have for a long time striven hard to remove. In an article on the subject by Mr. Pordage, Firemaster of Edinburgh, which was printed in the Journal last December, there was a remark that possessed a significance which was perhaps not intended by the writer. He said that he could not speak of the behaviour of reinforced concrete buildings under fire, as he had had no experience of such an occurrence. We trust and believe that his vast and comprehensive practice will continue to lack this important item. It is our firm conviction that immunity from rapid and fabric-wrecking fires is principally a question of initial expense. Failing compulsory legislation, a strong endeavour should be made to educate the public to right views on this question. That architects, as a body, are as yet prepared to impart this enlightenment is not plainly evident. For our part, we have repeatedly urged upon them the desirability of devoting more earnest attention to the subject, and have been constantly and consistently careful to provide them with abundant materials for its closer study. One reason for doing this is the desire to see reinforced concrete work become more architectural in character, and it is to that end that we are constantly urging architects not to allow it to pass out of their hands into those of the engineer. The architect should have at least sufficient general knowledge of the work to supervise and control it, even when he feels that it is best to have it executed by specialists. It has been shown in these pages—not least convincingly in those devoted to advertisements (which, in a reputable professional and trade organ, are always of considerable educative or informative value)—that there is hardly an item in a business building that has not been carefully studied from a fireproofing point of view, with the result that the well-informed architect now has it in his power to specify a structure in which every detail shall be non-inflammable. As to the matter of cost, it is almost superfluous to contend that the relative increase is really inconsiderable when the immense advantages are taken into account. Where the use of non-inflammable materials is backed up by wise planning, with the due provision of the means of confining an outbreak to the compartment of its origin, the owner will be almost entirely free from that haunting dread of fire which is the constant bugbear of many a harassed business man, and he will get an immediate return on his investment in the form of a substantial rebate on his insurance policy.

Royal Academy Honours.

Our most sincere congratulations to Mr. Ernest George, President of the Royal Institute of British Architects, on his election as an Associate of the Royal Academy, are tempered by certain regrets. While rejoicing heartily that this well-merited distinction has been at length conferred on Mr. George, we cannot help feeling that it has been too long delayed. Mr. George's signal services to art and architecture should have been accorded this recognition many years ago, when, one would have thought, his many beautiful buildings, and his dainty and charming etchings and water-colours, should have made an irresistible appeal to a body which, however, has always managed to convey the impression that it is grudging of its honours to architects. It was more than fifty years ago (in 1859) that he won the Royal Academy Gold Medal for Architecture! Nor does this late repentance seem very sincere when we see that the full membership so gracefully vacated by Mr. Norman Shaw is conferred, not upon another architect, but upon a painter, thus rendering the Immortal Forty imperfect by the exclusion of a fourth representative of the Mistress Art. Sir John Belcher (1909), Sir Aston Webb (1903), and Mr. T. G. Jackson (1896), no doubt share our regret that for some utterly inexplicable reason Mr. Reginald Blomfield was not invited to complete the quartette. Perhaps Burlington House has become suddenly fascinated with the Eastern doctrine that "all good things are in threes"; but the Western idea is nevertheless to "act on the square."

An Impossible Wall.

Perhaps the time is not far distant when the employment of a properly qualified architect will be compulsory in the case of every building that is erected. This thought struck us very forcibly an hour or two ago while inspecting, no matter in what quarter of London, a building that has been for more than a century used as a workshop. It is really made up of a number of private houses; and as these were gradually added to the establishment builders were called in to perform feats of derring-do that were purely desperate. The party walls were most recklessly riddled with doorways and windows; and, a large amount of light being essential to this particular industry, a wide and high outer wall was simply honeycombed with additional windows, apparently with utter disregard to the stability of the structure. A shop front inserted in this same wall is simply a marvel of absolute foolhardiness. How it was done is more or less of a mystery, but an opening of about 15ft. wide was cut away, and a fine old oak bressummer inserted to bear the weight of the many tons of brickwork that rise for three storeys above it. A sturdy oak strut resting on the sill and supporting the beam was apparently inserted as an afterthought to allay the nervous apprehensions of somebody who perhaps lived in more degenerate days. This many-windowed wall, which would look frightfully unsafe even if it were constructed of reinforced concrete, has defied all the laws, physical and municipal, for more than a century, but is at length condemned, because it has been found that every time a motor lorry lumbers past it, the superincumbent brickwork executes a sort of fandango on the brave old oak bressummer, and the experience is rather exciting. To look at it while it is in serene repose, is to conceive a desire for instant flight, but to behold it gaily dancing requires more fortitude than the average citizen can command, and so it has got to be demolished before it volunteers to dispense with the harmless necessary housebreaker. Its endurance for so long a period is almost beyond credibility; especially when one reflects on the extent to which buildings are over-inspected! But we saw it with our own eyes only an hour or two ago; yet we should not like to hazard a belief that it is still in existence; and in any case we would not incur the very serious responsibility of conducting any daring enquirer within ten yards of it.

A Matter of Business.

The title of an advertising pamphlet that is noticed on this page is, "What is Wrong with Trade?" and the answer to this very vital question seems to be, in effect, that business men are not sufficiently businesslike, and, in particular, that British traders do not make anything like an adequate use of their opportunities. Corroboration of this view is fairly deducible from a striking communication that has just been sent to us from Canada by a firm handling builders' supplies and specialities. "There must be," our correspondents write, "many first-class lines in England and the U.K. that we might handle, but it seems difficult to get hold of them, or when we have got hold of them, the manufacturers do not seem to be prepared to offer the same inducements as the American manufacturers, and the consequence is we handle many American lines." If this complaint were casual and solitary, it might not carry much weight; but, unfortunately, it is only one of innumerable indications that the Prince of Wales's exhortation, "Wake up, England!" was only too completely justified. It is not that British traders are lacking in courage and enterprise in great matters; but apparently they are rather disdainful of close attention to the minor details that count. The British trader is too prone to rely implicitly on the worth of his goods. It is somewhat difficult to convince him that in these days of keen competition merit and reputation must be backed up by publicity and "pushfulness." The proud boast, "Our goods speak for themselves," is vain and fallacious where it operates as an excuse for failing to advertise them adequately. We are convinced that many a firm could double or quadruple its output but for the two reasons indicated by our Canadian correspondent—namely, that the goods are not kept sufficiently in evidence by persistent advertising, and that many opportunities of trading are wantonly thrown away by the adoption of an inflexible attitude with respect to terms and conditions. As being ourselves of the old British breed, we must confess to considerable admiration for the old-fashioned obstinacy of the trader who says, with a grand air of finality, to all and sundry, "Those are our terms; take them or leave them." The attitude is dignified, not to say heroic; but it does not pay. And we imagine that, after all, our traders are not in business with the object of airing their manly independence, but to make money, and we trust that this little lesson from Canada will not be lost upon them. Very possibly the question is not chiefly a matter of price. That is a detail which is largely regulated by the sheer quality of the goods; and we have a most robust belief in the merits of British manufactures; but if they are to take their due place in the markets of the world, their virtues must be duly proclaimed, and their vendors should not shut the door against themselves by too rigid and too arbitrary an insistence on invariable conditions or methods of business. In other words, the merchant should show more adroitness in adapting himself to variable circumstances. To adopt the words of our Canadian correspondents, he should take every care not to make it difficult for the would-be customer either to get hold of or to handle them. Otherwise he is playing into the hands of his foreign rivals, whose goods may be inferior, but whose methods are notoriously more pushful and more accommodating.

Obiter Dicta.

The Spread of Cement.

How cement is regarded in the building world was clearly shown at the recent New York Building Code hearings, when effort was made by competing interests to restrict its use. More and more it enters into the modern high-class building, and it has already extended from this type to smaller structures.—"*Cement Age*" (*New York*).

A Good Time Coming.

As one who has access to the statistics of the world, I have every hope that the period of depression will pass rapidly away. In the course of the present year there will be a most marvellous improvement in trade. Any political party that got into power might claim the benefit of it, but the world went on whichever party prevailed.—*Mr. G. R. Askwith, K.C., at the West of Scotland Iron and Steel Institute.*

Eastern Arts and "Alhambra Rot."

The artistic horizon of the West having been widened so as to include Japan, it is not surprising that another Eastern country —India—has also appeared within the field of æsthetic vision. This is a more recent development, and the same process of accepting the art of India, by instalments, is observable as in the case of Japan. Indian decorative art is now generally comprehended, but the fine arts of sculpture and painting are still regarded with an indifferent eye. Thirteen years ago a well-known artist and traveller wrote as follows concerning the attitude of certain great authorities in England with regard to Indian art: "They recognised only the art of Greece and Rome, stigmatising everything, in India as 'Alhambra rot.'" Fortunately, as far as industrial art is concerned, the "Alhambra rot" party has passed away, and Indian decoration in its highest forms is meeting with the just estimation from the West that it undoubtedly deserves. . . The old intolerant spirit is decidedly dead, but the new school that has taken its place has not yet realised that in the fields of picture painting and sculpture India, like every other civilised country, had its recognised form of expression.—*Percy Brown* (*Curator, Government Art Gallery, Calcutta*), *in the "Nineteenth Century" for January.*

The World's Great Walls.

Apart from Chinese folk-lore, there seems to be a pretty common consensus of opinion that the Great Wall [of China] was a defensive military work, either to guard the Northern frontier against the Hiung-nu and other peoples of Mongolia, or to cover the trade-route to the West. Such fortified lines are to be found everywhere; they are frequent of mention in the pages of historians both ancient and modern. I need only allude in ancient times to Nebuchadrezzar's "Wall of the Medes," the Long Walls of Athens, the lines by which the Thebans in their death-struggle with Sparta covered their territory, and Antiochus Soter's 180-mile rampart round the Marojian Oasis.—*Edward A. Foord, in the "Spectator."*

Decoration Prevents Destruction.

The main building, flanked by two wings, built in red brick picked out with white stone at the corners and round the doors and windows, still stands as it did when it was designed by Jacques Bruand, one of the great architects of the days of Louis XIV. . . . The house was saved from the fury of the mob in the days of the Revolution. They had discovered fleurs de lys on the gateway, and had condemned the château to be burnt. A friend of the family was one of the crowd, and he boldly asserted that they were not fleurs de lys but fleurs de lances. Discussion waxed fast and furious, and the ridicule which they poured upon the man who had made this diversion made the mob forget that they had come to raze the house to the ground.—"*Saturday Review.*"

St. Paul's, the Impressionist, and the Fog.

Now we are close to St. Paul's Churchyard. Here the mausoleum night [of fog] is lifted for a space, and out of the blankness of an umber-tinted vast swells forth a vague and mystic bulk of grey, a shadow without shading or relief. It is the immense cupola of the Cathedral vising like a mountain above the streets. The sun does battle with the flying mists about the dome, and melts them to a dull and sullen gold, wherein the star of day hangs like a quivering globe of blood. It is a spectacle of sombre yet soft sublimity, such as only the towering imaginations of a Turner, a Doré, or a John Martin, expressed by brushes of opulent wealth and daring power, might conceive or execute.—"*Academy.*"

Who Invented the Slide Rule?

I agree with Prof. E. Cajori in thinking that the Rev. William Oughtred was the first to suggest that calculations could be made more accurately and rapidly by sliding the edges of logarithmic scales together than by using compasses—the method adopted by Gunter; but Oughtred had a poor opinion of this device, and rightly considered that his circular scale was a great improvement on it. A few years before 1671, Seth Partridge rediscovered the sliding principle, perfected it, and gave an almost complete specification for the slide rule which is used to-day.—*Alexander Russell, in "Nature."*

"THE SEVEN STARS," MANCHESTER.

Of the few remaining portions of mediæval Manchester, perhaps the most interesting is "The Seven Stars." This old inn, situated in Withy Grove, the heart of the city, undaunted by the storms of centuries, remains a strong and sturdy monument to the early builders of the half-timbered style, so famous in this country. Its licence, granted in 1356, makes it the oldest licensed house in Great Britain. Besides its picturesque outward appearance, there is much within which commands the attention of the visitor. The disappearance by sale of many grand old pieces of furniture within recent years, is much to be regretted. The valuable, though small, collection of antique silver is very interesting, so also is the grandfather clock, standing where it is said to have stood for over 200 years, on the staircase. The inn was connected to the Collegiate Church, now the Cathedral, in days long since past, by a secret underground passage, the entrance to which has been bricked up, only an arch of early date in the cellar indicating where once the entrance existed. It is to be hoped that Manchester will endeavour to retain this charming and rare link with the past.

We are informed that the extensions to the Victoria Hospital, Accrington, are being warmed and ventilated by means of Shorland's double-fronted patent Manchester stoves, with descending smoke flues, patent Manchester grates, and ventilators, supplied by Messrs. E. H. Shorland and Brother, of Failsworth, Manchester.

* * *

"What's Wrong with Trade?" is a wise, witty, and withal daintily artistic booklet that has been issued by Carl Hentschel, Ltd., the process engravers, whose head offices are at 182-4, Fleet Street, E.C., setting forth the advantages of persistent advertising, and showing the best methods of doing it, and more particularly the spirit in which it should be done. Incidental references to the services that can be rendered by Messrs. Hentschel in providing the illustrations that are essential to prolific publicity are very cleverly insinuated. The booklet (which has on the cover a characteristic Hassall illustration in colours, as well as some peculiarly dainty little marginal sketches, is one of the best persuasives to advertising that we have ever seen.

ENGLISH AND CONTINENTAL IRONWORK: A COMPARISON.*

By J. Starkie Gardner.

Throughout the Renaissance period in France the ironwork, like the architecture, was traditional, but profoundly influenced by that of Italy, for François I. and Henri II. and his consort encouraged Italian artists to work and settle, just as his contemporary Henry VIII. encouraged them to settle here. His fickle continental alliances, however, led him also to favour Germans and Flemings. Such influences were not lasting as regards ironworking, and, except richly decorative locksmithing, which had always been a cherished art in France and neglected here, the ironwork in both countries was alike meagre and utilitarian.

The French Revival.

The first indication of a revival is seen in France, and practically coincides with the accession of Louis XIII. in 1610. The Italian influence had long since waned there, and Henri IV. had himself suffered through it. It is true that ironworking was in full swing in the bordering countries of Germany and Spain, where the smiths were indulging in *tours de force*. But the revival in France is absolutely free from any trace of the influence of either of these countries. It was a new style, gradually evolving, elegant and restrained, in the native taste, but with an ever-growing tendency towards the rich and sumptuous curves and scrolls of the Baroque. Rubens had a commanding influence in France from 1622, when he was decorating the Luxembourg for Marie de Medici, almost to the time of his death. The arts, painting, sculpture, and architecture, felt his influence deeply, how should ironworking escape it? Rubens may personally never have prompted a design in ironwork during his life, but he powerfully influenced, if he did not inaugurate, the sumptuous freedom and splendour of colour which characterised French art for upwards of a century. The ironwork followed the same line as far as the material permitted, and, as might be expected from a material so facile when hot, and in the hand at the outset of gifted craftsmen, wholly unrestrained by traditions and rules, it developed even more rapidly, but more consistently, than in Spain or Germany. Ironworking became a firmly established art in France, and it remained so, apart from modifications due to changes of fashion and sentiment, until the monarchy itself ceased to exist. To trace its development, however, is a difficult task, and one I am not qualified to follow up to-night. The French smiths began to engrave and publish their designs in 1615, following the example set by Androuet du Cerceau. Louis XIII., who died in 1643, had been a great patron, and it is certain that much fine ironwork had come into existence in France during the first half of the seventeenth century, which could hardly fail to attract the attention of travelling Englishmen. The rails round the statue of Henri IV. on the Pont Neuf, ordered by Richelieu in 1640, were lofty and of plain bars with a rich cresting, and Evelyn notes them as a "strong and beautiful grate of iron." He also observes, under date 1649, of the gardens of the Château de Maisons, "the yron gates are very magnificent." These were perhaps those by Jean Marot, who was but thirty years old, but his illustration of them was not published till much later. They would well deserve the encomium of "very magnificent," for they are indeed the well-known gates that now, brilliant and polished, close the Galérie d'Apollon of the Louvre.

*Paper read by Mr. J. Starkie Gardner, on Jan. 14th, before the Architectural Association.

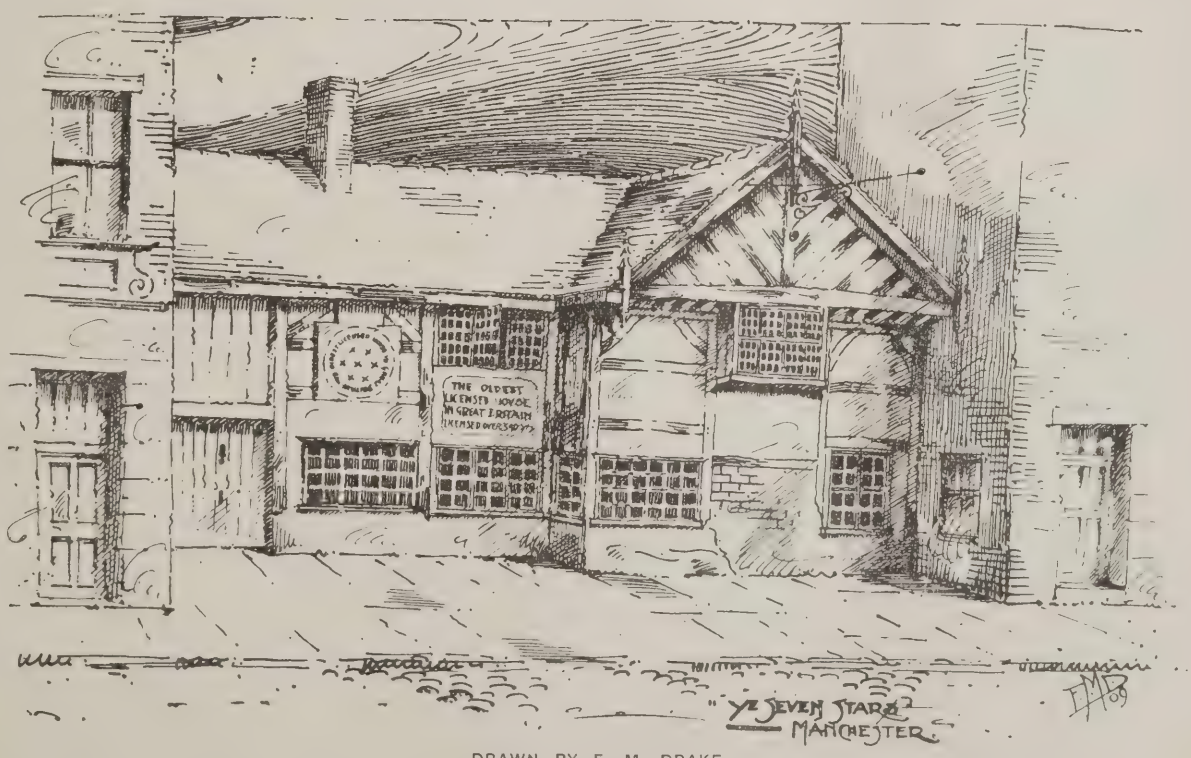
The Widening of the Field.

It is strange that the taste for rich ironwork did not at once penetrate from France to England under the artistic and cultured Charles I., who was such a princely patron of Vandyke and Rubens. Under Cromwell the English Channel was probably a *mare clausum* to French art; but it is almost wholly inexplicable that the reign of Charles II., with its influx of highly skilled Huguenot craftsmen, should have failed to welcome it, just when it was at its zenith in France. As the young King Louis XIV. expanded into the *grand monarque* towards 1660 the field for the smith's art rapidly widened. Royal and noble palaces were approached through spacious courtyards surrounded by iron railings with magnificent gates; while the gardens, parks, and avenues by which they were environed demanded elaborate iron fences, gates, and wickets. Staircases were enlarged into grand architectural features of palatial dimensions, and occupying central positions, required iron balustrades of the most sumptuous possible character. The smiths, thus stimulated, naturally vied with each other in the magnificent pride of their work and the increasing difficulties demanded from its execution. The greatest architects entered the arena of rivalry and supplied the designs. Mansard designed the screens for Clugny and for Meudon; Girard that for St. Cloud, and Gittard that for St. Maur. Men of such boundless influence as Jean Lepautre, Jean and Daniel Marot, Jean Bérain, Jean le Blond, and Langlois, published *Livres de Serrurerie*, or included numerous designs for smiths in their works on ornament. Lesser men followed suit, while the smiths themselves by no means desisted from publishing pattern-books of their own work throughout the reign. These publishers among the craftsmen were, as in all times, by no means the best workmen.

The commissions given by the King for Versailles alone amounted to over a million livres between 1664 and 1680. This extravagance led to the disgrace, and thus, indirectly, to the death of Colbert; as a mistake in the measurement of a window led to a quarrel with Louvois, who only averted disgrace by plunging the *Roi Soleil* into a new war. Of these works, the smiths, Godignon and Dezeutres, executed the great screen, and Luchet the gates, to the Court of Honour at Versailles, at a cost 32,500 livres. Simon Delobel made the doors to the *escalier du Roi*, and numerous balconies; and Caffieri and Lespagnandel the stair-rail. The Royal work was divided impartially, and every capable smith had his share. There was work for all under such a patron.

England Backward.

Though Charles patronised Frenchmen like de Grammont, and raised Louise de la Quérouaille to the peerage, and had his grounds laid out in the French taste of Le Notre by Verrio, no ironwork in the French manner appears in England during his reign. Such as there is is extremely plain, not more advanced than that produced in France a hundred years before.



DRAWN BY F. M. DRAKE.

This, the oldest Inn in the country, had its licence granted first in the year 1356.

There are however a few notices and other slight indications of the existence of some more decorative ironwork scattered here and there, but not enough to be convincing. It is strange, too, that Wren was in Paris in 1665, "prying into trades and arts," as he wrote home, while the superb gates, railings, and balustrades to the Palais Royal, the Bibliothéque, and the palace at Fontainebleau, and in many of the churches were already in position, work such as had excited the admiration of Evelyn sixteen years before passed without notice by him. Wren was no doubt impressed, but he showed no desire to encourage similar work at home.

On the contrary, there is a curiously plain and geometric pair of gates to the Ashmolean at Oxford, built probably by Wren in 1677. The railings to the Sheldonian Theatre at Oxford, completed in 1668, are interesting as associated with a building erected by Wren so soon after his return from Paris. The bars are lofty and straight, but perfectly plain, with the horizontal low door, the only relief being a scrolled head to the central standard of each bay. These are between the great stone piers with heads of fawns—a landmark for visitors. A contemporary engraving shows them to have been put up with the building. A pair of gates of the same construction and destitute of ornament still remain in the corridor behind the rich and later gates of the Clarendon Press.

The taste for fine ironwork was thus clearly not due to Wren, who apparently appreciated it as little as his great predecessor, Inigo Jones.

Tijou Comes to England.

The accession of James made little difference, and it was not until the arrival of the Prince and Pricess of Orange, who were inimical to France, that a taste for rich ironwork in the French manner arose in England. The year 1689 is a momentous one in the history of English smithing, for it introduces "M. Jean Tijou," a mysterious person as to whom little beside his work is for certain known. He was no doubt a French Protestant with whom the Princess of Orange must have been acquainted before or from the moment of her arrival in England. It can, therefore, be safely inferred that he was one of the French Protestant refugees in the Netherlands, and that he came over in the Princess's train. He was unknown, or had at least published nothing, for Guilmard, in his exhaustive work on the *Maitres Ornamentistes* only records him as a *dessinateur anglais* who worked towards 1720. It seems he became a parishioner of St. Martin's-in-the-Fields, for his daughter was married there to Louis Laguerre, the French decorative artist and pupil of Verrio. A Mrs. Ann Tijou, possibly his mother, who died in 1708, another Tijou, and Laguerre were all buried there, and descendants still live in Soho. His own place of burial and residence and his wife's are unknown, and no will was proved.

However, scarce had the Prince and Princess become King and Queen before Tijou rendered his first bill for six iron vanes "finely wrought in leaves and scroll-work," £80, and a rich iron balcony, over the river, to the water-gallery, where the Queen was to reside while the Palace was building. In this balcony she and her maids were accustomed to sit, work, and receive visitors. His second bill, still extant, was rendered in 1690 for the famous garden screen, £755 7s. This was for the Fountain Garden, a semicircle taken out of the Home Park by Charles II., and which Evelyn saw finishing in 1689. It comprised five fountains and three broad walks, two to the great avenues in the Park, the third to the head of the Long Water. Such a screen, of unusual extent and richness, was required perhaps to insure privacy, while clipped yew hedges, beloved of the Dutch, were growing, for the garden faced the principal front of the Palace, and was the first laid out for King William and hurriedly completed. Two "lion gates" formed part of the screen. This work for the water-gallery and garden being finished, there was probably a lull till the new Palace was ready, but in the interval Tijou was at work elsewhere, the Chatsworth work being completed before 1692, at a cost of £528; and on that at Burleigh; and perhaps he was also getting on with the magnificent gates for the triple arches of the new front to the Palace, opening to the garden. They still exist, and are examples of his richest work, and standing in shelter they remain to this day in perfect preservation. Each consists of one oblong panel half the height of the gate, a wide and richly-worked lock-rail, and a square panel beneath, the central pair of the three being the richest. The upper panels are scrolled round a central oval, the whole almost hidden by embossed acanthus and flowers. The lock-rail is as rich, and the square panel below repeats a four-way scrolled design radiating from a centre. All are in the rectangular double frames joined at the angles by short diagonals characteristic of his work. The side gates are similar, but less rich, and above them is a lintel of scrolls and acanthus. They form the chief item in Tijou's 1694 bill for £1,153 12s. 6d., which comprised some plain staircase rails. Two other pairs of gates are shown in Sutton Nicholl's engraving of 1695, which no longer exist at Hampton Court, though one may now be at Eaton Hall.

Tijou's Book of Designs.

From these bills it is clear that from the moment of his arrival he was under the immediate patronage of the queen, who is known to have taken the greatest interest in the gardens and probably ordered the ironwork personally, and on her own initiative, the King, as is well known, being too much occupied and away. In 1692 he published his great book of designs, and paid her Majesty the graceful compliment, as it then was, of portraying her as Juno reclining, attended by Vulcan, Mercury, Saturn, amorini, and a group of the Arts. The man in the frontispiece, with strongly marked features, long hair, and heavy moustache, in redingote and cravat, who is closely inspecting the work of four brawny smiths, is almost certainly Tijou himself, a portrait by his talented son-in-law, Laguerre, who designed it. The other engravers were well-known artists hailing from Antwerp and Amsterdam. This most expensively got-up book is the first of its kind ever published in England, and introduced the custom long before in vogue in France. It is marked as on sale in London without further address, proving that he resided here and believed himself to be a well-known personage. The plates comprise, in addition to designs for Royalty, those for Chatsworth, Burleigh, and Wimpole, with others impossible of execution in iron. The book was "for the use of smiths." Partridge, a London smith, seems to have borrowed one of the baluster designs for the library staircase of Trinity College, Cambridge, built by Wren.

In 1694 a heavy and unforeseen misfortune befell Tijou in the lamented death of his great patron the Queen. Work at Hampton Court practically ceased in consequence till the destruction by fire of Whitehall Palace, in 1698, drove the King to complete it. The Fountain Garden was enlarged for eight additional fountains, and the beautiful screen was removed to the Privy Garden on the south front, then being laid out, where £832 was apparently expended on masonry to receive it. The gates remained still to shut off the garden walks from the Park avenues, and the balustrade for the King's staircase, designed five years before, was ordered from Tijou. This enlargement of the garden and removal of the screen, necessitated 1,442ft. of new iron rails with 172 panels for both sides of the Fountain Gardens which were designed by Talman, clerk of the works, who also estimated the cost at £2,132 16s., at 5d. per pound. Tijou undertook the work, but charged £3,675 for it, and a balance of £1,889 1s. 6½d. became the subject of appeals and petitions. It was unpaid, when William III. died in 1702, and Anne, who cared little for Hampton Court, was loath to pay her own bills, much less those of her predecessors. Tijou enjoyed no more royal patronage, and Talman was not the man to pass such an overcharge. Other existing works of his seem to be gates at the Clarendon Press and Bridewell, similar to those of the triple arch, an entrance to Burley-on-the-Hill, and part of the work at Drayton House.

Tijou's Work in St. Paul's.

His work in St. Paul's is well known. It commenced as early as 1691, with windows for the choir at 6d. per pound, which were made at Hampton Court and brought to London. All the panels, screens, altar-rails, choir-gates, and balusters, in which embossing is extensively used, are by him, apparently aggregating to a total of between £4,000 and £5,000, and extending over a period of nineteen years. His work finished in 1711, when he pressed to have his account settled in terms which make it appear that he was not in easy circumstances after twenty years of work. He left the country, leaving his wife to collect the money and follow him, the family tradition says, broken-hearted. At St. Paul's the plainer work was only given subject to competition with two English smiths, one of whom undersold him. He probably went to Paris to dispose of his copper-plates and designs to a celebrated smith named Fordrin, who later republished them in his own name. He is reputed to have worked at Canons, but if he commenced there he must have abandoned the work, leaving it perhaps to his assistants.

That Tijou was an artist of the first rank in his day can never be disputed. He must certainly have executed the masks and finer embossing with his own hands, for it is by a master. It is also clear that he set out his own work, for a joiner is paid for glueing boards for Mr. Tijou to draw the iron screen upon. We may reproach Tijou for redundant richness, and that the actual smith's work is little more than material to hang his foliage on. He was clearly an artist and an embosser, but never a practical smith, as is evident from the designs he published.

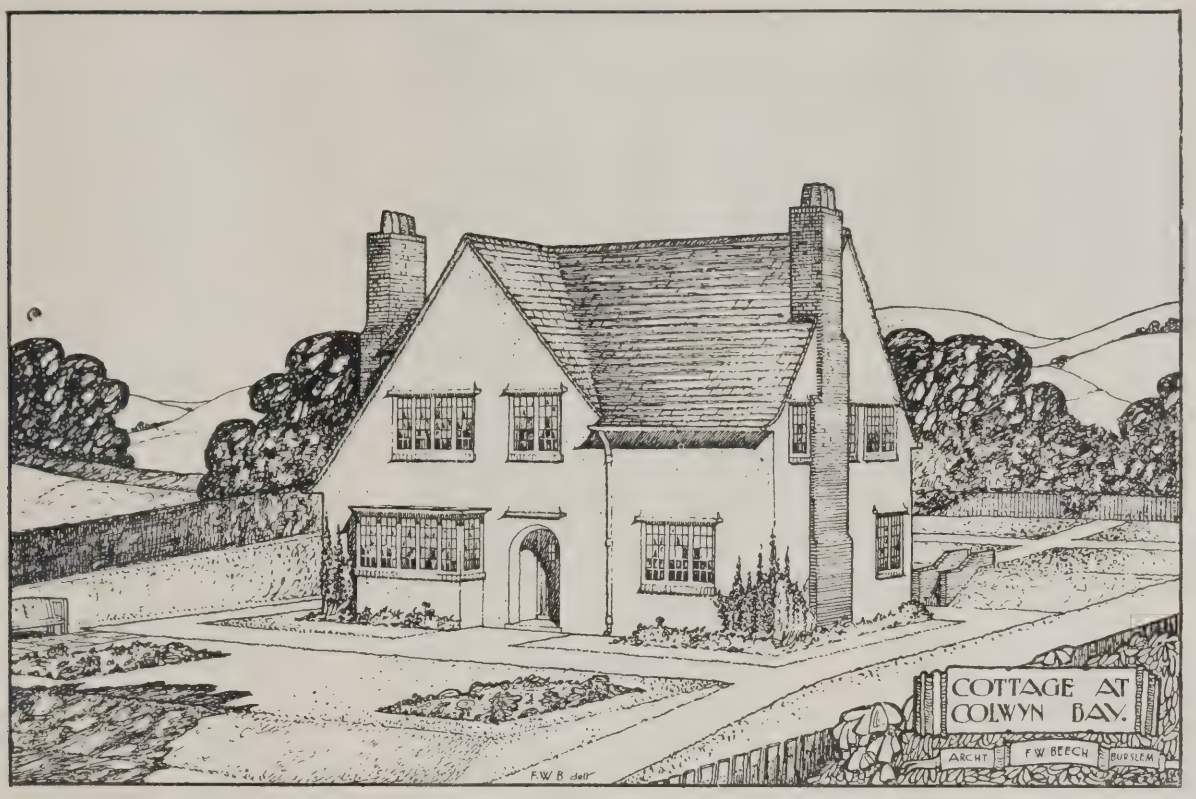
Huntingdon Shaw.

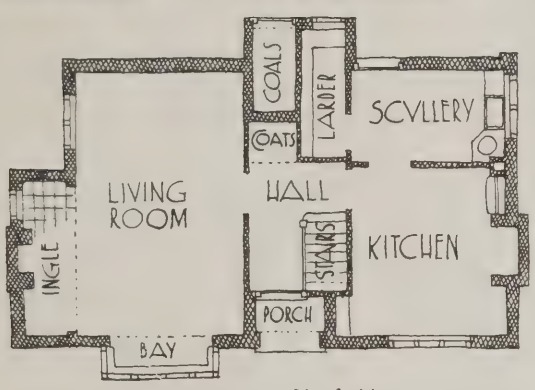
The credit of the work has been assigned to Huntingdon Shaw, a smith of Nottingham. There is no evidence to sustain such a claim, which rested solely on the inscription on a monument in Hampton Church, and it has been conclusively demolished. We may, however, believe that the tradition had some basis of fact if we please, for Tijou must have had a working foreman, his works were for a time at Hampton Court, and Shaw's death in 1710 almost coincides with Tijou's relinquishing business. Shaw was never either a master craftsman or designer, and as far as actual proof goes there is none whatever that he was even a smith. His estate nevertheless adorns the new Victoria and Albert Museum, as our only representative of smithcraft, though an official inquiry made by the Board of Education had demonstrated that Shaw's name is nowhere recorded in connection with any ironwork at Hampton Court or elsewhere.

I have dwelt at some length on Tijou, for whatever we may think of his work, and no one visiting St. Paul's can deny that it is appropriate and beautiful, he alone raised smithcraft from the lowest level into a flourishing craft, patronised almost immediately by Royalty, and almost the entire aristocracy of the country. As designs, most are essentially in the French taste of Louis XIV.; but when executed the work becomes something different. Whether modified by the taste of the patron, or the architect with those buildings it is so generally associated, it appears, as I am pleased to think, more English in design, less grandiose and assertive, stronger and more practical.

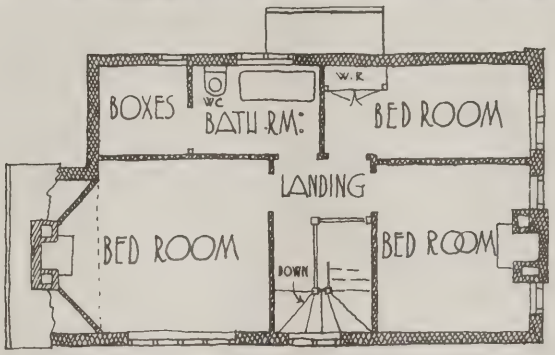
Wren Ignores Tijou.

We have some ground for believing that Tijou's very florid ironwork was not to





GROVND PLAN



FIRST FLOOR PLAN

COTTAGE AT COLWYN BAY. F. W. BEECH, ARCHITECT.

This cottage has been erected in the Nantyglyn Valley, and has beautiful mountain and sea views. The front and side elevations are rough cast and the windows have lead lights with wide cames. The roof is of brindled sand-faced tiles. The ingle nook is faced with narrow sandfaced bricks with wide joints. The living-room has a wood block floor. All interior woodwork is treated with two coats brown Solignum, and all exterior woodwork two coats grass-green Solignum. All doors have antique Norfolk latches. The cottage has been built from the designs of Mr. F. W. Beach, of Burslem, by Messrs. Bond and Sons, of Colwyn Bay.

Wren's taste, and, therefore, that he was no willing patron, for, while he extols Grinling Gibbons in his memoirs, he is silent as to Tijou. This is strange after an association of twenty years. Tijou ignores Wren in the dedication of his book of designs; he sent his estimates and bills direct both to the Crown and to the Cathedral authorities, and the indoor work at Hampton Court, such as would naturally be left in Wren's hands, like the balustrades to the King's and Queen's back staircases, the Privy stairs, Lord Portland's, and others, are as plain as can be, with no traces of the beaten leaf work of which Tijou was so lavish.

When Tijou disappeared, his apprentices, assistants, smiths, or whoever he employed must have remained. Whether he actually brought any foreign workmen with him is unknown, but none are heard of after his departure. Presuming Shaw to have been his foreman of works, he, too, had departed, and the road was clear for successors. The only work in the Home Counties, however, that can certainly be attributed to a pupil is a pair of gates made for Canons, and now at the Durdans. They are designed after Tijou's style, but not carried out by a masterful hand.

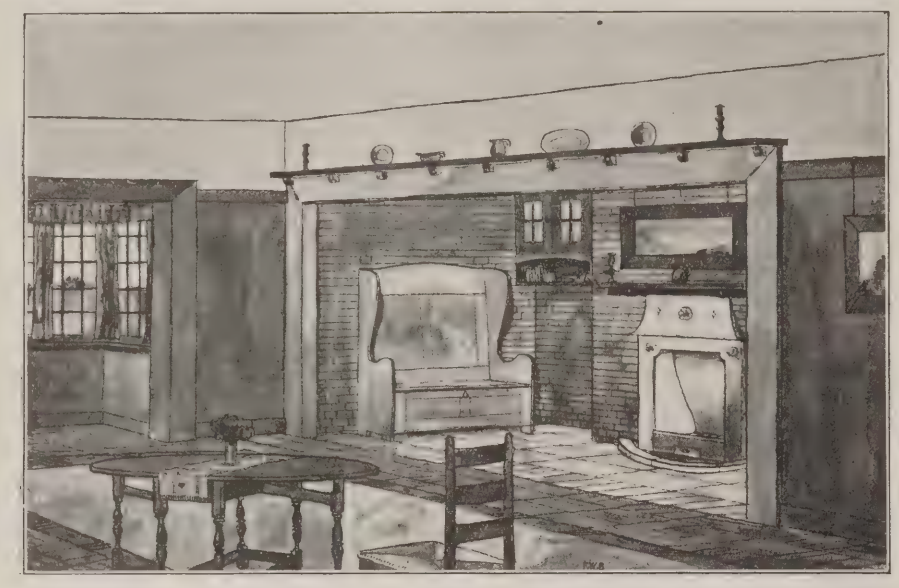
Robert Bakewell.

Robert Bakewell was probably one of his original assistants, but must have seceded before 1707, perhaps from ill-health. He adopted Tijou's style, but diverged from it greatly as time went on. He made a summer-house for Melbourne, the work on which was interrupted by long illnesses, and not finished till late in 1711. He then set up a workshop in Derby, and his work is widely spread over this and neighbouring counties. We hear of him for over a dozen years more, and he probably worked on much longer. Two brothers at Chester followed more or less in Bakewell's footsteps, and produced some very important and noble and original forecourt screens. They may have worked at Drayton House, but so far are first heard of some time after Tijou had departed. A very fine smith at Bristol had a great vogue round about, and executed splendid work in the manner of Tijou, though his designs were often weak and bizarre. These men practically monopolised the West Country and the Midlands, but, strange to say, no disciple of Tijou's settled in the Metropolis, and the very distinctive styles these men introduced died out with them.

Thomas Robinson.

The English style came into existence and developed side by side with Tijou's work. As far as can be traced at present, Thomas Robinson is the man to be most honoured.

The earliest mention of this name I have yet met with is in 1697, when he had produced the beautiful railing to the Morning Prayer Chapel in St. Paul's Cathedral. The fine leaf-shaped spikes on hollow balls, fashioned by the hammer, the latter from sheet-iron, and the more massive standards between, are excellent work in the English spirit. Two years later we find Robinson supplying the wrought windows for the Cathedral at 5d. per pound, when Tijou was getting 6d. Later other work followed, which it is needless to specify. The Cathedral accounts showed that he was employed until 1711, when Tijou's departure left him a clear field. In this year he was erecting the very fine gate and railings at New College, Oxford, and an eye-witness records that he was an "ingenious" smith, at that time the term of highest praise, and that his works were at Hyde Park Corner. There are thus several works known of his, and from these it is possible to identify many others, though less certainly than in the case of Tijou's followers, whose mannerisms leave us in no possible doubt. Conditions of work in London make it so very easy to appropriate other people's ideas. Other names have come to light, men perhaps taught in Robinson's workshops, and yet others will be discovered, all working practically on much the same lines. Robinson, however, must have had a long career or very capable successors. Indeed, I have been told that the firm con-



COTTAGE AT COLWYN BAY. F. W. BEECH, ARCHITECT.

The living-room, of which this is a view, has a wood block floor. All interior woodwork is stained with two coats of brown Solignum. The ingle nook is faced with narrow sandfaced bricks with wide joints.

tinued as a foundry on the site of Victoria Station till the railway took it over. The effects aimed at by Robinson were lofty and perpendicular, never horizontal, and he obtained them not only by carrying the bars to a great height, but by avoiding interruption of their vertical lines by horizontal ones. The piers were carried right up through and interrupting the top horizontal without any break, and were relatively slender and surmounted by high pyramids of scrolls and finials, with perpendicular effects like those of the Gothic architecture around. The finely designed overthrow to the gates is also aspiring and lofty, and the whole design remarkable for its sparing use of embossed work, a rich appearance conferred by the numbers of sharply crinkled welded water leaves, which diffuse a beaded look over the whole surface. The contrast between this and Tijou's work is very striking, for he and his school never purposely aimed at obtaining commanding and lofty effects by the use of uninterrupted vertical bars, but sought them chiefly through the magnificence and richness of detail of the embossed work.

The Finest Screen in England.

Robinson repeated his success at Trinity College, Oxford, where little of his work now remains, and it seems safe to regard the fine works at Belton and at Beddington as his, these having similar characteristics. It is more difficult to claim for him the immense screen or grille at Carshalton Park, which presents the most dignified and grandly perpendicular effect of any screen in England. This is obtained largely by using massive vertical bars for the piers, which are unusually severe, with solid caps and bases, and limiting and concentrating the scrollwork with telling effect. It was probably erected after 1723, when plans and elevations for the contemplated mansion were engraved. The design betrays French influence, but further research will, I believe, disclose more facts.

By analogy and inference many of the most scholarly and best designed gates in and around London would be assigned to Robinson, among them the gates now at Devonshire House, which our valued friend, Mr. Phené Spiers, has traced back to Lord Heathfield's house at Turnham Green, probably not their original site, whence they were brought in the last century to Chiswick, and quite recently to Piccadilly. There are gates at Clandon Park of the same make, the real history of which is lost in a tradition that they were brought from Naples. I am engaged in classifying and unravelling the history of the numerous gates still existing in London and its environs, now, alas, very rapidly disappearing! This is a difficult task, as appropriation of ideas has always been so easy in London that few distinguishing peculiarities can be relied on.

One rival to Robinson is a smith, presumably of London, who executed several magnificent works in and around Cambridge and elsewhere, with a sufficiently distinctive style.

The Tijou Tradition.

It does not appear so far that any English smiths were directly influenced by French work, except through Tijou, who had been the sole channel, and had introduced by his own example alone a taste for richly worked wrought-iron into England. Entirely French at the outset, it was but natural that Tijou, who was a genius, should after twenty years of residence in England and of intercourse with English patrons and architects, bring it somewhat into line with English sentiment, which in the main is wholly different from the French. Those who had been immediately associated in his work followed his ideas and traditions, but these almost died out in a single generation. On the other hand, our smiths, who were onlookers, caught some of his enthusiasm and imbibed his ideas, but had to find out for themselves how to put them in execution. Embossing, to those who were brought up as smiths, was a difficult, tedious, and expensive process, and they therefore used it sparingly, their designs being modified to suit this condition. Thus was produced the English school of ironwork, of well-knitted, restrained, and graceful lines, combining a simple dignity and fitness which harmonised so admirably with the national temperament and general surroundings. The essentially English treatment may be described as refined, and never approaching the commonplace or vulgar.

Gibbs's Designs for Ironwork.

We were, however, at all times of our history open to receive French fashions and impulses, and ironworking was not altogether exempt. Architecture certainly borrowed much from France, but Gibbs's book of architecture, published in 1728, is the first book by an English architect which includes designs for ironwork. Two plates are devoted to forecourt screens and one to gates. The forecourt for country mansions, however, had become almost a thing of the past before the book was published, and apparently none of the designs were ever executed. The designs appear to be adapted from the French, particularly from the grilles and gates to the front of Versailles, and are evidently subject to some definite and unexplained rules of proportion, for though variety is obviously aimed at, either design might be chosen indifferently, for all produce the same effect. The details are not all actually different from those then in use by our smiths, but purely French details are recognised in the railing with pike-heads and tassels, and the borders of small circles, of which we have seen so much in our London park gates of late. Massive cast baluster standards are also introduced, like those of the railings to St. Martin's-in-the-Fields.

The grand forecourt to Wentworth Castle, built about 1715, with its wide and stately bowed front, also presents a similar sweep of railings to that of Versailles, with lofty gates and wickets in the French taste. These are of long, vertical bars, with the lock-rail low down, under a rich overthrow, horizontally treated, with a pyramid scrolled top comprising the fully displayed arms and supporters of Thomas Wentworth, Earl of Strafford. Many other details suggest French design.

Powis House, in Great Ormond Street, was burnt in 1712, while occupied by the French ambassador, and rebuilt in a sumptuous manner by Louis XIV., who defrayed the cost, though the building was insured. The ironwork is of the utmost richness, and was probably renewed by order of Louis XIV. It is less distinctly French than that to Wentworth, but the fleur-de-lis terminals to the scrolled pyramid tops of the railings, and the magnificent scrollwork buttresses to the gates, etc., are unmistakably foreign. The gates to Newcastle House, in Lincoln's Inn, were also typically French. These have disappeared, and I believe the enclosure to the forecourt at Elvaston is really almost the only one actually of French make existing in England. It is said to have come from the Palace of Madrid, presumably the one near Paris, though I have failed to find any illustration of this château showing such an enclosure.

With the publication of Gibbs's book smithcraft seems to have waned. The few gates that are dated are plain and massive, like those to Gray's Inn and the Temple, and of about Gibbs's date. The grilles to the Mansion House and Bank of England are heavy and severe. The screen to the forecourt of the Horse Guards was probably designed by Vardy, though illustrated in Ware's "Body of Architecture" in 1756. Two or three guides for smiths published at about this time chiefly reproduced French designs. Batty Langley, in his "Ancient Masonry," took his bodily from a German, J. J. Schübler. Jores borrowed from Huquier, and the plates of the "Smith's Right Hand" are also taken chiefly from French sources. Few, if any, of their designs were ever carried out in England.

Discussion.

Mr. Matt. Garbutt, in proposing a vote of thanks, observed that he had rather misunderstood the title of the paper. Instead of being a comparison between English and French work, it was chiefly a careful account of the work of Tijou and the English smiths that succeeded him, and whose names were comparatively unknown. He was much pleased that Mr. Gardner had made such valuable discoveries with respect to English ironwork, which, in common with most artistic work, had received very little appreciation. They had seen a fine selection of illustrations, which were nearly all the work of Tijou. They were not, however, all examples of blacksmithing. It was seldom, indeed, that they got a piece of pure blacksmithing. He remembered referring to a piece of ironwork, while in conversation with a smith, as being the work of a blacksmith. "Oh," said the smith, "that's not blacksmithing, it's joiner's work." The operation in question consisted of cutting the bar iron while cold, and mortising together as a joiner would treat a piece of timber. The use of embossing, and sheet work, was characteristically French, and it appeared in the English work which had been derived from the

French. When they came to consider the vast amount of work that was attributed to Tijou, it became evident that in a good deal of it he could not have had much personal control. In bulk, it was the many years' work of many men. Mr. Garbutt then referred to an elaborate example of Tijou's designing skill, which had been shown upon the screen. This, continued Mr. Garbutt, any smith would pronounce to be impossible of execution. Tijou must have had men under him to correct his more flagrant errors of design. Embossing was, in Mr. Garbutt's opinion, only really effective in ironwork out of doors, where outline was the only thing that told. His own sentiment was against the use of plate work, which would invariably fall away if used in the open air. It was more suitable for use in interiors.

Mr. Maxwell Ayrton seconded the vote of thanks, and expressed himself in entire accord with the remarks of the previous speaker. Although the work of the period chiefly dealt with could claim a certain dexterity of handling, it had lost the simple directness that characterised the earlier work, keeping within the limits of the material, which were rather confined. It was difficult to find more beautiful ironwork than that of the 14th and 15th centuries, in Germany and in Spain. The revival started when, unrestrained by tradition and rules, the smiths themselves appeared to be straining to obtain effects that were entirely foreign to the earlier workmen. The original excellence of treatment, however, was confirmed by a return to the earlier work at a later date.

Mr. Gerald Horsley supported the vote of thanks, and said what struck him as a point of some importance was that the ironwork, described as beginning with Tijou, should only have lasted for two generations. Tijou was succeeded by Robinson, Edwards, Bakewell, and others.

What remained was unpretentious in character, and then only used in the smaller houses. In France it was not so. Ironwork proceeded along with architecture, even as it does to-day. If they followed the architecture from about 1660 down to the present time, they would notice, as in the gates of the Palais de Justice, about 1770, and in many other instances onward, fine ironwork, which suggested derivation from the architecture itself. Charming as the early English ironwork was, it could not be compared with that of the French. True, the English had never had the advantages that the French had enjoyed; when Louis XIV. founded a school for architects in France, England was dependent upon the coming of a Frenchman not so great as Wren.

Mr. Henry Tanner, the chairman, summed up the discussion, and suggested that Mr. Gardner should give a similar paper, being a comparison between English and Spanish ironwork. He submitted that perhaps Shaw had acted as the smith, and Tijou as the designer. Tijou, he thought, must have been a difficult man to get on with, or he would have got more work. He envied him his knack of getting work without giving estimates.

Mr. Gardner, in reply, thanked the audience for their kind reception of his paper, and said that, as it was impossible to condense so large a subject, he had confined himself to a particular time. French influence was largely to be found in English work. In fact, many designs were precisely the same; and it was almost impossible to find in England any designs that had not an exact counterpart in France. It was different with respect to Italy, Germany, and Spain. We borrowed nothing from them, and they borrowed nothing from us. In Germany, continued Mr. Gardiner, nothing finer was to be seen than the Renaissance ironwork. As soon as the low countries became rich, they took up smithing, and smithing of an heroic kind, with the greatest enthusiasm. So, also, was it in Spain. The Spaniards made church grilles which, gradually growing in size, eventually assumed immense proportions, until a height of 90ft. was reached, the work all being done on an anvil, by hand.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION
	NATIONAL MUSEUM OF WALES. The Council desires to receive competitive designs for the erection of a new National Museum at Cardiff. Three premiums are offered of £200, £150, and £100, for second, third, and fourth. The Council have appointed Sir Aston Webb, R.A., Mr. John J. Burnet A.R.S.A., and Mr. Edwin T. Hall, F.R.I.B.A., as Assessors. Particulars and plans of the site will be supplied to competitors on payment of a fee of £2 2s., returnable if all papers are returned within 14 days. Inquiries to be addressed to Dr. Wm. Evans, Hoyle, Director of the Museums, City Hall, Cardiff.
Jan. 31.	PEMBROKE (Co. DUBLIN) LAYING OUT HERBERT PARK. The U.D. Council invite schemes with estimates of cost, for the laying out of above public park, which is about thirty-five statute acres in extent, within their district. A premium of £50, which is to include all expenses, will be paid to the person whose scheme may be selected. All plans, estimates, etc., sent in by the successful competitor to become the property of the Council. The Council will not be liable for any payment to a competitor, other than the above premium to the successful party. A plan of the lands as now existing can be obtained from on and after Monday, 3rd January, 1910. J. C. Manly, Clerk to the Council, Town Hall, Ballsbridge, Pembroke, Co Dublin.
Feb. 1.	OLDHAM, EXTENSION OF THE TOWN HALL. Restricted to Architects practising or residing in the Borough. Premiums of £50, £30 and £20, for the three designs placed 1st, 2nd and 3rd, and a sum of £5 will be paid to all unsuccessful competitors who send in a complete set of plans in accordance with the instructions. Plan of site, with instructions and suggestions for architects obtainable from E. C. Foote, Borough Surveyor, Town Hall, Oldham. Deposit: 21s.
Mar. 1.	GLAZED BRICKWORK DESIGNS AND ESSAYS. A committee of glazed brick manufacturers invite designs for works to be executed in glazed brickwork, also essays as to the advantages to be derived from the use of this material in accordance with conditions to be obtained from J. Johnston Green, 142, Liverpool Road South, Southport. Premiums of 100 guineas, 50 guineas and 25 guineas awarded to designs and essays jointly. Assessor Mr. Max Clarke, F.R.I.B.A., appointed by the President, R.I.B.A.
Mar. 31.	SHEFFIELD: ENDCLIFFE PARK CHURCH. Plans desired for Church for 650, Institute for 150, Primary Department for 95, and Caretaker's Apartments. Premium, not merged in commission, £35. Assessor, Chas. Hadfield, Esq., F.R.I.B.A. Questions until February 10. Delivery on March 31. On receipt of 5s. the Secretary, J. W. Nicholls, 64, Everton Road, Brocco Bank, Sheffield, will furnish conditions and instructions, with plan of site, showing existing buildings, levels and drainage—these not returnable. Deposit returned only to those who send plans.
May 31.	MUNICIPAL OFFICES, KARACHI. The Municipality offer a premium of 7,500 rupees (£500) for the best design, detailed plans and estimates for new Municipal Offices. Cost not to exceed 500,000 rupees, and the style of architecture is left open to the designers. Ferrotype plans of the site and a general arrangement of the floors of the building showing the accommodation to be provided, together with a copy of instructions to architects, will be supplied to intending competitors on application to the Chief Officer and Chief Engineer, Karachi Municipality. A charge of Rs. 5 will be made therefor, which will not be refunded. Each set of drawings must be sent in anonymously, but accompanied by a sealed envelope containing the author's name and address. Each set of drawings and all the documents required, including the sealed envelope, must be securely packed in a wooden box addressed as follows:—The Chief Officer and Chief Engineer, Karachi Municipality, Karachi, India, and forwarded, at the competitor's own risk and charges, in time to reach the Chief Officer on or before the 31st day of May, 1910. It is proposed to apply to Government for permission for one of the chief architects to act as assessor to decide on the design to which the prize shall be awarded. The decision of the assessor will be final and not be open to dispute. The decision of the Municipality will be made within three months of the latest date for submission of designs, and payment of one-half of the premium will be made thereafter to the author of the selected design, the balance to be paid when the further details specified in the instructions to architects have been supplied. On payment of the premium the Municipality will have all rights in the design, with power to erect the building under its own agency, either according to the design selected or with such additions or alterations as it may deem necessary.

Correspondence.

The Editor declines responsibility for the statements made or opinions expressed by correspondents.]

Competitions: The Revised Regulations of the R.I.B.A.

To the Editor of THE BUILDERS' JOURNAL

SIR,—The regulations of the R.I.B.A. were revised so lately as the year 1905, and it must seem strange that after an interval of only four years it should be thought necessary to reconsider the rules then adopted on ceremonial motion of the chairman. During these four years there have been no changes in the constitution of the Institute, nor in the status of the profession, and I am quite unaware that there has been of late any notorious indignity put upon competing architects such as would naturally lead to action by the Institute. It would seem, therefore, that the cause of the present ferment lies within the profession itself.

For fifty years and more the wrongs of the competing architect have been a constant grievance in the profession. This grievance has in the past been a real grievance and a bitter one, but if immemorial customs had not established the usage we should be impatient of what would seem unreasonable assaults upon the methods of those who now promote competitions. The habit of resenting a right social usage may become as inveterate as the more common habit of acquiescing in the continuance of an evil one. In this regard the competing architect has been a sick man for a very long time, but from a burly sufferer making the best of a neglected case he has now grown to be a sort of exotic of the sick-room. The habit of being sorry for himself is confirmed in him, so that when the realities of his condition fall short of the standard of ill-health, he is used to it; he imagines causes and, unconsciously, affects symptoms like a confirmed hypochondriac. It is only by such a conception of the state of affairs that the desire of architects that the "requirements" of the promoters should be rigid and binding is understandable, or the idea that promoters who discard the design recommended by the assessor, are guilty of bad faith is intelligible. Both these points, to name no others, are advanced in the proposed new regulations, and I would submit that the first is hostile to the cause of architecture and the interests of architects: and that the second is an indecorous extravagance of language; the first tends to reduce the competitive planner to the level of the solver of jig-saw puzzles, with half the pieces missing, and the second assumes an undertaking on the part of the promoters that they will accept eternal responsibility for any caprice or mental ill-health of the assessor.

The intention of all regulations which have from time to time been framed, has been to secure that so far as is possible the awards in architectural competitions shall be arrived at by a mechanical, impartial sifting out of those designs which do, in fact, technically and in their architecture, best satisfy

the real requirements of the promoters. That I think will be conceded to be a fair statement of the case. Nevertheless, in attempting to enforce a mechanical and impartial adjudication, it is a great mistake, surely, to demand that any design which violates the instructions shall be excluded from competition. It is true that it sometimes happens that competitors who have restrained their convictions and produced commonplace designs strictly in accord with the instructions have found themselves passed over by one who has allowed his enthusiasm to over-ride his ambition for a prize; but the remedy surely lies in *removing altogether the obligation to observe the instructions*, not in starving the inventive powers of the competitors. The merit of any design consists in effective architectural expression being given to a just balance of advantages. A good design is an idea, and any system which allows client or promoter to assert at the outset what his exact detail requirements are, and demands that under no circumstances will he reconsider his requirements, modify or adjust to the needs of the case, is not only destructive to the hopes of architecture, but to all enthusiasm in the designer. The conditions should be drawn much more fully in describing the uses of the building, the commercial interests of the town, and the prejudices and ideas of the promoters. But of restrictions there should be none. If the promoters asked for a council chamber and a design provided even a bear pit, or an operating theatre, no harm would be done; but if the promoters pledged themselves, as they are invited by the regulations to do, to exclude any design that did not show a skylight in the Mayor's parlour, let us say, a great deal of harm would be done, for the requirement is probably quite ill-considered, and is merely included because some pertinacious town councillor has somewhere seen a top-lighted room which he admired. The system of competitions seeks to replace the advice of one man, by the suggestions of many; but if the suggestions of the many are to be judged by restrictions, the system must be a failure—a sort of egg and spoon race.

The strong feeling which has always been aroused when the award of the assessor has not been adopted by the promoters has no doubt been due to the light irresponsibility and coarse motives which have so often marked this event. When the motives are honest and the discard undertaken with serious reluctance, no objection can surely be raised by any reasonable being. What architect with a mind unpoisoned by failure in competitions could raise it? If the promoters have obligations to fill to the competing architects, so also are they under grave obligations to those in whose behalf they act, nor is public indifference to the style of public building a sentiment likely, I think, to commend itself as hopeful for architecture. A public building should properly be one that expresses the time, place, and persons with whom its birth is associated, and not the fashion of building favoured by architects at that date, and any group of architects who would urge promoters of competitions to undertake to accept a style of building they may detest, will fail. As a mere matter of history, in no competition have the promoters ever undertaken to accept the award of the assessor, that is to say, they expressly reserve the right to decline to put up and pay for a building they do not like. I am persuaded that the open competition system is a bad one. Take the system of school prizes—and, of course, I am in the minority, but when I hear as I heard lately a distinguished architect, eminent for his success, who, by competitions, has carried out many buildings, refer to his "many disappointments," I begin to wonder what it is architects expect of competitions. Is it a declaration similar to that of the referee in the story book, who decreed "all have won, and all must have prizes?" For myself, I sympathise with the judge whose only regret was that he could not give a verdict against all parties.

BULKELEY CRESWELL.

The General Election and Architectural Copyright.

To the Editor of THE BUILDERS' JOURNAL.

DEAR SIR,—I enclose herewith an abstract of the recommendations of the committee (Lord Gorell presiding) appointed in March last by the President of the Board of Trade, to report to the Government as to the legislation necessary to give effect to the revised International Copyright Convention signed at Berlin in November, 1908. The extracts are as follows:—

"As to architecture, the Convention goes beyond British law, which forbids copying plans of a building, but not copying the building itself.

"After due consideration the committee, by a large majority, have come to the conclusion that it is desirable to accept architecture as matter to be protected, both for the sake of uniformity and because it deserves to be protected, and presents no difference in principle from that applicable to the sister arts.

"They further consider that protection should be given against copying buildings, whether by use of plans or otherwise, and against use of drawings or models for other purposes than those authorised and by persons other than those supplied therewith.

"With these exceptions most of the subject matters enumerated in the article are already protected in this country, and the committee recommend its adoption.

"As to the position of copyright in the overseas Dominions, the committee understand that it is proposed to call a conference of Colonial representatives, and it seems to them of the utmost importance that the Colonies should come into line with Great Britain and that, so far as possible, there should be one law throughout the Empire."

It may be that some members are not aware of the result of the deliberations of the committee, but as will be seen they, by a large majority, consider it desirable that architecture should be "protected" not only in the British Isles, but also in our overseas Dominions.

As a matter of practical politics affecting the profession at large, now is the time to obtain the necessary "pledges" in support of architectural copyright, and I venture to make a suggestion and recommendation that individual members of the profession should send a written request to all the Parliamentary candidates in their constituency asking whether, in the event of their being returned to Parliament, they would support a Bill to give effect to the recommendation of the Law of Copyright Committee, 1909, as applied to architecture in particular.

All the answers should be kept until the result of the election is known, and later the replies of the Members of Parliament forwarded to a representative committee of the profession, which could be appointed to deal with the matter.

In the event of legislation affecting the law of architectural copyright being submitted to Parliament, the members supporting the Bill could if necessary be very properly reminded of their promise.

HERBERT SHEPHERD.

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INDEPENDENT ARBITRATION ESSENTIAL.

At the annual meeting of the Liverpool Law Society, held recently, Mr. George Layton endorsed the President's remarks as to the unwisdom of allowing disputes to be settled bureaucratically. It had always seemed to him to be unfair that a contractor who took a contract from a Corporation, Dock Board, or private individual was obliged to leave any dispute to the arbitration of the engineer of the other side. The consequence had been that many unfair awards had been made. They could hardly expect an official, if he had made a mistake, to give an award against himself (hear, hear). In his opinion, the practice should be made illegal.

THE MEASUREMENT OF ILLUMINATION, DAYLIGHT AND ARTIFICIAL.

WITH SPECIAL REFERENCE TO ANCIENT LIGHT DISPUTES.*

The daylight and artificial illumination of buildings is a matter which the architect is constantly called upon to determine, and to determine in most cases for the whole life of the building. It is difficult to imagine any building where the decisions of the designer with regard to the shape and size of windows and the provision of artificial illuminants are not of the utmost importance. In schools, libraries, hospitals, and workshops the efficiency and sufficiency of the lighting has to be his first consideration, and in very few buildings indeed can he afford to make it a secondary one.

Disproportionate Window Space.

At the same time, rooms which are built with an unduly large proportion of window space can only be warmed in winter with difficulty and at great expense, whilst in summer they are insufferably hot. Even greater care has to be exercised in order to avoid excessive artificial lighting, which is not only expensive but extremely detrimental to the eyesight. The human eye, which will readily adapt itself to very large variations of diffused sunlight, which will read print with equal ease at sunset in December indoors and at noon in June outdoors, is extremely sensitive with regard to artificial illumination, and will be strained and injured by anything outside of a very limited range.

Neglect of the Subject.

One would therefore naturally expect the subject of illumination to have been fully investigated by architects and to receive from students as much attention as the proportions of Greek temples. One would expect that it would be the subject of minute regulations in the London Building Acts and in local by-laws, in the regulations of the Board of Education, and in the Government requirements for the proper lighting of factories and workshops. It would be expected that in the intensely populated towns and cities of England, where land is valued by the square foot and almost by the square inch, and where a light well costs a modest competence in dead rent, that the limiting angles of good, bad, and indifferent lighting would be known exactly. But this is hardly what we do find. What is the information possessed by the average architect upon the subject of windows? He knows that the window space of every room should be at least one-tenth of the floor space—text books written 100 years ago will tell him that—and he probably knows that the same proportion in schools should approximate to one-fifth. But how many could say what proportion of the outside daylight is enjoyed in any room; how many could say what difference would be caused by any given degree of obstruction; or whether the height of the window head makes any difference? How many can define the relative efficiencies of a square foot of glass in a wall and a square foot of glass in a skylight? How many can tell a client what would be the relative amount of light absorbed by or reflected from wall papers of different colours, or by different kinds of glass?

Artificial Lighting.

With regard to artificial light, many architects know that a provision of 30 candle-power per square of 100ft. super of floor area is considered ordinary, that 50 candle-power per square gives bright, and 60 candle-power per square gives brilliant effects. But how many can say at what height from the floor the lights should be placed in order to give these effects, what would be the results at other heights, or what would be the effect of using frosted or tinted globes or shades, and whether the result would be the

*Substance of a paper read by Mr. P. J. Waldram, F.S.I., before The Society of Architects, Jan, 13th.

same with many lights or few? Is it too much to say that the ideas of the average architect upon the subject of illumination are almost as hazy as those of other people? If so, then that is saying a very great deal.

There is no technical literature on the subject. The average architectural school gives perhaps one lecture on window areas to third or fourth year students, whilst the subject of different systems of artificial lighting is ignored as completely as it is in the syllabus and papers of the qualifying examinations. One seldom finds illumination referred to in the technical press, and then only in vague and general terms, and as far as the author is aware no architectural institution has ever suggested the formation of a committee to investigate it and collect information.

The Building Act and local by-laws merely demand a minimum proportion between window and floor area, irrespective of whether such windows are at the bottom of a deep area or overlooking a park. The Regulations of the Board of Education for new schools (1907) are excellent as far as they go, except that they forbid the most efficient possible window, viz., a ceiling light. But they do not go very far, and they are absolutely silent upon the subject of artificial lighting. Details for the approval of the Board are required of sanitary arrangements, ventilation, boundary walls, desks, fireplaces, etc., but artificial lighting is not even mentioned. The requirements of the Home Office with regard to the lighting of workshops is that it should be "adequate," which is, to say the least, a little indefinite.

The Measurement of Light.

The reason for this state of surprising ignorance is not far to seek. Exact knowledge is impossible without measurements and standards; and the measurement of light has been unfortunately confined almost entirely to the measurement of the *intensity* of light sources, whilst the measurement of results, i.e., the general illumination to be derived from arrangements of lamps, has been neglected. Hence, we have ample data as to the candle-power of lamps, but no data at all of the illumination at table height which can be secured by using them. A few weeks ago, the author asked three well-known electrical firms to tender for the wiring of a village hall on the basis of a given illumination at a certain height above the floor. The reply of each one was to the effect that having no data on illumination they were unable to tender. Text books tell us that illumination varies inversely as the square of the distance between the source of illumination and the surface illuminated. So it does in the laboratory, with single lights and blackened walls, but it does not do anything of the kind in the presence of the reflecting surfaces of walls and ceilings.

In the second place the measurement of such an everyday matter as daylight has not been considered worthy of attention. In consequence, the inaccuracies and vagaries of the human eye remain unknown, and it is commonly regarded as an efficient instrument for measuring illumination. As a matter of fact, the impressions received by the eye are no more an accurate criterion of daylight illumination than a landscape photograph is a measure of the acreage of a field. A piece of printed paper upon a table in the centre of a room upon a fine day appears to be illuminated to very much the same extent as when it is held outside the window. But try to photograph in the two positions; outside it may require say 1-5th of a second or less, inside it will probably take 5 minutes. The photographic plate records a difference in the relative illuminations of no less than 1,500 to 1; to the human eye this enormous difference is almost imperceptible. This is only one instance of the utter unreliability of the eye as a measuring instrument. Many others might be cited. For instance, most people would feel insulted if it were suggested that they were unable to estimate the relative brightness of different classes of sky such as:—1, Cloudless; 2, blue predominating; 3, clouds predominating; 4, no blue; 5, overcast.



Photo: Topical.

MESSINA: A YEAR AFTER THE EARTHQUAKE AND FIRE.

This view represents the Swiss Village. The houses are one storey ones and largely built of wood.

But nine people out of ten who were not expert photographers would place them in the wrong order. Very few would expect to find that clouds *increase* illumination, still fewer would believe that the illumination from a cloudy sky is more than double that received from a clear blue.

Effects of Wall Treatment.

Again, the effects of different tints of wall paper on the eye are most extraordinary. Nearly everyone would be favourably impressed with the lighting of a room papered in light pink, and would be extremely liable to consider inadequate that of a room with light buff or pale grey walls. Yet the latter colours reflect nearly four times as much light as pink. Certain wall papers mean a very considerable difference to one's bills for artificial light.

How many people would hold up the Strand Law Courts as an example of daylight lighting? But try and read a piece of fine print at sunset in the witness box or counsel's seat of any of the Courts, and afterwards try it at the same hour in the centre of an ordinary office with large windows; the difference is surprising. The chief reason for this is that the windows are high up in the walls, and the enormously high relative value of high angle light is a matter of which the eye takes little notice, and which is seldom properly recognised. Its effect, however, can be easily studied by darkening different parts of any ordinary window with brown paper screens. The loss of the bottom two or three feet in height will hardly make any difference at all, but shutting off a few inches from the top may reduce the general illumination of a room by 30 to 50 per cent.

It will sometimes be found that high rooms on lower floors with badly restricted horizons are actually *lighter* than low rooms on upper floors with the same proportion of glass to floor area and with absolutely open horizons.

In this connection it might be mentioned that the ordinary North light roof would be very much more efficient if the flatter slopes were turned to the north and glazed. The illumination would be greatly increased and the workmen would not stand in his own light when facing South.

Variations of Daylight Illumination.

The daylight illumination of every room varies by several hundred per cent. from sunrise to noon and from noon to sunset; and it also varies from day to day and from month to month. But the wonderful adjustable iris diaphragm of the eye deliberately stops down all illuminations which are above a common level of efficiency, so that the mind is quite unconscious of these large middle-day excesses of illumination, and may very well remain ignorant of them.

A very little consideration of these facts will show that unaided visual impressions are quite worthless as a criterion of the daylight illumination of any room, and how extremely unlikely it is that different experts, trusting to their eyes alone, will arrive at the same opinion; for it is no exaggeration to say that there are few experts who know how to *mistrust* their own eyes to such a degree as will enable them to form approximately reliable opinions.

Fortunately, however, the daylight illumination of interiors can be measured in spite of its constantly fluctuating character; because the proportion of the outside daylight which any room receives is always a fixed ratio. As sky brilliancy increases and decreases, so does the interior illumination, and in precisely the same proportion, except when the room is lit by the direct rays of the sun or directly reflected rays. If the middle of a room receives 1-1,000th of the outside light at sunrise in December, it receives 1-1,000th at noon in June. This proportion is also the same in a scale model of the room as in the room itself. All that is required is a photometer with a large adjustable range and which will record not candle-power but illumination in candle-feet, viz., degrees of illumination equivalent to so many standard candles at a distance of one foot.

Light Measurement a Simple Matter.

The chief object of this paper is to show that the measurement both of artificial and daylight illumination is such a very simple matter, requiring neither special skill nor expensive apparatus, that it ought to be largely undertaken by architects. The photometry of lamps and other light sources demands very delicate and expensive apparatus, specially constructed laboratories, and the exercise of technical and mathematical ability of no mean order. But the photometry of lamps is a matter for the engineer and not for the architect: he is concerned with the results, not the means. The photometry of illumination, both daylight and artificial, can be performed with instruments of about the same size, weight, and cost as a good hand camera, and demands neither technical skill nor mathematical knowledge.

The principle of illumination photometers is to compare the illumination which falls upon a card outside the instrument with the light of a standard electric lamp inside, and

viewed through a slot in the same card. The light of the standard lamp is graduated by turning a milled head at the side of the instrument until the illumination of the slot is equal to that of the rest of the card. The same operation turns an index needle on a dial which automatically indicates the degree of illumination in the slot. The difficulty of balancing lights of different colours is in most instruments met by passing the light through a rapidly rotating section. The resulting flicker is, however, not a little trying to the eyes, and the author prefers the well-known Preece-Trotter type, in which the difficulty is overcome by using slotted cards of different standard tints.

[This method was explained with the help of diagrams.]

The following are a few examples of inside and unrestricted outside illumination :—

Proportion of Unrestricted Outside Illumination Received by Interiors of Buildings.

New Suburban Elementary Schools		
Children's Desks		0·0025 to 0·008
New Urban Technical School		
Class Rooms, Ground Floor, average		0·001
Upper Floors		0·002 to 0·004
Ordinary Offices, Centre of Rooms, average		0·001
British Museum, Reading Room ..		0·007
,, ,, Entrance Hall ..		0·0017
Patent Office Library, Centre of Reading Room ..		0·005
,, ,, ,, Reading Alcoves and Galleries		0·0307 to 0·008
Royal Courts of Justice—Middle of Central Hall		0·0012
,, ,, ,, Courts—	Judges' Seats Counsel Solicitors Jury and Witnesses	0·0007 to 0·0022
House of Commons	Clerk's Table ..	0·0008
	Speaker's Chair	0·0009
	Behind do. ..	0·0002
	Members' Seats	0·0003 to 0·0007
House of Lords	Woolsack ..	0.0006
	Members' Seats	0·0004 to 0·0306
	Members' Lobby	0·001
	Lords' Lobby ..	0·0004
	Central Hall ...	0·0015
	Committee Rooms (Centre)	0·004 to 0·005
Westminster Hall (Centre)		0·0012
Charing Cross Station, Booking Hall		0·0001 to 0·0003
Surveyors' Institution, Centre of Library		0·0015

Obstructions to Light.

In cases where the obstruction of the visible horizon has already taken place, the proportion of light still remaining can be compared with that of other rooms in the neighbourhood; but the more customary problem is to estimate the future damage of a proposed obstruction. This can be ascertained in three ways.

(1) By erecting the proposed obstruction in the form of temporary screens and noting their effect on the percentage of light enjoyed. (2) By reproducing the room and its aspect in a scale model and similarly noting the effect. (3) By deducing the damage from known and recognised data of the difference caused by any given degree of obstruction.

The first two methods are comparatively simple, and they are the only ways open to us at the present time; but if we only had the data referred to in (3) the trouble, anxiety, and needless expense of ancient light disputes might be avoided altogether, and at the same time one of the greatest difficulties connected with town building would become a matter of simple calculation.

Finally, we have to consider what is the real effect of any given obstruction. Over the greater part of the working day it is negligible, for if a room be lit at all at sunrise and sunset, then it has a very large excess between those hours. It may suffer æsthetically, and in rental value, from loss of prospect; but prospect is not as easement.

Seasonable Varieties.

The real loss, as regards reading, writing, and industrial occupations, is that more artificial light will be required in the morning and evening. The extent of this loss can only be exactly arrived at if the average of increase and decrease of outside daylight be known. There is need for exact and authoritative data, but approximately this may be put at a rise or fall of about 1,000 candle-feet in 45 minutes on clear days in June, and in 180 minutes in average weather in December. In other words, at a point in a room enjoying 1-1000th of the outside light the illumination would increase and diminish at the average rate throughout the year of 1 candle-foot per 120 minutes. But a room only enjoying half that proportion would require twice as long to acquire a working light in the morning, and would lose it so much sooner in the evening.

A rough approximation of a standard well-lit room would be one enjoying an average of 1 candle-foot (i.e., a fair reading light), at half-an-hour after sunrise and at sunset on a clear day, which is given by a proportion of about 1-1000th of the outside illumination. Fig. 3 shows approximately the number of minutes of artificial illumination per full *working* day of sunrise to sunset, which would be necessitated in such a room by any given degree of damage. The cost of this can be readily ascertained and capitalised.

The great present-day need is that architects should take an active and intelligent interest in illumination. They can at least insist that gas and electric sub-contractors should guarantee a given illumination at table height of candle-feet. The demand will soon create the supply, and instruments for testing the results are neither expensive nor difficult to use. But above all, we need workers who will record data and results. Architects, and architects alone, can do this satisfactorily, and their labours would benefit not only their own profession, but the whole of the working community.

Societies' Reports.

Ulster Society of Architects.

At the annual meeting of the Ulster Society of Architects, a copy was submitted of a memorial forwarded to the authorities of Queen's University, Belfast, in reference to the teaching of architecture as a fine art. The question of the erection of new buildings for the Queen's University is also an important one; and it was stated that the Council approached the Senate by letter and deputation to obtain, if possible, some assurance that precautions will be taken that not only shall the buildings be designed so as to be a credit to the city and province, but also that no qualified architects, especially members of the society, should be debarred from an opportunity, by competition, of obtaining the appointment of architect for these buildings.

The Council had had attention drawn again to the fact that surveyors and others are being employed to do architects' work, to the serious loss of the professional architect.

The scrutineers having reported the result of the ballot, the following were declared duly elected, viz :—As honorary member, the Right Hon. Robert Young, P.C.; as associates, Messrs. R. Steven Boag, Belfast, and J. M. C. Robinson, Derry. The following is the result of the ballot for officers and Council for 1910, viz. :—President, Mr. R. M. Young; vice-president, Mr. H. Seaver; hon. treasurer, Mr. T. Houston; hon. secretary, Mr. J. St. J. Phillips; members of Council, Messrs. J. J. M'Donnell, W. J. Gilliland, and N. Fitzsimmons; associate members of Council, Messrs. T. W. Henry and H. Lamont; hon. auditors, Messrs. J. A. Hanna and Vincent Craig.

The Institution of Municipal Engineers.

At a meeting of the Council of the Institution held at 39, Victoria Street, London, S.W., at the end of last month, 37 applicants were elected to membership and five to studentship. The roll of the Institution now stands at 679 members and 96 students, making a total of 775. The secretary was instructed to send to the National Association of Local Government officers a copy of the following resolution, which was passed at a meeting of the Northern District of the Institution, held on December 18th: "That the Council of the Institution be asked to communicate with the N.A.L.G.O. asking them to send a letter to each candidate for Parliament at the forthcoming election, enquiring whether he is prepared to vote for a bill giving to local government officers superannuation on similar lines to that now enjoyed by poor law officers." It was decided that arrangements be made to hold the next General Meeting of the Institution, if possible, in Manchester in February. It was decided that any member of the Institution be allowed to attend Council meetings, and that any member so attending may, with the permission of the acting chairman, address the Council on any matter under consideration. It was resolved that the suggestions made at the joint meeting of the Council and hon. district secretaries on November 27th, together with the observations since received on these suggestions, be referred to a committee. It was resolved that a committee, to be known as the Revision of By-laws Committee, be appointed to prepare new draft by-laws. Copies of a draft report of the Science Standing Committee of the Concrete Institute were received, and the secretary was instructed to circulate the copies among the members of the Council. It was resolved, in pursuance of the resolution carried at the last General Meeting, "That a Committee, to be known as the Examination Committee, be appointed."

BELFAST IMPROVEMENT SCHEME.

The Corporation of Belfast has adopted an important improvement scheme to sweep many of the insanitary areas away and devote the ground thus cleared to open spaces, new and wider streets and modern houses. One result of the scheme will be the abolition of what is known in Belfast as the double tenancy system, under which an ordinary house is divided into two, the upper and lower portions being occupied by different tenants. The ground floor only, however, has the necessary water supply and sanitary accommodation. The scheme owes its origin to a report of Dr. Baillie, medical officer of health for the city, who gave it is his opinion that the narrowness, closeness, and bad arrangement of certain streets and houses and the want of light, air, and ventilation in the areas injured the health of the inhabitants. It is proposed to deal with eight areas of varying sizes, in different parts of the city. The localities scheduled contain 1,160 houses, with accomodation for about 6,000 persons under normal conditions, but as many of the dwellings are at present unoccupied, not more than between 3,000 and 4,000 persons will be displaced. After the existing houses have been cleared away the vacant ground will be devoted to the making of new streets, mostly between 40 and 45ft. wide, the widening of existing thoroughfares, the provision of more open spaces, and the laying out of playgrounds for schools. Afterwards a start will be made with the erection of model houses to accommodate the tenants displaced. The sum of £20,000 has been earmarked for the purpose. The houses will consist of two rooms; each will have a complete water supply and sanitary conveniences, while the rents—2s. a week—will be low enough to suit the purse of the poorest labourer. The remainder of the ground suitable for such houses will be let to builders on the understanding that they erect houses of the same type.

The cost of the undertaking has been set out as follows :—

Land and buildings	£81,855 5 0
Making, sewering, and paving streets	5,387 0 0
Incidentals and contingencies	9,180 0 0
Proposed model dwellings ...	20,000 0 0
	£116,422 5 0

It is calculated, however, that this cost will eventually be reduced by over £66,000, by the estimated value of building ground, capitalised ground rents, and other rents to be received.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible. The querist's name and address must always be given, not necessarily for publication.

The Editor is willing to answer enquiries from readers who require information on architectural, constructional, or legal matters. Such information must be regarded as the gratuitous advice or information of a friend, and not as the professional opinion of one who holds himself out as possessing expert knowledge on the subject in question. The Editor will, however, avail himself of the assistance of a large staff of experts in the matters above mentioned, but enquiries sent must be on the express understanding that he is not to be held responsible for any delays, mistakes, inaccuracies, or negligences which may occur.

Enquirers whose questions involve possible legal proceedings are strongly urged to consult their solicitors before taking definite steps in regard thereto.

Answers by post will be sent if the enquiry is accompanied by a postal order for 1s. made payable to Technical Journals, Ltd., and crossed, and a stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

This fee of 1s. required for answers by post is in no case to be regarded as payment for the answer given, but merely as a registration fee to meet the extra clerical and other expenses incurred in dealing with these special replies.

The Editor also reserves the right of refusing to reply to any question that he may deem to be unreasonable or unsuitable; and it must be understood that both question and reply will, as a rule, be published in these columns

Planning a Jam Factory.

A Regular Subscriber (Biggleswade) writes: "Kindly tell me the requirements of a jam factory—planning, accommodation, plant, cost, etc. Perhaps there are books on the subject. However, I am only wanting a general idea at present, and will be very glad if you can kindly oblige me at your early convenience."

—Books that may assist are Marks' "Principles of Planning" (Batsford 8s. 6d. net), Thwaite's "Factories, Workshops, and Warehouses" ("Builders' Journal" Office, 9s.). There is also one entitled "Factories, their Planning and Arrangement," by an American author, which may be obtained through Chapman and Hall. The best way, however, to learn the requirements would be to get an introduction to see over a jam factory.

Henry Adams.

Combined Drainage.

A. C. A. (Leyton) writes: "The drains of six houses, built in three blocks of two each, were constructed in 1854 by one main drain or sewer, "B" carried a cesspool at one end of the row, each house having a short connecting drain to the main drain or sewer. The cesspool was done away with when the sewer in the road was constructed a few years ago, and the main drain connected up to the new sewer. The owners were charged by the Urban District Council for the sewer in the road, and the road being made up was then taken over by the U.D. Council. The question is whether this main drain is not a sewer and therefore repairable by the U.D. Council."

[To this question we replied that we were of opinion that the drainage system shown from the point where it receives the sewage of the second house (No. 5), is a sewer, and repairable by the local authority. *Travis v. Uttley* (1894), 1 Q.B. 233.—Editor.]

"A. C. A." then writes as follows:—"I hear the U.D. Council say they know all about *Travis v. Uttley*, 1894, but that they rely on *Wood Green U.D.C. v. Joseph*, decided in the House of Lords, July 24th, 1908, where, although the decision was against the Council, yet it cleared up many uncertain points, and they say they are satisfied they can recover under it.

"(1) Does this case alter your opinion, or have any legal decisions been given since this second case which would modify the effect of the *Travis v. Uttley*, or which could make such a combined system as ours a private drain and not a public sewer?

"(2) Regarding the branch drains which the Council have relaid (the cost of which is claimed from the owners), the Council having relaid the main drain or sewer a foot or two lower than it was originally laid, must necessarily have relaid part, at any rate, of the branch drains in order to connect with new main drain or sewer. In these circumstances should not the branches be paid for by the Council in part, if not in whole?

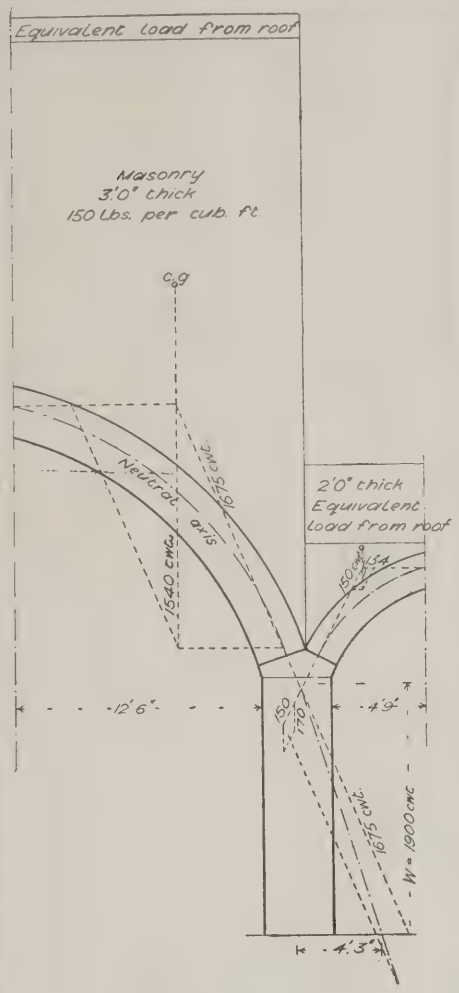
"(3) I hear the Council will apportion the cost of the new sewer or main drain on the principle of an equal sixth to each of the six houses; but as No. 1 has twice the width of garden, and therefore twice the length of drain, and all the houses vary in frontage, would such an apportionment be legal? Must not the charge be made according to the actual length of pipe used and work done for each house? Can you refer me to any legal decision on this point?"

(1) Having regard to the fact—which was not made clear in the former query—that the six houses in question belong to different owners, the case would seem to be governed by S. 19 of the Public Health Acts Amendment Act, 1890. That section enables the local authority to call upon the owners to repair a "single private drain." In my view, and upon the authority of *Wood Green U.D.C. v. Joseph*, all the owners will be liable to contribute. But suppose one man owns 1 and 2, that part of the "Sewer or Drain B" which is at the back of his house, will be a sewer, and as such maintainable and repairable by the local authority.

(2) I should think, in the absence of authority, that if the local authority alter the level of their sewer, they cannot charge the persons liable for the maintenance of the branch drain with the cost of the alterations.

(3) I can find no case in which any principle was enunciated as to the proportions in which the liability should be divided up. It would seem, however, to be fairly clear that the matter ought to be determined by length of frontage.

B.



ILLUSTRATING REPLY TO CHURCH (SUNDERLAND.)

Cement Rendered Plinth to Match Stone.

H. J. C. (London, W.C.), writes: "It is proposed to render certain brick portions at the base of a red brick and stone-faced building occupying an important position in the City, so as to give the building the appearance of having a continuous stone base. The rendering will be coloured to match the adjoining work as nearly as possible, but it is thought desirable to cover the whole of the existing stone work and the rendered portions above referred to with some permanent solution to conceal any difference in colour which may be noticeable. Certain portions of the stone cornices, etc., to the upper part of the building are worn and decayed; these will be brought forward with cement and sand and washed over with the same solution. Can you recommend a suitable solution?"

—Such solutions as fluate (Bath Stone Firms, Ltd.), are used to prevent the decay of stone by rendering it waterproof. Cement rendering to form a plinth on a city building is useless unless the building is protected by its position from rough usage and from traffic. A thin wash of Portland cement is sometimes put over a stone front after brushing down to give a uniform tint, and this might be tried in the present case.

Henry Adams.

Stability of Arches to Support Tower.

Church (Sunderland), writes: "In the design for a lantern tower (not reproduced) the arches are struck from centres which will be about 6ft. 6ins. below their springing, and as so many architects seem to place tie-rods across these arches (e.g., Mr. Norman Shaw in All Saints' Church, Lee), and as they obviously cannot think them any gain from an æsthetic standpoint, they apparently must consider them necessary from a structural point of view. It appears to us that in one case the nave, transept, and choir should form sufficient abutments, but if there is the least risk we contemplate introducing steel joists in the thickness of the walls above the arches. We should be glad to know whether, in the opinion of your expert, these joists (which are indicated in blue on diagram) are necessary, and if so, of what size they should be. The tower, as will be seen, is a low one, and we may say that, as the church is for a colliery district, we intend instead of laying the ordinary foundation, to build on a raft of reinforced concrete."

—The elevation of one pier as proposed with the load coming on to it in one direction, is shown in accompanying illustration, assuming no strengthening by joists, etc. The weight of the pier is first combined with the thrust from smaller arch, and the result thus found combined with the thrust from the main arch giving a final resultant cutting the base at 4ft. 3ins. from centre of gravity of base joint. Then

$$\frac{W}{A}\pm\frac{M}{Z}=\frac{1900}{9}\pm\frac{1900\times4{\cdot}25}{\frac{1}{6}(3\times3^2)}=211\pm1794=$$

2,005 cwt. or 100.25 tons per sq. ft. compression, and 1,583 cwt. or 79.15 tons per sq. ft. tension. In addition to this there would be a thrust of the same amount coming from the arch at right angles to the one taken in the calculations, so that the piers are totally inadequate without some method of decreasing the thrust of the arches. If rolled steel joists are inserted as suggested, the required section of the piers may be found approximately as follows. The total dead load will be, say, 1,540+1,725+134+134=3,533 cwt. or 176.6 tons, and at 15 tons per sq. ft. the area required $=\frac{176{\cdot}6}{15}=$ say 12 sq. ft., requiring the piers to project another foot in the direction of the 25ft. span arches, which will be reduced in span by 2ft., and in the direction of the 28ft. span arches the piers should be increased 18ins. and the span reduced accordingly. It is impossible to say exactly what load the joists will have to carry, being built in the wall like this, but it may be assumed that they will have to carry 52 tons distributed over a clear span of 23ft., requiring two (B.S.B. 28) 18ins. by 7ins. by 75lbs. rolled steel joists, and the same size will do for the other direction.

Henry Adams.

Highway Encroachment.

"CHESHIRE" (CREWE), writes: "In the case of land abutting upon a public highway and divided therefrom by (A) an ordinary thorn hedge, and cop (B) the same with a ditch on the highway side of the hedge; should the area be calculated to the root of the hedge or to the bottom of the cop and 4 feet from the root of the hedge respectively? If the latter be correct, could an owner under conditions (B) remove the old hedge and erect a new fence 4 feet from the root of the hedge, assuming that he properly piped the ditch, and that the new fence did not project beyond the 4 feet from the root of the hedge?"

—In the circumstances detailed, it is clear that the width of the highway is defined by measurement between the hedges on either side. It was laid down in 1862 that: "In the case of an ordinary highway, although it may be of varying and unequal width, running between fences, one on each side, the right of passage or way prima facie, and unless there be evidence to the contrary, extends to the whole space between the fences, and the public are entitled to the use of the entire of it as a highway, and are not confined to the part which may be metalled or kept in order." (*R.* v. *United Kingdom Electric Telegraph Co.*, 1862, 31 L.J.M.C., 166.) That being the width of the highway, it is clear that to erect a fence in the proposed place 4 feet nearer the metalled road, would have to encroach on the highway, and would have to commit an act which might be restained by the highway authority. B.

Liability for Smoke Nuisance.

J.E.C. (LONDON, W.) writes: "I have taken a house which has a wash-house in the garden at the rear. This wash-house with chimney projects about 10ft. beyond the next door house, and the chimney runs up to the level of the first floor window next door, being about 10ft. away from that window. When the copper fire is lighted the smoke goes into the window and causes the neighbours annoyance. Our wash-house and chimney were built some 20 years before the house next door. Can my neighbours compel me to remove or extend the chimney?"

—It is not stated whether the 'copper' chimney was built before the neighbour came to occupy his house. It does not much matter, however, for it is no answer to a claim for nuisance that the plaintiff came to an existing nuisance with knowledge of its existence (*Tipping* v. *St. Helens Smelting Co.*, L.R., 1 ch., 66). In that case the plaintiff bought land, knowing there was a smelting works on land near it, recovered damages in an action at law for the injury done to his land by the smoke of the works, and then filed a bill for an injunction which was granted. The only chance of resisting a claim for damages or an injunction rests on prescription. If it could be shown that this "copper" chimney had been used without interruption for 20 years, its owner might have a prescriptive right. In *Crump* v. *Lambert*, 1867, L.R., 3 Eq., 413, Lord Romilly said: "It is true that by lapse of time if the owner of the adjoining tenement . . . has not resisted for a period of twenty years, then the owner of the dominant tenement has acquired the right to discharge the . . . smoke . . from his tenement over the tenement of his neighbour." A solicitor should be consulted without delay. B.

Public or Private Road.

JUSTICE (SKIPTON) writes:—Some two years ago the streets A and B shown on sketch [not reproduced], were scheduled to be made up under the Private Street Works Act, 1892. On receiving the provisional apportionment the owners laid an objection on the ground of excessive cost, and a deputation met the Council. The latter promised a reduction of the cost and a definite understanding. An owner in street B (who, by the way, is clerk to a highway authority), claimed that these streets were repairable by the authority on the ground that both streets were formed and opened to the public prior to the year 1835. He saw the town clerk on the matter, and the matter lapsed for some six months. Then the Council's surveyor died, and on the appointment of his successor the question again came up. For some reason or other the street B, which was a much worse state than A, was left undone, and no provisional apportionments were sent out for street A, which has been executed alone. Can you give me any information respecting the liability of authorities to repair streets opened to the public prior to 1835. The final apportionments, I may add, were much higher than the provisional ones."

—Without many additional particulars, it is impossible to say whether the highway authority are within their rights or not. It is true that a way which was a highway repairable by the inhabitants prior to 1835 could not now be made up at the expense of the frontagers: but the question is one of fact. B.

Joint Ownership Possession.

F. O. J. (BATH) writes: "A property consisting of house and garden is held by two parties jointly under a will; one of the joint shareholders is in occupation of the demise, but there is not an agreement, and no rent has been paid since the will was proved in 1907. (a) What power has the non-occupying joint shareholder to compel the occupying shareholder to quit the premises? (b) If the occupying joint shareholder remains on the premises, how to determine the rent?"

—Highly technical points of law are involved in this query. Before replying fully, it would be necessary to know (1) the terms of the will; (2) whether there are any trustees; (3) whether the house and property is owned in fee, or is merely the residence of a lease. The use of the word "demise" makes it appear that it is a lease. Assuming this to be the case, it is clear that one joint tenant cannot oust the other. They each are entitled to possession "*per my et per tout*" (to use an old legal phrase), and the one who is in possession may stay there. An old Act of Parliament, however (4 and 5, Anne c., 16), provides that actions of account may be brought and maintained by one joint tenant or tenant in common against another as bailiff for receiving more than comes to his just share and proportion. There is, however, no relationship of trust or agency in one co-owner of a property towards the other, and where one collects the rents of the whole he does so not in the capacity of agent, but of owner (*Kennedy* v. *De Trafford*, 1897, A.C., 180). B.

Proposed Alteration to Bridge.

A. E. W. (SALOP) writes: "I was called in to report upon and give an approximate cost of repairing a defective bridge built quite recently on an estate. I also enclose two drawings [not reproduced]. The one marked (1) is the bridge as at present; the arch is giving way, but does not seem to push the sides out, and the other marked (2) is what I suggested by way of remedy. With regard to the narrowing of the span, this will not affect the flow of water, as I am informed that the same is never more than 18ins. deep, and at present it is only about 9ins. Could you also give me a rough idea of what the cost should be? (the old blue bricks would, of course, come in again); also any other information with regard to the construction of some."

—The proposed alteration of bridge by thickening the piers on the inside and reducing the span would probably be advantageous, but of course no definite opinion can be given without knowing all the circumstances and making a personal inspection. Three half-brick rings would be better than one-half brick and one 9in. specially moulded. A key stone improves the appearance, but is not essential. HENRY ADAMS.

Exterminating Beetles.

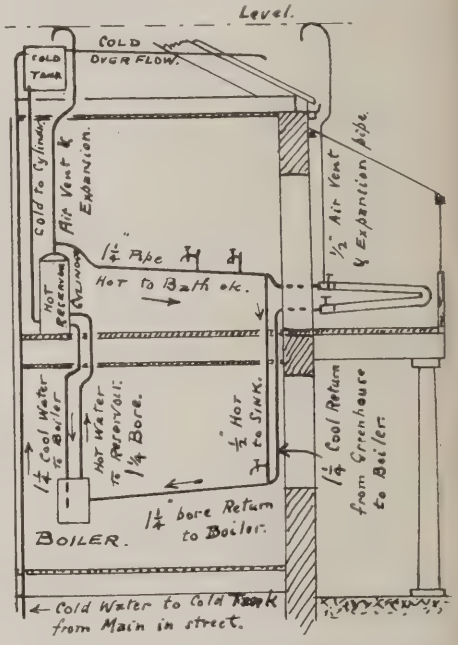
READER (HULL) writes: "Is there a means of getting rid of bettles under wood floors, all powders having failed? The cause of their existence is believed to be due to a leak in the back boiler, which has rotted a portion of the boarding. This has all been renewed, also additional air bricks have been placed all round the house."

—I fear that there is little to be done in such a case if all possible holes and crannies have been filled up. If small hollow canes (or pieces of elder stems) are strewn about the beetles will creep into them and may be destroyed very easily, but it is a work of "patience and perseverance." F.S.I.

Heating Greenhouse from Kitchen Boiler.

H. S. (ROCHDALE) writes:—"In a new house the kitchen will contain the usual kitchen grate with boiler for supplying hot water to sink and bath-room. In the back-yard over the kitchen window a small greenhouse is to be built. Can this greenhouse be heated from the hot water supply in the house, and if so, can you give me any particulars of the heating?"

—Yes. More fuel will be needed, of course, and you may have to use coke on frosty nights. The piping needed would be 35 to 40 lineal ft. of cast iron pipe, 4in. bore, to each 1,000 cubic ft. of space, with a separate boiler, fired to suit the weather. In your case the boiler is not fired to suit the weather, but to suit cooking, washing, and baths; so the warmth may vary more than prize-winning blooms may stand.



ILLUSTRATING REPLY TO H. S (ROCHDALE).

You will get the best results by a separate return pipe from the greenhouse to the boiler, with a valve on it. The flow pipe may be from a T-piece on the main flow from the boiler to the hot-water tank in the bath-room, but if possible, it should be a continuation of the hot-water pipe from bath-room to scullery. If this pipe be led on from the scullery sink to the return pipe from greenhouse to boiler, you will then have a complete circulation at little cost, and be able to draw hot-water almost as soon as a tap be opened. The accompanying sketch shows the pipes needed. A valve may be needed on the pipe between the scullery sink and the return pipe to the boiler from the greenhouse, though it may not be necessary. Valves to flow and to return pipes are needed in the greenhouse. The expansion and air-vent pipe to the greenhouse pipes must be led to a greater height than the top of the cold-water reservoir that supplies the boiler, and this will mean that the expansion tank at the pipe ends, usual in small greenhouses with their own boilers, will not be needed; it will overflow unless its lid be made secure and water-tight.

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NORTH ELEVATION FROM THE RAILWAY.



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LECTURE HALL, GROUND FLOOR. LOOKING TOWARDS THE GALLERY.



THE SOUTH STAIRCASE.

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Buildings to Measure near Hereford or Worcester.

"Gothic" (South Wales) writes: "(1) hat good work is there to measure or study r the Inter. R.I.B.A. Exam. in or near ereford or Worcester? (2) Do you know of y book or books on measuring work for e above exams.?

(1) Querist will find ample scope for udy in the cathedral churches at Hereford id Worcester, notwithstanding the destruc-ve "restorations" which they have severally ndergone. At Hereford the Cantilupe rine in the north transept, or the adjoining mb of Bishop D'Acquablanca, would be cellent subjects for measured drawings. he beautiful Perpendicular north porch of ishop Booth would also be a good, though ther ambitious, subject. At Worcester a ortion of the wall-arcade in the south-east ansept, or of Prince Arthur's chantry, ight be measured; or a window from the ined Guesten Hall. Both Leominster and edbury churches contain some very fine eometrical windows with ballflower orna-ent, which would make excellent subjects. ewkesbury Abbey should also certainly be isited, if possible.

(2) "Architectural Drawing" by R. Phené piers (Cassell and Co.) contains some use-ul directions as to the preparation of neasured drawings of architecture. A help-ul paper on the subject by Mr. L. M. Gotch, Institute Medallist for measured rawings, is given in the May number of ast year's Architectural Association journal, which could be obtained from the offices of he A.A., 18, Tufton Street, Westminster, rice 7d., post free. G

R.I.B.A. Prize Awards.

The following awards were announced at the Institute meeting on Monday last.

Institute Silver Medal and 25 Guineas (Essays).

"Domus et Hortus," J. A. O. Allan, Aberdeen. Certificate of Hon. Mention: "Rez de Chaussée," C. J. Nixon Horsfield, Westminster.

Institute Silver Medal and 10 Guineas (Drawings).

"Roma," James Whitelaw, London, N.W. Hon. Mention, "Francois Mansart," Cyril A. Farey, London, N.W.; "Adige," Herbert J. Rowse, Liverpool.

Soane Medallion and £100 for Design for Shakespeare Memorial Theatre.

"Mirth," Alec. G. Horsnell, Chelsea. Hon. Mention, "Horseshoe," Adrian Berrington, Chelsea.

Owen Jones Studentship, Certificate and £100.

W. O. Miller. Hon. mention, H. R. Wilkinson.

Tite Prize, Certificate and £30.

"Jupiter," William A. Robb, Glasgow. Hon. mention, "Comprised Within," Anthony R. Barker, London, W.; "Tomahawk," William Friskin, Pollokshields.

Grissell Gold Medal and £10 10s. for Design and Construction.

"Fra Angelico," Charles Percival Walgate, London, W.

Arthur Cates Prize, 40 Guineas.

C. D. Carus-Wilson.

Godwin Bursary, Silver Medal and £65.

W. Milburn, jun.

Ashpitel Prize. 10 Guineas.

William John Roberts, Manchester.

Pugin Studentship, Silver Medal and £40.

H. Hubert Fraser, Hon. mention, D. J. Chisholm; J. B. Cowper.

Hackness Hall, the seat of Lord Derwent, about six miles from Scarborough, was the scene of a very disastrous fire on Sunday last, damage being done to the amount of many thousands of pounds. The fire commenced at the top of the building and burnt down to the cellars.

THE NEW ACADEMICIAN.

Mr. Ernest George, who has just been elected an Associate of the Royal Academy, was born on June 13th, 1839, and was educated at Brighton. He won the Royal Academy Gold Medal for architecture in 1859, and the Royal Gold Medal of the Royal Institute of British Architects in 1896, and was elected President of this body in 1908. He studied at the Academy Schools, and began practice with Mr. T. Vaughan. His works include "Stoodleigh Court, Dorset," "Collingham Gardens, South Kensington," "Church of St. Andrew's, Streatham," "Harrington Gardens, Mount Street," and a "Villa at Antibes, France." As an etcher he has pibliished "Etchings on the Moselle," etc.

Our Plate.

L.C.C. School of Building Extension.

The buildings completed in the autumn of last year form an extension to the L.C.C. school of building, Brixton, S.W., which was opened in 1904, for the purpose of instruction in building and the allied trades.

The position of the extension on the vacant land available, was determined by the proximity to the railway on the north side and to the dwelling-houses in Ferndale Road on the south side. These factors lead to placing the lecture hall farthest from the railway and adjoining the Ferndale Road Houses, where, by reason of the comparatively low roof, interference with rights of light of these houses would be avoided.

The principal portion of the building is arranged in a block parallel to the railway, and double windows are provided in those rooms where quiet is essential.

Laboratory and workshop accommodation (in accordance with schedules prepared by the officers of the Education Department), is provided chiefly on the north side of the main corridor.

The extension (about 198ft. long) contains two staircases extending the whole height of the building, providing alternative means of escape in case of fire.

On the ground floor are placed the lecture hall, arranged to seat 200 persons, rooms for the principal, principal's assistant, and clerks, mechanical and physical laboratories, smiths' shop, men's cloak-room, and lavatories.

On the first floor are the chemical laboratory, demonstration class-room, stone-carving room, a workshop, and the students' common-room and library; also cloakroom accommodation for women.

On the second floor are classrooms for wood-carving and ornamental leadwork, a painters' shop, two classrooms, teachers' common-rooms, and lavatory accommodation for men.

On the third floor are architectural drawing office, architectural classroom, ornament room, modelling room, and figure room, the three last-mentioned being provided with north light.

The buildings, externally, are faced with yellow stock bricks, and the roof is covered with green slates.

The walls of the corridors, staircases, and laboratories are lined to the height of about 4ft. with brown salt glazed bricks, and above this they are plastered and finished with distemper. The walls of other classrooms generally are plastered and distempered. The floors of the classrooms are laid with wood blocks, and those of the corridors with red tiles.

The details of the fittings have been considered in conjunction with the education officers.

An external hoist has been provided in the yard for conveyance of clay, plaster, etc., to and from the upper floors.

The building is mechanically ventilated by means of electrically driven fans placed in the roof.

The building has been designed by Mr. W. E. Riley, Superintending Architect to the London County Council, without reference to any particular style, the object being to secure a plain substantial structure expressive of its use.

The contract amount for the building work is £24,996, and the Council sanctioned a sum of £2,000 for the equipment.

Our plate shows views of (1) the north front from the railway, (2) the lecture hall, and (3) the chemical laboratory.



THE L.C.C. SCHOOL OF BUILDING, BRIXTON. W. E. RILEY, F.R.I.B.A., SUPERINTENDING ARCHITECT.

This is a view of the Demonstration Class.



REINFORCED CONCRETE CATTLE MANGERS AND STALLS AT BURDEROP PARK, SWINDON.
This view shows a new use for this ubiquitous material, which demonstrated its value as a fire-resisting material, as will be seen from the view below. Indented Bar reinforcement was used.

WHAT IS ARTISTIC CRAFTSMANSHIP?

The first of the second series of lectures on the arts connected with building was given at the Carpenters' Hall on Wednesday evening, the lecturer being Professor Beresford Pite. What do we mean by artistic craftsmanship? Is there a distinction between art and artistic craftsmanship? Is there any difference between such a matter of pure sentiment as things dubbed artistic, and matter of fact practical craftsmanship? Is not craftsmanship one thing, and anything artistic very much opposed to it? Artistic craftsmanship is a virtue which doubtless has a past to contend with, but that it will rise from its dead ashes to a nobler usefulness, we have little doubt. We ask the question, the lecturer continued, what is artistic craftsmanship? Does it not mean work well done by one who understands his trade? Work done by someone who knows nothing much of other learning, but knows what he can do with certain instruments? such, for example, as Indian surface carving on ivory. Is this artistic craftsmanship? We must assume that the man has honestly done his level best, and that the work is sound and true.

Granted the best craftsmanship, is the result necessarily artistic? If not, then what on earth do we mean? If the poor fellow has done his best, are his labours inferior, is his result less worthy, because of some standard by which we judge him? In such a difficulty how useful are the building crafts to us. Among the building crafts there are many instances in which the honest practical work of which we have spoken is all that is required. For instance, in the framing of partition walls, and the unseen framing of roofs, such work would not be improved by having smooth edges and carefully wrought parts. Drains also suggest craftsmanship, but not artistic because hidden from view. The plumber has been successful in asserting himself vigorously with his wiped joints. Here his craftsmanship is very much in evidence. Why not artistic? This sort of plumbing is of course not "ornamental leadwork." We must differentiate between the two and class this as unornamental, unartistic leadwork. A splendid series of slides were next shown illustrating the lecturer's points. Commencing with Stonehenge, which he said was an example of craftmanship pure and simple, as to its artistic qualities, we will hold our breath. As far as workmanship is concerned, great skill was involved in pilling those huge lintels on the posts. Next we were shown the ruins of the temple at Paestum. Here he said we have the same lintels and the same posts, with a huge entablature and simple expressive columns with large abacus caps. Here there has entered into the mind of the craftsman nothing more than the constructive element. The distance between the columns was arrived at by nothing more than the capacity of the lintel to bridge the span. The Parthenon at Athens showed the same structural difficulty, the same problem for the craftsmen. The lecturer ventured to suggest that if the Greeks had had steel girders, they would have been delighted to span the portico of the Parthenon from angle to angle with a single girder after the manner of those employed in the new Post Office building in Newgate Street. The art of architecture has been defined as refinement in building, and no better example of this can be found than the way in which the Greeks for century after century gradually increased the refinement of their work. The Erectheion was next shown, and the lecturer pointed out the refinements in the carving of the capital, base, and the shaping of the fluting, each of which was imposed on the craftsman, not from outside, but as a tradition, and from the possibilities of his own hand and his own tools. Speaking of the Caryatid portico, he remarked that there is an element here not in the portico or in the Parthenon. No fad of the craftsman could account for the six elegant ladies supporting the portico. Here an element of poetry has come in, something alien to the material. The spirit of art has entered in. Art is leading and craft following. Part of the beautiful frieze from the Temple of Apollo was shown and compared with one from a sarcophagus at Syracuse, as showing the craftsmanship of the Greeks in setting their sculpture in the frieze as a composition, while in the later example (about 8th or 9th century) the figures are ranged in a row without any composition. Next the history of the Corinthian capital was traced, and the origin of its name (taken from Corinth, which was the seat of bronze worker), which indicates its bronze origin. Passing to another branch we were shown a scene on the Tiber with an old three-ringed masonry arch in the foreground, from which, the lecturer remarked, springs all the craftsmanship of the architectural arch. Then followed a few simple examples of unaffected beauty, having the qualities described at the outset, and where an honest attempt to do the best has resulted in artistic effects. The narthex of the church of San Lorenzo, with its simple row of columns decorated with a spiral instead of vertical flutings, the Cathedral of Torcello having the same directness of expression and absence of ornament, an example of sober craftsmanship attaining artistic quality on account of its simplicity and directness. Next some interiors were shown, and the lecturer expressed an opinion that the original builders were unaware that their buildings were beautiful at all. In the case of the cathedral at Monreale, in Sicily, the element of the art of beauty was confined to the capitals. All the rest was plain, honest unadorned brickwork, until handed over to the mosaic workers. In the case of another and earlier building, San Vitale, at Ravenna, the architectural interest is entirely secondary to the decorative interest. A pulpit at San Lorenzo also illustrated in a marked degree the simplicity and directness of the craftsman's methods. Turning homewards a stone Saxon cross was shown, carved at a time when there was no artistic style in England, yet having a spiral ornament very



FIRE AT THE FARM BUILDINGS, BURDEROP PARK, SWINDON.
A destructive fire occurred at these farm buildings last November, when 22 head of cattle were destroyed. sixty-six others were saved, mainly through the special drop-pin fastenings, which had only to be lifted to release the beasts. The cattle mangers and stalls can be seen standing up uninjured by the fire.

similar to that on some of the Venetian examples. Then the spandrel carving from Stone Church, near Gravesend, was illustrated, which, the lecturer remarked, was one of the most beautiful pieces of carving in England. The development of stone carving in England was traced, and it was shown how rapidly this developed in England into a beautiful refined interpretation of masonry. You will say, Professor Pite concluded, that I have shown you nothing later than the mediæval period, and that I have not touched on the problems of the Renaissance and the work of our own day. In working as we do we may learn to deal with the handicrafts for what they are worth, but let the student set himself to work to thrash out the question for himself, let him see what he can do most simply, most readily, to express himself in the way of ornament, as the circumstances will allow. We have looked at Sicilian churches, but it has come home to us in the mediæval stonework of the mediæval period, that the craftsman became an artist simply by tackling his work honestly and directly, and I would suggest that in whatever age we live all work honestly, intelligently, and pleasurably done is beautifully done, and what is beautifully done is artistically done.

THE GUILD OF ARCHITECTS' ASSISTANTS.

We have received from the Guild of Architects' Assistants a copy of the form they are issuing to elicit information of a definite character regarding unemployment. The replies may be sent anonymously. The questions asked are as follows:—Present and former salary; duration of professional experience and age; duration of unemployment as assistant; were you articled; and for how long?; have you been engaged in other business during the above time, if so, how long?; have you acted as principal in an office rented by yourself, if so how long?; how much time have you spent in the provinces?; have you any professional qualifications (R.I.B.A., S.A., etc.), or have you passed any technical examinations?; any other information you may care to add. Replies are to be sent to the hon. secretary, 137, Church Street, Edgware Road, W.

The following is a statement of the objects and constitution of the Guild.

Objects.

The objects of the Guild are to unite all sections of the profession for mutual aid, and for the consideration of all questions dealing with the relationship of the assistant and the principal.

To assist members in matters of improvement in their professional education, and in maintaining and improving the professional status.

To organise and maintain a system of insurance.

Constitution.

The Guild to consist of a central body in London, and branches, governed by an Executive Council in London, and branch committees.

An annual conference of delegates from central body and branches including representatives from architectural societies to be held in London, to advise the Executive Council, but to hold no executive power.

Annual general meeting of delegates to be held in the same centre and immediately preceding the annual general Guild meeting, reporting its decision to the latter.

The annual general meeting to be held in different centres each year.

President, vice-president, Executive Council, honorary secretary, secretary and treasurer to be appointed at annual general meeting after declaration of ballot.

The Council to appoint Finance, Legal and General Committees.

A special committee to be elected by full members to manage the insurance scheme.

Branches to have a chairman, vice-chairman, secretary or hon. secretary, and a committee elected from its members at annual meeting of branch.

Branches to be autonomous and to pay an agreed percentage of their contributions to the central branch for general purposes.

Members to be proposed and seconded by two existing members, and balloted for at a general meeting of the central body or branch, four black balls to exclude.

Members' subscriptions to be 5s. per annum, and a further subscription to be levied upon those wishing to participate in unemployed insurance.

Members to be divided into two classes, ordinary members with no insurance benefits, full members with insurance benefits.

Any assistant who has held his present position or who has been in employment continuously for twelve months previous to entry, under 40 years of age, and can produce a certificate of good health from a medical officer appointed by the Guild, and can show good testimonials as to his professional ability is eligible for insurance benefits.

In cases where principals are not available within the Guild for election and a principal has intimated a desire to assist in the work of the central or branch committees, he may be elected or co-opted by the existing committees, and shall continue in office one year, and have equal voting powers with his colleagues for that time.

The number of principals on the Executive Council and all committees never to exceed one-third of the total number.

Branches to frame their own rules as to admission of principals.

Central Body.

To receive contributions from branches for executive purposes.

To have complete control of the scheme of finance relating to the Guild, and the Unemployed Insurance to be managed by the Finance Committee and treasurer, who report monthly the finance position to the Executive.

Two auditors to be elected yearly.

The names and addresses of members of the Guild to be kept by the secretary.

The employment bureaux to be managed by the secretary, who will keep lists of members (their description and qualifications) requiring employment (registered and guaranteed by local or central committee) and of employers (salary, hours and office conditions) requiring assistants.

To reply to any local advertisements or enquiries for assistants.

To obtain all necessary information concerning unemployment and situations vacant through members of the Guild or by technical journals.

Fares to be advanced in special cases to established members if finance will allow.

To maintain a scheme of unemployed insurance and payment of lump sums.

Assistance in special cases to members approved by branch and Executive Council through a contingent fund.

Employment bureau to be open to all assistants, members and non-members, providing the latter pay a fee of 5s. if successful in obtaining an appointment.

To receive all complaints relating to professional grievances, addressed either orally at a general meeting or by letter to the secretary, and to deal with such cases either legally or otherwise.

To keep the press well informed as to the condition of architectural practice and employment.

To found scholarships or prize-money or payment of nomination fees for deserving students showing themselves capable.

To print and publish the monthly report edited by the secretaries, a copy of which is to be sent to each member, and all articles therein to be sanctioned by the Executive.

The Legal and Finance Committees to pass a report monthly to the General Committee, who will publish same in the monthly report.

The monthly report to give complete available particulars as to the state of employment in the various Guild centres.

Monthly meetings to be held and lectures on all phases of architectural practice and education to be arranged and approved by the Executive.

Branches.

To pay an agreed percentage of contributions to the Executive.

Two auditors to be elected yearly, not already members of branch committee, to audit branch accounts monthly, and forward to Finance Committee for insertion in the monthly report.

The names and addresses of members of the branch to be kept by the secretary.

To maintain an employment bureau and provide information of local news as to employees and employers to the central body for publication in the monthly report. The secretary to reply to local advertisements or enquiries for assistants.

To receive all complaints relative to professional grievances addressed either orally at a branch meeting, or by letter to the branch secretary.

To report to the central body all cases which should be dealt with either legally or otherwise.

No branch to act independently of the Executive.

To inform the local press of the conditions of architectural practice and employment.

Any cases of dispute locally to be discussed at a meeting convened by the branch, in which local press representatives and any principals may be invited. A report to be made to the Executive Council for advice, and their decision as to any action that may be taken thereon.

To found scholarships or prize-money, or payment of nomination fees for deserving students showing themselves capable.

Monthly meetings to be held, and lectures on all phases of architectural practice and education to be arranged and approved by the Executive.

THE CORDWAINERS' HALL.

The new hall which is being built for the Cordwainers' Company, has a frontage to Cannon Street of 62ft., and has a depth of 60ft., or thereabouts, and is the sixth hall built upon the same site, the first hall having been built in or about 1393. The new building provides for an entrance to the hall premises at the western end of the site, leaving the rest of the frontage to Cannon Street, by a depth of over 30ft., for letting purposes on the ground and basement floors. This part of the premises will be self-contained, and quite distinct from the rest of the premises to be occupied by the company. The entrance hall is octagonal on plan, and is to be finished in marble, and leads to an inner hall, from which the main staircase ascends to the upper floors. At the foot of this staircase cloak-room provision has been made, and an electric lift provided to serve throughout the premises. The mezzanine floor will contain a suite of offices for the use of the clerk of the company, a large committee room, and also an office for the beadle. The first floor will contain the court room, and the court reception room, while on the second floor the large hall is situated. This hall will be 60ft. in length by 32ft. wide, and 23ft. high. On the top floor accommodation is provided for the beadle, and a kitchen to serve the large hall. Internally, the premises are to be fitted with oak on the main floors, the staircase being oak throughout, and the large hall is panelled in oak to a height of 20ft., or thereabouts. Besides the main staircase, a secondary service staircase is provided, fitted with electric lifts for quick service from all floors. The builders for the works are Messrs. Ashby and Horner, of 8, Aldgate, E., and the building is being carried out from the designs prepared by the company's surveyor, Mr. H. Chatfeild Clarke, F.R.I.B.A., of 63, Bishopsgate Street Within, E.C. Mr. W. Crossley is acting as the Clerk of Works.

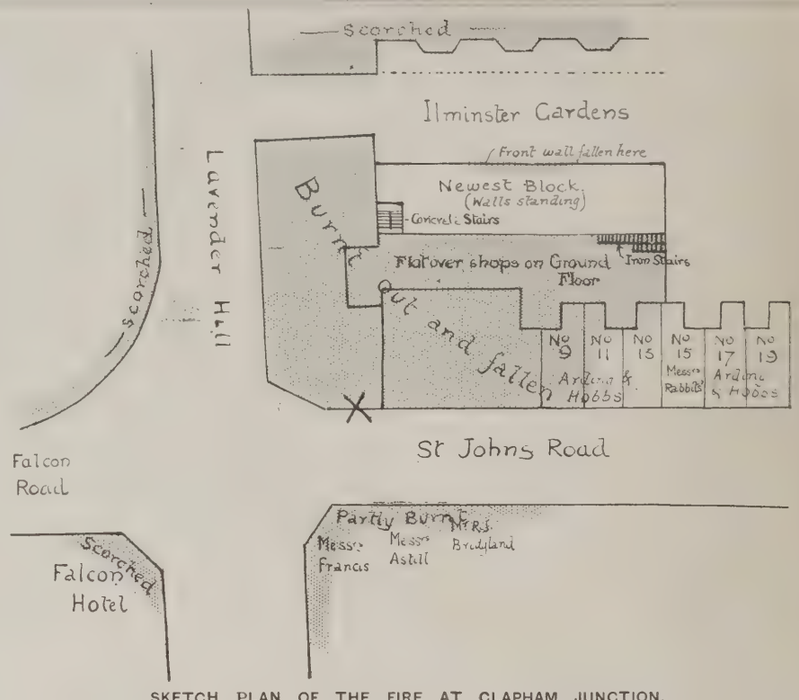
THE CLAPHAM JUNCTION FIRE AND ITS LESSONS.

The searching inquiry into the disastrous fire of December 20th, which destroyed the premises of Messrs. Arding and Hobbs, drapers and furnishers, at Clapham Junction, was of considerable value to those interested in fire protection and fire-resisting construction.

The business of the firm and the class of building in which it was housed are typical of many similar firms in London, the suburbs and provincial cities. The fire started from a simple and ascertained cause, it burned with incredible rapidity and ferocity, destroying buildings covering some acres of ground, and involved the loss of eight lives.

Nature of the Buildings.

Messrs. Arding and Hobbs commenced business on this site in premises then existing at the corner of Lavender Hill and St. John's Road, these premises being constructed of brick and stone, with exposed columns and girders to carry the floors. The business being a progressive and successful one, the firm from time to time took in further shops extending up Lavender Hill and along St. John's Road, so that at the time of the fire they occupied a large block of buildings bounded on the three sides by public thoroughfares, and comprising Nos. 315 to 325 (odd numbers) in Lavender Hill and Nos. 1 to 19 (odd numbers) in St. John's Road, with the exception of No. 15, which was occupied by Messrs. Rabbits, boot manufacturers. The shop windows therefore extended in an unbroken line from the corner of Ilminster Gardens round to No. 19, St. John Street. Ilminster Gardens is a residential thoroughfare, and here there were no shop windows; but the most recent addition to the premises faced this thoroughfare and consisted of a large block extending up five floors. In this block were the trade and employees' entrances, lavatories, etc., and here also were the concrete staircase and concrete block partitioning which withstood the fire. The floors in this block were carried as elsewhere by steel joists and uncased stanchions, and the floors themselves were concrete panels between the joists. The walls in this new block were plastered, but in the older buildings matchlining was largely used for casing the walls, girders, and stanchions. The original shop



SKETCH PLAN OF THE FIRE AT CLAPHAM JUNCTION.
The spot where the fire commenced is marked with a cross.

of the firm at the corner of St. John's Road and Lavender Hill was a building of five floors, surmounted by a large cupola at the corner; but the other shops in St. John's Road were lower (having only ground, first and second floors) and formed part of a row of shops along this street. The floors in these shops were of the ordinary wooden type. These shops were in direct communication at the ground floor level with the rest of the buildings.

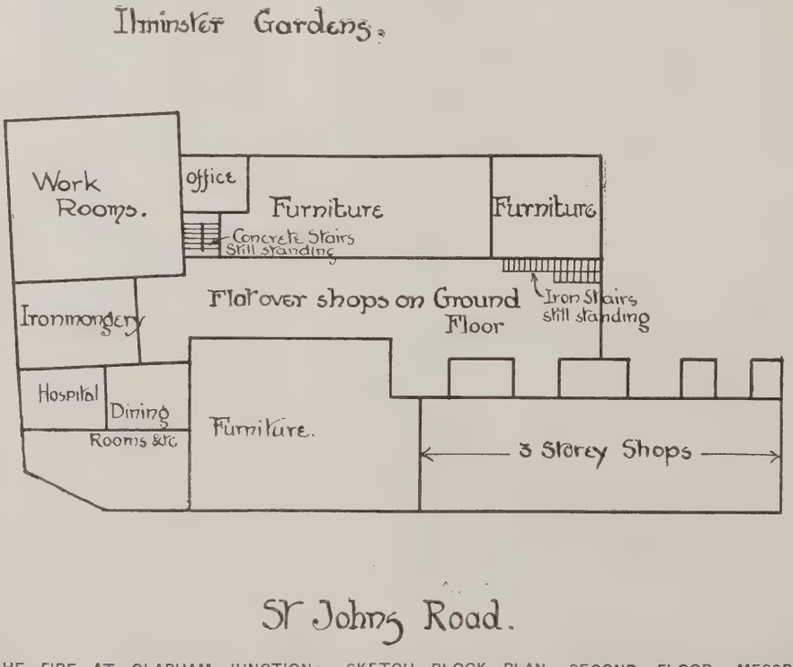
Fire Precautions.

As regards fire precautions, the buildings were well fitted in some respects. There were 12 double fire doors provided under the L.C.C. requirements; also 15 fire hydrants supplied by a high-pressure main which had been specially laid in Lavender Hill; and a considerable number of hand grenades and chemical extinguishers about the premises. An iron escape staircase by the St. Pancras Ironworks was provided from the upper floors to the concrete flat at the back of the premises, and escape shutes from several of the windows. The firm had a fire brigade formed of employees, trained and periodically inspected. A fire-bell was also provided which, it was stated, could be heard in any part of the premises. In view of the Christmas trade, extra fire buckets and extinguishers had been provided, and some of the buckets were placed in the very window in which the fire broke out. There was no sprinkler system installed, although the question had often been considered by the firm. Apparently from the evidence a sprinkler system would have been expensive, and it was thought that the buildings were sufficiently protected.

Nature of Contents.

The business of the firm was in general drapery and millinery, furniture and furnishing soft goods, men's tailoring and outfitting, women's dressmaking and tailoring, fancy goods, jewellery, etc., comprising all the general stock and departments of the large store draper. At the time of the outbreak the Christmas trade was in full swing, the windows were specially dressed for the occasion, and a toy bazaar was set out on the ground floor. To assist in the window display additional electric lighting had been installed. This work was done by a firm who had carried out all the electrical work on the premises for 2½ years. In previous years this temporary lighting had been inspected by the Phœnix Fire Insurance officials, but in the present instance this inspection was omitted, though it was stipulated by the firm that the work was to be executed in accordance with the Phœnix Company's rules. It was admitted that this temporary lighting had been properly carried out in all respects.

The lamps used for this temporary lighting were 16 candle-power 60 volt metallic filament lamps working in a series of two on a circuit of 120 volts. The window in which the fire occurred was dressed with very small lace and silk goods, "fascinators," shawls, woollen goods and white muslin aprons. Blue art muslin was used as decoration. At the bottom of the window were celluloid tortoiseshell and jet combs set out



THE FIRE AT CLAPHAM JUNCTION: SKETCH BLOCK PLAN, SECOND FLOOR, MESSRS. ARDING & HOBBS'S PREMISES.



Photo: Bolak.

THE CLAPHAM JUNCTION FIRE, THE MORNING AFTER THE DISASTER.

This view, taken from outside the Falcon Hotel shows the walls of the newest block of five floors still standing. The two piers standing in the foreground mark the building at the corner of Lavender Hill and St. John's Road. The hoarding in the extreme right hand corner is that erected outside the premises of Messrs. Francis and Sons.



Photo: Bolak.

THE CLAPHAM JUNCTION FIRE.

This view taken of the ruins in St. John's Road shows the twisted girders.

on a bed of cotton wool. Some fancy necklaces, etc., were suspended on wires stretching across the window, which was one of the windows of No. 325, Lavender Hill, facing St. John's Road and next to the semi-circular window at the corner, as indicated on the sketch plan by a cross.

Extent of the Fire.

The fire broke out about 4.30 p.m. The premises were not so crowded as they had been during the afternoon, owing to the tea-hour, but it is estimated that about 1,000 people were in the building, of whom about 370 were employees. A male assistant had entered the window to reach one of the fancy necklaces, previously mentioned, and had just grasped it when he heard a loud sound, apparently just beneath where he was standing. He saw no flash, but immediately flames flew up all round him. The explosion took place in the middle of the window. In his opinion one of the globes had exploded. These globes were a few inches above the cotton-wool. Early accounts stated that in reaching for the necklace the assistant had displaced an umbrella which had fallen on to and broken the lamp, but this statement was not borne out by the evidence at the inquest. The assistant stated that he did not notice what took fire first, but when he looked down the cotton wool was on fire.

It seems clear therefore that from some cause or other, such as accidental violence, a short circuit, or atmospheric pressure on a weak bulb, one of the lamps broke and set fire to the cotton wool. Though the electrical journals have protested somewhat vehemently against this deduction, it is borne out by experiments made after the fire by Mr. S. G. C. Russell, the electrical expert of the Phœnix Insurance Company, which showed that the breaking of a metallic filament lamp suspended over a mass of cotton wool instantly set the latter alight. The circumstances of the fire are no doubt unusual; but though "The Electrical Times" states that "it seems ridiculous to suppose that anything but a specially prepared tinder could be ignited by" such lamps, one can hardly imagine a better form of tinder than cotton wool or a better material to feed the initial flame than celluloid.

The fire spread with extraordinary rapidity. The manager of a shop opposite this window says that the interior turned yellow with flames that broke out like a flash, and that within three minutes the glass came out. One or two of the officials of the firm appear to have warned employees on the upper floors of their danger; and there would seem to have been ample time for all to have got safely away. Those who perished seem to have remained at the windows in the front of the building instead of seeking an exit at the back. Possibly the fact that the electric light either went out or was turned out added to the confusion and made exit a matter of difficulty. Only three out of the twelve fire doors were closed, some being left open for the passage of the fire hydrant hose; but the fire quickly got beyond the control of the employees' brigade, which had to beat a retreat. In such general excitement eye-witnesses' accounts are apt to be confused or contradictory. One spectator affirms that the roof was burning within ten minutes, others that flames showed through within half-an-hour. Certainly the whole place was gutted and most of it fallen down within two hours of the fire commencing. The exposed columns and girders, quickly affected by the fierce heat and water, sagged and collapsed, bringing down the floors and walls depending on them.

The walls of the newest block in Ilminster Gardens are standing, but the roof and most of the floors have gone, and the interior is gutted. The centre part of the front to Ilminster Gardens has also fallen out; but the big wall dividing it from the older buildings at the back stands, and can be seen in the large general view of the ruins that we publish. The granolithic stone staircase by Stuarts Granolithic Stone Co., erected in 1897, and the iron staircase are both intact. Along St. John's Road the fire spread as far as what appears to be No. 9, which is burnt out, only the front wall remaining. Nos. 11 and 13 are structurally intact at the front, but damaged at the back; No. 15, Messrs. Rabbits' boot store, is now open for business, as also Messrs. Arding and Hobbs's two other shops, Nos. 17 and 19. So fierce was the fire that the fronts of the houses in Ilminster Gardens, of the shops on the oppo-



Photo: Bolak.

THE CLAPHAM JUNCTION FIRE.

Another view of the ruins from St. John's Road, showing distorted girders.

site side of Lavender Hill, at the corner of Falcon Road and the front of the Falcon Hotel, were badly scorched, and had windows broken. Some of these buildings were from 70 to 100ft. away. The premises of Messrs. Francis and Sons, Messrs. Astill, and Mr. R. J. Bridgeland, on the opposite side of St. John's Road, a comparatively narrow thoroughfare, took fire and were badly damaged. Some of this damage was due to the street decorations put up by the tradesmen at Christmas time, which helped to spread the flames across the roads.

The Lessons of the Fire.

From the point of view of modern fire-resisting construction, it is clear that these premises were, as a whole, not satisfactory; but it must not be forgotten that most of the buildings were, if not particularly old, of a date anterior to the foreward movement in fire-resisting construction. Moreover, as has been said, the premises represented a gradual aggregation of separate shops and other buildings, which were altered as they were added from time to time, and in which solid walls had to be cut away and superincumbent walls supported on stanchions and girders. The great danger lies in the fact that most of the great drapery establishments have been built up in a similar manner, and are therefore exposed to similar risks. Indeed, it is doubtful whether many of them are equipped with so complete a system of fire hydrants and extinguishers as were Messrs. Arding and Hobbs's premises. The grave risk of housing highly inflammable stock in speculative-built shops with wooden floors and matchlined interiors is greatly increased when the party walls are cut away to permit communication from one shop to the other. Moreover, concrete panel floors (especially if made of coke breeze) carried on exposed steel joists and girders, cannot to-day be considered fire-resisting, nor can any system in which naked steel is employed.

The merits of reinforced concrete as a fire-resistant are well known; and reinforced concrete will probably largely take the place of steel in future structural work. The value of plain concrete has been sufficiently demonstrated by the behaviour of the granolithic stone staircase and the concrete block partitions in this Clapham fire. And if steel is used the methods of encasing it with concrete or with hollow tiles have been before the public for many years.

Apart from any questions connected with this particular fire, these large drapery shops are troublesome buildings from the architect's point of view. The result generally of gradual additions and extensions, is that anything like clear and direct planning is generally precluded, and the demand for abnormal window space militates against an æsthetic or rational treatment of the elevations. From the public point of view the fire danger must be considerable. The tall fixtures and the invariable policy of hanging goods suspended on rods obscure the view in all directions; the awkward planning and the haphazard placing of the communicating doors makes it difficult to find one's way about. When, as in the Clapham fire, the outbreak of fire is immediately followed by the lights going out, the possibilities of a catastrophe are immeasurably increased.

The danger of using unprotected electric lamps near inflammable substances, a practice which Mr. Russell says is generally pursued in London, seems to demand some legislative restriction, since it is in the mind of every electrical engineer that lamps may break and cause a fire. The practice of wiring metallic filament lamps in series does not seem to us as satisfactory in large establishments as the installation of an auto-transformer, so that the lamps may be used singly. Any difference or deficiency (however small) in the capacity of one lamp wired in series is bound to lead to trouble eventually; and such a defect is not to be ascertained easily beforehand. The necessity of having distinct control switches so that the lamps in any one section of a large establishment can be switched off without extinguishing the lights throughout is also indicated.

The outstanding lesson of the Clapham fire, however, is that the provision of extensive hydrant system and extinguishers is of little use unless the buildings containing inflammable goods are capable of resisting the hottest fires, and are so subdivided that the fire can quickly be restricted to the area in which it commenced. Though every material known will succumb to some degree of heat, it must not be forgotten that the restriction of the fire to a small area will prevent a fire ever attaining such proportions and to such a degree of heat as will destroy the most modern methods of fire-resisting construction.



Photo: Bolak.

THE CLAPHAM JUNCTION FIRE.

View of one of the fire-doors which spacing was not closed and has been warped by the fire.

STEELWORK ENCASEMENT.

The Rev. J. P. Bacon-Phillips writes to point out that in almost every instance during the last few years when fire has done vast damage in an almost incredibly short time, it has almost invariably been caused by the collapse of iron or steel girders. He very rightly contends that these girders could be encased more efficiently than in many cases they appear to be. This is a point that is emphasised in nearly every great fire of recent times, and it is strange that a lesson that is so often and so strongly enforced should be so persistently neglected. This is surely not for want of efficient means of encasement, but would appear to be generally due to the short-sighted economy of the building owner, who, in the case of the shopkeeper, is apt to go to the limit of his resources in the effort to make an imposing show, and is apt to cut down expenses on items that do not come into this category. In such cases the architect should be firm in his insistence on the necessity of adopting the completest possible equipment against fire risks. As we have repeatedly said, and as our advertising pages prove, the means of reducing risks to an absolute minimum exist in abundance. A most serious responsibility attaches to the rejection of such means; and, in view of frequent calamity, it has become an urgent question whether their adoption should not be made compulsory. Already we notice that the Law and Parliamentary Committee of the Hammersmith Borough Council is considering a resolution urging upon the London County Council the expediency of applying for statutory powers to inspect extensive shop premises, bazaars, and the like, within its area, to which the public are attracted in large numbers, and particularly when ordinary trading is supplemented by entertainment, and to make such requirements as to exits, gangways, doors, stairs, lighting, and other matters as may be essential to the safety of the public.

* * *

The challenge cup for the smartest piece of work during the past year has been awarded to the Shoreditch station. The Cannon Street Station is commended for its work at a fire in Cannon Street on August 22. The fire, it will be remembered, affected over 70 sets of offices, but was confined to one block.

SOME RECENT REMARKABLE FIRES.

A fire, which by the prompt action of the Fire Brigade, was happily checked before becoming serious, broke out on the premises of the Edison and Swan United Electric Light Company in Queen Street, City. It was discovered at eight o'clock, when the only persons on the premises were the staff of cleaners. Smoke was observed coming up from the basement, and the fire alarm was at once rung. Fortunately the premises are only a few yards away from a fire station in Cannon Street, and firemen with their appliances were on the spot without loss of time. No flames could be seen, and some difficulty was experienced in discovering the exact locality of the outbreak. The difficulty was overcome by the use of the smoke helmets with which the brigade is provided. These helmets fit right over the head and face, in the same manner as a diver's helmet, and are connected with a reservoir of air which is carried on the back, the wearer being thus enabled to move about with impunity amid suffocating fumes. Several firemen in these helmets disappeared with a hose into the blinding smoke, and in a short time they were directing jets of water on to the fire, which was consuming some of the stores kept in the basement. It was quickly extinguished, and no damage was suffered in any other part of the premises. The cause of the outbreak is not known.

A fire broke out late at night at Birmingham Small Arms Factory. The outbreak is said to have begun in the stationery department—a range of buildings covering an acre and a half. The flames spread with remarkable rapidity, and it was feared at one time that the larger range of buildings known as the gun-making department would be involved. There is, however, a wide road running between the two sections, and the wind blowing in a safe direction the larger block was kept intact. As it was the whole of the roof of the stationery department and warehouses was practically destroyed, and damage to the extent of several thousands of pounds done. There is a private brigade on the premises, and this was got to work immediately.

A fire occurred at the works of the Orchestrelle Company in Goldsmith Street, a narrow thoroughfare with a right-angled bend leading from Macklin Street to Drury Lane. The premises, which stand at the bend of the street, are four storeys high, and are of considerable depth from front to back. The business carried on there is the making of mechanical musical instruments, and more than a hundred hands are employed. A little before six o'clock in the evening a burst of smoke and flame was discovered in the basement, and the alarm was immediately given. It was quickly seen that the fire appliances at hand were not equal to dealing with the outbreak, and information was conveyed to the Fire Brigade, who, under the command of Lieutenant Sladen, attended with eight engines and the horsed fire escape. The Salvage Corps was also present. The first care of the members of the firm was to get all their employees out of the building, and this was safely accomplished. The operations of the brigade were somewhat hampered by the narrowness of the thoroughfare, and in spite of their vigorous attack the flames gained headway and rapidly spread to the ground floor, and eventually reached the first storey. The smoke from the burning stock, much of which consisted of music-rolls, was so dense that a fireman became unconscious while inside the building. Six of his comrades carried him out, and he had to be removed to Charing Cross Hospital. The fire was completely subdued after about three hours' strenuous work by the brigade.

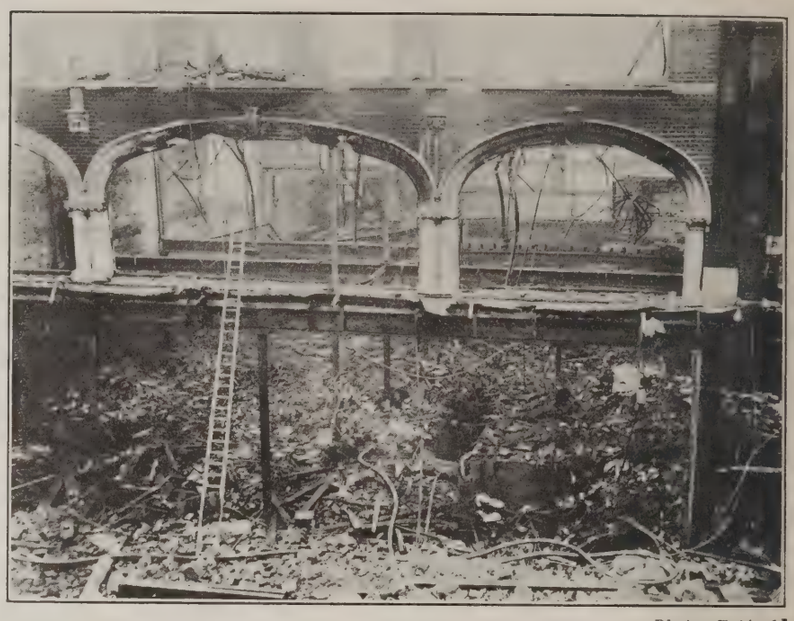


Photo: Topical.

THE KILBURN DRAPERY FIRE: VIEW OF PART OF THE PREMISES FROM THE HIGH ROAD.



Photo: Topical.

THE KILBURN DRAPERY FIRE: VIEW OF PART OF THE PREMISES FROM THE HIGH ROAD.

This fire, very similar in its origin and results to that at Clapham Junction, was fortunately not attended by fatal results. The outbreak occurred on an early-closing day, and only a small proportion of the employees were on the premises.

A great fire broke out at five o'clock on the afternoon of January 1st, at the Customs tobacco stores, Alexandria, Egypt, containing tobacco to the value of nearly a million sterling. The port fire brigade succeeded in restricting the conflagration to one half of the buildings, which were gutted, the loss being roughly estimated at £300,000. The German cruiser "Freya" sent 200 men on shore to help the firemen, and they rendered valuable service, forcing windows and doors and salving hundreds of bales. An unsatisfactory feature of the outbreak was the fact that it assumed large proportions before the alarm was given.

A serious fire has occurred at Port Antonio, Kingston, Jamaica, the Hotel Titchfield having been completely destroyed and other buildings burnt. The loss consequent on the destruction of the hotel is estimated at £60,000. It falls principally on the United Fruit Company and other American concerns.

A very serious fire, closely resembling in many particulars that which recently caused the destruction of Messrs. Arding and Hobbs's establishment at Clapham Junction, occurred last Thursday evening at Kilburn, involving loss and damage to the premises of Messrs. B. B. Evans and Co., High Road, to an amount which is estimated at over £60,000. Like the Clapham Junction fire, the scene of the disaster was the extensive premises of a suburban drapery firm, and the outbreak has been—perhaps erroneously—attributed to the fusing of an electric wire or the explosion of an electric lamp in the front window. Fortunately, however,



Photo: Topical.

THE KILBURN DRAPERY FIRE: VIEW IN THE INTERIOR.

The effect of fire on exposed steelwork is clearly shown by the twisted and sagged joists.

there was no loss of life. Thursday being early-closing day at Kilburn, practically the whole of the staff, numbering 150, were absent when the fire was discovered a few minutes before half-past five. Messrs. Evans's premises consist of ten shops, Nos. 142 to 160, with a frontage of some 200ft., and when the firemen had got the blaze under control after three hours' hard work, three of these shops had been completely burnt out, and great damage done to the greater part of the remainder. The establishment was closed for the half holiday at two o'clock, but it had been arranged to have the windows lit up after dark, and a few minutes after the light had been turned on it was discovered that the goods displayed in one of the centre windows were alight. The flames spread in every direction with extraordinary rapidity, and had got a good hold before the firemen from the neighbouring fire station were on the scene, and there were soon thirty fire engines on the scene, and immense volumes of water were being poured into the burning mass. In half an hour the roof of the shop where the fire originated collapsed. After the place had been burning for two hours and a half, a portion of the front wall collapsed, happily without injury to anyone. By this time the work of the firemen had begun to tell, and at half-past eight several engines were able to return to their stations. When the fire was at its height it was found that the flames had reached stables at the rear.

Buildings in Progress and Completed.

AMBLESIDE.—A new infants' school at Ambleside, erected by voluntary subscription, was opened on Saturday, by the Bishop of Barrow-in-Furness. The building is erected on a portion of the playground of the Kelsick Boys' Elementary School, and was designed by Mr. W. L. Mason, architect, Ambleside, and built by Mr. Arthur Jackson, contractor.

BERLIN.—The proposed new Grand Opera House in the West of Berlin is rapidly taking form under the direction of the impresario, Herr Berg, the owner of the Thalia Theatre here. The manager of the new house is to be Herr Angelo Neumann, the present manager of the National Theatre at Prague. The new building will be in the best situation, and will probably run the Royal Opera very close. The latter is altogether unworthy of Berlin.

BLACKWOOD.—The new elementary mixed school is centrally situated on a commanding site near the Drill Hall. The site comprises about 1½ acres, and is sufficient for doubling the present accommodation. It has picturesque gables, lofty central hall, and covered playground. There is a mixed department for 350 boys and girls, exclusive of cookery classroom. The rooms consist of six classrooms, five of which open direct on to a central hall 56ft. long by 24ft. wide, together with commodious cloakrooms, lavatories, and entrance vestibules, also a large cookery kitchen for girls and teachers' room. The furnishing and equipment are up to date. The heating throughout is by means of large open fireplaces and a low-pressure heating system, and ventilation has been well provided for. Owing to the steepness of the site the playgrounds have been placed at two different levels. Mr. F. Bond, of Cardiff, was the builder, the cost of the work being a little over £6,500, and Messrs. James and Morgan, FF.R.I.B.A., Cardiff, were the architects, assisted in the superintendence by Mr. E. Evans, clerk of works, of Gilfrach, Bargoed.

COATBRIDGE.—The new Coatbridge Higher Grade School and Junior Students' Centre has been formally opened. Erected at the corner of Albert Street and Dunbeth Road, to plans prepared by Messrs. H. and D. Barclay, Glasgow, at an estimated cost of £21,000, the building is really a handsome one, both externally and internally. The main building fronts Albert Street, and a separate building, in which are housed the gymnasium, manual workshop, cookery, and dressmaking classes, has a frontage to Colt Terrace. On the ground floor there are two physical laboratories and six classrooms for 40 each, headmaster's room, teachers' common room, and male teachers' room. On the upper floor there are a chemical laboratory, two art rooms, six classrooms for 30 each, and a female teachers' room. The manual workshop is fitted with 20 single benches, with a store-room attached. The heating, lighting, and ventilation are on up-to-date lines.

CONONLEY.—A new school built for the village of Cononley, near Skipton, by the West Riding County Council, to replace the National School, which has been in existence since 1845, but has for some time been unsuitable for its purpose, was opened on Saturday by Mr. F. J. Wilson, of Lothersdale. The school, a neat little structure, comprises a main hall 44ft. long by 23ft. wide, parallel with which are three classrooms each 20ft. by 20ft. The lighting, ventilation, and heating arrangements are on up-to-date lines. The school, which will accommodate 124 scholars, has cost £2,128, which, after deducting a Government grant towards the building of £960, works out at £9 8s. 4d. per scholar.

EBBW VALE.—The Willowtown new schools, Ebbw Vale, have been formally opened. The new school is situate at the west end of Brynheulog Street, and is in the heart of a populous and rapidly increasing district. It stands in about 1¾ acres of land, acquired from the Ebbw Vale Steel, Iron, and Coal Company, Ltd. The schools, which are in two blocks, consist of mixed and infants' departments. The exterior is in Pennant dressed stone, with brick quoins, and Forest of Dean stone dressing. The interior is up to date in every detail, and designed on the central hall principle. There are six classrooms in each department, accommodating 50 and 60 children respectively. The total accommodation of the mixed department is for 340, and the infants' department for 320, with further provision for 140, should the rooms, now intended to be used as a manual and cookery centre, be required for ordinary teaching purposes, so that the total accommodation will therefore be for 800. Great attention has been paid to the ventilation, which is on the system of fresh air inlets and copper domed ventilators, in addition to which the windows open at the top and bottom on patent gearings. The rooms are large, lofty, well lighted, and perfectly heated. The walls to a height of 4ft. 6ins. are of coloured glazed brickwork, which are easily cleaned. The floors are of rift sawn blocks, laid by Messrs. Nicholson and Sons, Leeds, and the corridors are of rock asphalt, laid by Messrs. Wainwright, Shepton Mallet. The whole of the furniture is in keeping with the building, and consists of oak to special specifications and designs of the architect, and supplied by Messrs. Bennett and Co.,

London and Glasgow. The playgrounds are all asphalt. The schools, which are among the finest in the county of Monmouth, were erected by Messrs. Williams and Sons, New Tredegar, according to plans prepared by Mr. Henry Waters, M.S.A., Ebbw Vale and Beaufort, the architect to the Ebbw Vale Education Authority, and the work has also been under his personal supervision, the cost approximately being about £16,000.

GREAT CROSBY.—The Great Crosby Council School, Coronation Road, Great Crosby, has been opened. The school has been erected in accordance with plans prepared by Mr. Henry Littler, the county architect, and is planned in two departments in one building, accommodating 350 "mixed" and 150 infant scholars, each department having its own central hall and cloakrooms, and is so arranged that the school can be extended to provide for 300 further scholars. The building is faced externally with Accrington bricks, with stone dressings. The cloakrooms and entrances have salt-glazed brick dadoes with Accrington bricks above, and the classrooms and central halls have tiled dadoes with plaster above. The floors of the cloakrooms and entrances are of concrete with granolithic finish. The internal joinery is in pitch pine. The building is heated by hot water on the low pressure system, and is lit by electricity. Special rooms are provided on the first floor for the teaching of cookery, and manual instruction, together with a lecture-room and laboratory, with separate boys' and girls' entrances, staircases, cloakrooms, lavatories, and storerooms. The floors of this department are of fireproof construction, and the rooms are finished in a similar manner to those in the main school. The playgrounds are asphalted.

GRINDLEFORD.—The foundation stone of a new church at Grindleford has been laid. A site was given by Mr. E. A. J. Moynard, and a fund was started to raise the £2,000 required. This has now been obtained, but a further £500 is necessary. The building which is being put up consists of a chancel and side chapel, vestries, and a temporary nave, which will seat about 165 persons.

HARROGATE.—The Education Committee of the Town Council, having considered and amended the specifications for the building of a new Infants' School at Bilton, recommended the Council to apply to the Board of Education for sanction to construct a swimming bath in the basement at an estimated cost of £300, and that the necessary approval of the Government Departments of all the amendments be obtained.

NEWMAINS. — At Newmains, near Wishaw, a new institute has been erected by Mr. James Hamilton Houldsworth, of Coltness, to provide recreation and useful instruction for the people of the village. The building is one storey in height, but is planned for extension if found necessary. It is equipped with a billiard-room having three tables, a commodious reading-room, a large tearoom, and four bath-rooms, together with cloakroom and other conveniences, and caretaker's house adjoining.

OKEHAMPTON.—A dinner was given by Messrs. Blatchford and Dawe proprietors of the Mid-Devon Joinery Works, in celebration of the completion by the firm of the block of premises built for Lloyd's Bank. The building, which is imposing in appearance, commodious, and peculiarly convenient for its purpose, occupies a prominent position at the corner of Fore Street and Lodge Road. Messrs. Horace Field and Simmons, of London, were the architects, and the contract was obtained by Messrs. Blatchford and Dawe in open competition with well-known London, Birmingham, Bristol, Torquay, and other firms. The price was, roughly, £6,000.

OXFORD.—The City Council, at their meeting on Wednesday, accepted the contract of Mr. Henry Flint, of High Wycombe, for £9,487, for the erection of the South Oxford Schools.

ROCHESTER. — Mr. D. R. T. Glazebrook, F.R.S., Director of the National Physical Laboratory, Kew, opened the new science building at the King's School, which has been erected as a memorial to the late Archdeacon Cheetham on the west side of the playground, with its principal front facing thereto, and practically at right angles to the older building of the school, with which it has been designed to harmonise. The exterior walls are faced with red bricks, with the exception of a part of the west elevation to St. Margaret's Street where the old stone boundary wall has been left standing and heightened. The roof is covered with hand-made tiles. Above the entrance are carved in Ancaster stone the arms of the Dean and Chapter, the monogram S. C. (Samuel Cheetham), the dates of the foundation of the school (1542), and the erection of the new building, and the words, "Deus Scientiarum Dominus." Inside the entrance is an alabaster tablet bearing the following inscription:—

IN MEMORIAM SAMVELIS CHEETHAM
ARCHNI ROFF: ET BENEFICIO
HUIVSCE SCHOLAE FAVTORVM
HAEC DOMUS INSTAVRATA EST
A. S. MCMIX.

On the left of the entrance is the science laboratory, 30ft. × 20ft., fitted up with working benches for 16 students, master's demonstration table, a dark room, and the usual fittings, on the left is the art room, 25ft. × 20ft. with a large north light. The walls are finished in Keeves cement. The woodwork of deal is stained with solignum and varnished. The builders are Messrs. George Baker and Son, of Pelican Wharf, Strood, and the laboratory has been fitted by the Educational Supply Association of Stevenage Wrought iron hinges and carving have been carried out by Messrs. H. H. Martyn and Co., Cheltenham. The architect is Mr. E. F. Cobb, A.R.I.B.A., Rochester.

ROYDON.—A new non-provided school has been opened at Roydon, Castle Rising. Captain Howard, of Rising Hall, gave the site and £100, and, with Mr. Raoul Everard, of Longham Hall, was guarantor for £100, loaned by the Diocesan Association, which association, together with the National Society, provided the balance needed. Locally they had also collected £100 in various amounts. The architects were Messrs. Lacey and Upcher, and the builder Mr. Seamon, of Roydon.

STOKE.—The Town Council has resolved to accept the tender of Messrs. Willcock and Co., Wolverhampton, for the erection of the new Stoke Town Hall, at £25,791.

SUNDERLAND.—The new Children's Hospital is rapidly approaching completion. It is being built for the purpose of relieving the congestion at the Sunderland Infirmary, and is situated in a healthy position amid rural surroundings, near the Waterworks and the new Barnes Park. The architectural style may be described as the early Georgian domestic. The buildings are of brick, with stone dressings, and the roof of red tiles. There will be accommodation for 46 inpatients, and the staff will be suitably housed, the whole arrangements being of a most up-to-date order. Mr. Joseph Huntley is the contractor, and the buildings are erected to the plans of Messrs. W. and T. R. Milburn, of Sunderland.

WEST EALING. — The new Lammas Council School at Cranmer Avenue, West Ealing, has been opened. The school is erected in a newly developed part of the borough, has cost £15,969, and provides accommodation for 398 boys, 400 girls, and 420 infants. There are cookery and laundry centres and a building for handicraft. Mr. Charles Jones, Borough Engineer, of Ealing, was the architect. An agitation was made for making the school a fee-paying one, but it was decided that it should be a free school.

Messrs. Moscrop-Young and Glanfield announce that they are removing to more convenient offices, and that their address is now 20, Brook Street, Bond Street, W., where they will carry on their business as architects and surveyors. Telephone: 9545 Gerrard.

Trade and Craft.

Checkfire Doors.

In a new leaflet which has been opportunely issued by the Checkfire Door Co., Tutaport Works, Lonsdale Road, Kilburn, N.W., who are contractors to H.M. Government, and to the L.C.C., etc., the construction of the Checkfire door is tersely and clearly explained. The door, as we have previously shown in these pages, has, in a total thickness of but one inch, half an inch of air space, and no outer frame is required. Consequently, they are elegant in appearance, light in weight, and noiseless in movement. The internal air-space is obviously of great importance; for whereas all materials get red-hot in time, air cannot conduct red heat. The Checkfire door is hung in plain brick rebates, thus avoiding risk from expansion.

Other advantages are enumerated in the leaflet, in which also there are short and plain directions for hanging the Checkfire door, which is accepted by all insurance companies, and has emerged triumphant from the test by the British Fire Prevention Committee.

Electric Fittings and Supplies.

The eleventh annual edition of the catalogue issued by Messrs. Simplex Conduits, Ltd., whose head offices are at Garrison Lane, Birmingham, and whose London offices and stores are at 113, 115, and 117, Charing Cross Road, W.C., contains 374 pages, and many hundreds of illustrations of their steel conduits and fittings for electric light and power wiring. The catalogue shows considerable extension in the scope of their manufactures and supplies, which have been steadily developed during the past two or three years. The Simplex practice, it is claimed, anticipated, and corresponds in every essential particular with the specification drawn up by the Engineering Standards Committee. Exact external diameters are adopted; the Simplex thread is specified as the standard conduit thread, and the Simplex socket junction as the standard method of joining with ordinary conduit. The firm's goods have been awarded eight Grand Prix and gold medals.

Coming Events.

Wednesday, January 19.

THE CARPENTERS' COMPANY LECTURES.—Mr. M. H. Baillie Scott on "The Art of Building, with special reference to the use and abuse of materials," Carpenters' Hall, 7.30 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—The students' meeting to hear Mr. S. Ash on "A Holiday in Belgium," is postponed on account of the General Election.

R.I.B.A.—Exhibition of Prize Competition Drawings opens at the Alpine Club, and continues until Jan. 29.

Thursday, January 20.

R.I.B.A.—Literature Committee Meeting.

Friday, January 21.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—Professor S. D. Adshead on "Tone and Colour in Towns."

Saturday, January 22.

ABERDEEN ARCHITECTURAL ASSOCIATION.—Mr. Alex. McGibbon on "Architectural Forms not influenced by material: a Popular Opinion Confuted," 7.30 p.m.

BUILDERS' FOREMEN'S ASSOCIATION. — Annual dinner, King's Hall, Holborn Restaurant, 6.30 p.m.

Monday, January 24.

THE SURVEYORS' INSTITUTION.—Adjourned discussion on Mr. Davidge's paper, "Town-planning Systems," and on Mr. Willmott's paper, "Housing and Town-planning, etc., Act, 1909," 8 p.m.

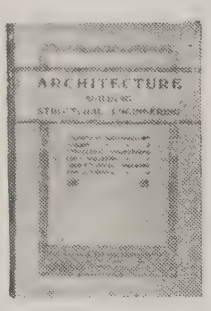
Tuesday, January 25.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCHITECTURE. — Mr. Banister Fletcher on Roman Architecture (Thermae), British Museum, 4.30 p.m.

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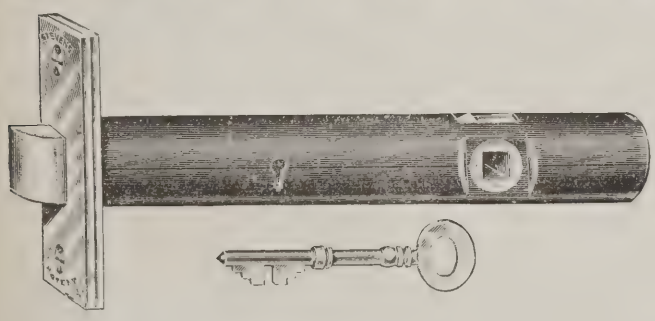
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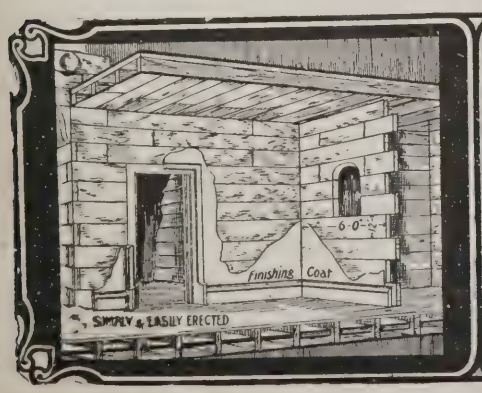
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Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, *Caxton House, Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Axminster.—For six villas on the Hakes Building Estate, Axminster, for the Axminster Development Syndicate, Ltd. Symes and Madge, architects, Somerset House, Chard. Quantities by architects.

J. E. Fursland, Bridgwater	£1,500
Parsons Bros. and Dunster, Chard...	1,402
Bishop and Son, Chard	1,380
J. Bazley, Axminster	1,355
Newbery and Son,* Axminster ...	1,230

*Accepted.

Darlington.—Accepted for erection of a girls' secondary school at Darlington, for the Durham County Council:—
R. Blackett and Son, Darlington ... £12,599
*Accepted.

Friern Barnet.—For kerbing, channelling, making-up, etc., of Oakleigh Park North and Torrington Park (part of), for the Friern Barnet Urban District Council. Mr. E. J. Reynolds, A.M.I.C.E., engineer and surveyor.

Oakleigh Park North.

W. Iles, Southend	£5,930.
G. Bell and Sons, Tottenham ...	5,927
W. Griffiths and Co., London, E.C. ...	5,906
T. Adams,* Wood Green	5,534

Engineer and surveyor's estimate, £5,847.

Torrington Park (part of).

A. T. Catley, London, W.C.	£3,250
G. Bell and Sons	3,051
W. Griffiths and Co.	3,027
W. Iles	2,920
T. Adams	2,833
R. W. Swaker,* Hounslow	2,461

Engineer and surveyor's estimate, £2,865.
*Provisionally accepted.

Gillingham (Dorset).—For a pair of cottages for Mrs. Agnes A. Phillips, of Milton, Gillingham, Dorset. W. J. M. Morrish, architect, Gillingham, Dorset.

J. Barber, Mere, Wilts	£465 0 0
J. Hooper, Mere, Wilts	386 10 0
Sweetman Bros., Wincanton ...	360 0 0
A. Barnes, Gillingham	355 0 0
A. Gray and Son,* Mere, Wilts...	340 0 0

*Accepted.

Hengoed (Wales).—For the extension of Council chamber and the erection of a new wing, consisting of three offices and a committee room, at the Council Offices, Hengoed, for the Gellygaer Urban District Council. Mr. James P. Jones, F.I.S.E., surveyor, Council Offices, Hengoed, via Cardiff.

D. Davies and Sons, Penarth Road, Cardiff	£1,544 0 0
W. and D. Thomas, Ystrad-Mynach	1,519 12 4
H. J. Davis, Bargoed Hall, Bargoed	1,408 14 7
A. J. Colborne, Swindon	1,398 10 0
E. D. W. Evans, 63, Tudor Road, Cardiff	1,342 13 4
T. F. Howells, Caerphilly ...	1,340 0 0
Hamilton and Millard, Station Yard, Caerphilly	1,323 0 0
D. W. Davies and Co. (Howell) Cardiff	1,295 0 0
R. Forsyth, Hengoed	1,279 9 0
Vodden and Lee,* Gilfach, Bargoed	1,154 17 10

*Accepted.

New Washington (Durham).—For making-up 35 private streets, for the Chester-le-Street Rural District Council. Mr. G. W. Ayton, highway surveyor. Quantities by surveyor.

J. Trainer	£3,020 5 0
J. Carrick	2,720 9 0
R. Hudson	2,640 1 4
J. Hope	2,466 8 1
J. W. White	2,366 0 0
C. S. Bunch	2,356 12 6
J. Clarke and Sons	2,348 5 5
G. E. Simpson	2,298 17 8
J. W. Henderson	2,287 10 0
J. W. Robson*	2,265 6 10
R. Fisher	2,080 13 5

*Accepted.

Newtownards (Ireland).—Accepted for sewerage works, for the Urban District Council. Messrs. Swiney and Croasdaile, Avenue Chambers, Belfast, engineers:—
J. and R. Thompson, Ltd., Belfast, £12,398.

Oxford.—For erection of the new St. Aldate's and St. Ebbe's school, for the Oxford Education Committee.

J. Simms and Son	£10,610
Kingerlee and Son	9,987
Benfield and Loxley	9,937
Wooldridge and Simpson	9,897
H. Flint,* High Wycombe, Bucks	9,487

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(Tenders continued on page viii.)

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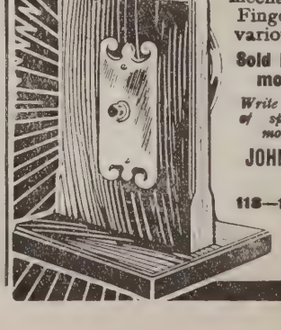


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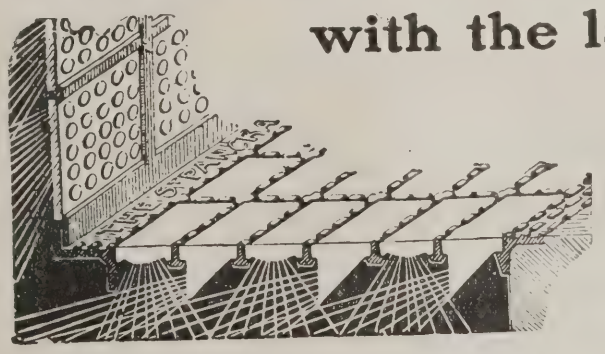
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(Tenders continued from page vi.)

Oxford.—For erection of a boys' and girls' school, in Thames Street, St. Aldate's, and for additions and alterations to certain existing buildings intended to form an infants' school, in Luther Street, Oxford, for the Local Education Authority. Mr. W. H. Castle, city estates surveyor.

Brucker Bros.	£12,667 0 0
Tombs and Son, Buckingham...	12,569 0 0
W. H. Siarey, Chinnor	11,600 0 0
J. Simms and Son	10,610 0 0
J. S. Kimberley, Banbury ...	10,600 0 0
Beardsmore and West, Northampton	10,525 0 0
T. Higgs, Northampton ...	10,415 0 0
Stephens, Bastow and Co., Ltd., Bristol	10,394 0 0
J. Parnell and Son, Rugby ...	10,360 0 0
A. J. Colborne, Swindon ...	10,289 10 0
W. W. Webster, Guilsborough, Northampton	10,210 0 0
T. H. Kingerlee and Sons ...	9,987 0 0
Benfield and Loxley	9,937 0 0
Pethick Bros., Ltd., London ...	9,910 0 0
Wooldridge and Simpson ...	9,897 0 0
H. Flint,* High Wycombe, Bucks	9,487 0 0

Rest of Oxford. *Accepted.

Portsmouth.—For pulling down existing offices and erecting new ones in the girls' and infants' playground at Stamshaw Council school, for the Education Committee. Mr. A. H. Bone, surveyor, Cambridge Junction, Portsmouth.

Barnes, Ltd.	£1,199 0 0
A. Light	1,151 10 0
S. Salter	1,118 0 0
J. Tanner	1,100 0 0
G. A. Gumbleton	1,078 1 5
E. Bayly	1,074 11 10
Pryer and Sons	1,065 15 9
J. Crockerell	1,029 0 0
F. J. Privett	967 0 0
H. Jones and Son,* Portsmouth	943 0 0
H. Buckett	930 0 0

*Accepted.

Rowsley, near Darley Dale (Derbyshire).—For erection of a new Primitive Methodist church and school at Rowsley, Darley Dale. Mr. D. M. Wildgoose, architect, Edge Road, Matlock.

J. W. Wildgoose,* Industrial Works, Matlock	969 5 0
W. Toft and Co.	1,010 5 0
E. J. Evans	1,024 10 3
F. G. Nuttall	1,069 6 7
F. Toft	1,101 15 0
T. Clark, Bakewell	1,161 4 0
J. Twyford and Son, Bakewell	1,190 17 0
G. F. Kirk, Foljambe-road, Chesterfield	£1,215 17 0

Rest of Youlgrave, near Bakewell.
*Accepted.

Skircoat (Halifax).—For the various trades required in erection of a detached house at Skircoat. Messrs. Joseph F. Walsh, F.S.I., and Graham Nicholas, F.R.I.B.A., architects, Museum Chambers, Halifax.

Accepted tenders:—Mason, Shaw Bros., Skircoat Green; joiner, F. Moore and Sons, Claremount; plumber, A. Pollard, Old Cock Yard; slater, plaster and concretor, Rushworth and Firth, New Bank. All of Halifax.

Wycombe (Bucks).—For erection of a pair of villas, Desborough Avenue, for Messrs. Beckford Bros. Mr. F. B. Hooper, architect, High Wycombe and Great Marlow.

T. Hopkins	£770
W. H. Siarey	648
C. Jefferson	615
F. Chapman	570
J. Nash and Sons	560
A. W. Morton and Sons	548
G. H. Gibson and Sons	527
F. Clarke	510
B. W. Martin,* Wycombe	462

*Accepted.

Wembley.—Alterations for No. 1, The Parade, for Wm. Mallinson. Messrs. George Baines and Son, architects, 5, Clement's Inn, Strand, London, W.C.

F. Tribe and Co., Ltd.—	
Estimate "A"	£266 0 0
Estimate "B"	107 0 0
Estimate "C"	21 0 0
J. and W. Pink—	
Estimate "A"	233 10 4
Estimate "B"	107 14 8
Estimate "C"	22 0 0
Batley, Sons and Holness*—	
Estimate "A"	215 0 0
Estimate "B"	105 0 0
Estimate "C"	20 10 0

*Accepted.

Walgrave (Northants).—For erection of new Council school, Walgrave, for the Northamptonshire Education Committee. Messrs. Law and Harris, architects, 1, Sheep Street, Northampton.

Goodman and Murkett, Wellingborough	£2,596
W. Heap, Lea Road	2,569
C. Andrew, Charles Street, Kettering	2,540
T. Higgs, Moore Street	2,487
R. Marriott, Rushden, R.S.O. ...	2,480
H. Martin, Ltd., Thenford Street ...	2,480
E. Green, Palmerston Road	2,459
T. Heath, Ltd., High Street, Towcester	2,398
Beardsmore and West, Derby Road	2,379
A. P. Hawtin, Colwyn Road	2,379
E. D. Sharman and Son, Baker Street, Semilong	2,345
E. Brown and Son, Castle Street, Wellingborough	2,325
T. Hickman, Northampton Road, Market Harborough	2,295
Sharp and Robinson,* Earls Barton	2,285

*Accepted subject to the approval of the Local Government Board.
Rest of Northampton.

Insurance.

Free £500 Accident Insurance Coupons have this week been sent to the following:—

O. P. P. (Birmingham), W. F. D. (Stroud), F. A. (Woking), G. H. (Glasgow), E. A. (Watton), J. B. W. (Glasgow), A. R. L. (Hull), L. H. M. (Bishopston), A. R. (Inverkeithing), F. G. R. (Tulse Hill), W. B. (Radcliffe), G. A. (King's Heath), A. L. (Edinburgh), G. H. B. Bournville), F. B. (Bristol), H. J. C. (Bristol), T. F. (Padiham), H. R. S. (Peckham), S. H. G. (Argyll), C. E. G. (Mansfield), H. M. (Bournville), H. D. (Cradley Heath), S. D. A. (London, W.C.), G. C. (Derby), G. H. (Moseley), J. P. (Heywood), W. C. D. (London, W.C.), D. L. L. (Glasgow), A. W. P. (Plymouth), W. T. (Largs), A. B. (Morley), G. E. P. (Sheffield), G. R. (Smethwick), A. N. B. (Nottingham), H. G. B. (Bristol), J. C. (Bristol), M. H. (Hull), T. W. M. (Leeds), H. F. (London, W.), A. J. C. (Mansfield), E. T. (Birmingham), H. S. (Rochdale).

TO CONTRIBUTORS.

Owing to the very large number of voluntary contributions submitted to the Editor, it has been found desirable to make the following regulations:—

1.—Intending contributors are advised to send a preliminary letter before forwarding articles and illustrations. The non-receipt of a reply within one week is to be taken as a polite negative. MSS. and drawings in all cases should be accompanied by sufficient stamps to cover return postage.

2.—The Editor declines to take any responsibility for the safety or return of contributions submitted, although every care will be taken where these regulations are complied with.

3.—Each MS. and illustration should bear the name and address of the owner or sender.

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COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about **five days** after the date of this issue.
Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders.
The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Jan. 13-25. **CHATHAM.**—Erection of balconies at the Workhouse Infirmary, Chatham, for the Guardians of Medway Union. Applications for bills of quantities, accompanied by deposit of £1 1s., to be made to the architect, E. J. Hammond, Balmoral Road, Gillingham, by the 13th inst. Tenders to be delivered by post at the Guardians' held.

Jan. 22. **NATLAND (Kendal).**—Whole or separate trade contracts, for erection of proposed residence, Natland, for Ismay Barnes. Plans may be seen and quantities and specifications obtained at the offices of John F. Curwen, F.S.A., Architect and Sanitary Engineer, 26, Highgate, Kendal, to whom tenders must be sent.

Jan. 22. **HAMPSTEAD.**—Demolition of the buildings now occupying the island site enclosed by Bayham Street, Hamilton Street, Greenland Street, and Greenland Place, Camden Town, and erection of a hoarding to enclose the site, for the Council of the Hampstead General Hospital. Block plan can be seen, and copies of the specification obtained, by application to the architects, Young and Hall, 17, Southampton Street, Bloomsbury, W.C. Tenders are to be delivered at the Hospital, Haverstock Hill, addressed to the Secretary.

Jan. 24. **PONTYPRIDD.**—Alterations and additions to premises in Morgan Street, for the Committee of the Pontypridd and District Club. Plans and specification can be seen with A. O. Evans, Williams, and Evans, Architects, Pontypridd, to whom tenders are to be sent.

Jan. 24. **BLACKWOOD (Mon.).**—Erection of two shops and premises at Blackwood, Mon., for J. F. Chappel. Plans and specifications can be seen and form of tender obtained at the office of D. J. Thomas, Architect, High Street, Blackwood, Mon., to whom tenders are to be sent.

Jan. 24. **PANTGLAS, GARN, S.O.**—Erection of schoolroom, two kitchens, and other repairs at Pantglas. Plans and specifications may be seen at Bronmenach. Tenders to be sent to Rev. J. W. Jones, B.A., Pantglas, Garn, S.O.

Jan. 24. **HALIFAX.**—Various works required in erection of workshop at Highroad Well. Plans may be seen and bills of quantities obtained of Jackson and Fox, Architects, Rawson Street, Halifax, to whom tenders are to be sent.

Jan. 24. **LINCOLN.**—Erection of a public elementary school on Spring Hill, Lincoln, for the Education Committee. Builders wishing to tender should apply to the Architect, W. G. Watkins, Bank Street, Lincoln. Applications are to be accompanied by a deposit of £1.

Jan. 24. **EXMOUTH.**—Carrying out alterations at the Foresters' Arms, Chapel Street, Exmouth, for Ross and Pidsley, Well Park Brewery, Exeter. Plans, specification and other particulars can be obtained at the offices of P. Kerley, Architect and Surveyor, National Provincial Bank Chambers, Exmouth, to whom tenders are to be delivered.

Jan. 24. **DERBY.**—Structural alterations at the Union Workhouse, Derby, for the Board of Guardians. Plan and specification may be seen on application to, and bill of quantities obtained, from F. C. Coulthurst, Architect, 4, Tlbert Street, Derby. Tenders must be sent to N. Twigge, Clerk to the Guardians, Poor Law Offices, Derby. Derby builders only invited to tender.

Jan. 24. **EDINBURGH.**—Carrying out the undermentioned works in connection with alterations at 15, Duncan Street, for the School Board:—1, mason work; 2, carpenter and joiner works; 3, plumber work; 4, slater and plaster works; 5, painter work. Plans may be seen and schedules obtained at the office of Mr. Carfrae, Architect, 3, Queen Street. Estimates must be lodged with the Clerk to the Board, School Board Offices, Castle Terrace.

Jan. 24. **GILLINGHAM (Kent).**—Making the necessary foundations, etc., for one 200 horse-power Diesel oil engine and alternator, at the generating station, Gillingham Road, for the Town Council. Copies of specification and general conditions may be obtained, and the site and preliminary plans inspected, on application to the Borough Electrical Engineer, at the Generating Station, Gillingham Road. Tenders to be delivered to F. C. Boucher, Town Clerk, Corporation Offices, Gardiner Street, Gillingham.

Jan. 25. **MERTHYR TYDFIL.**—Erection of a Masonic Temple for the Loyal Cambrian Lodge of Freemasons (No. 110), at Merthyr Tydfil. Plans and specifications to be seen with C. M. Davies Architect, 112, High Street, Merthyr. Tenders are to be delivered to James Fraser, 37, Thomas Street, Merthyr.

Jan. 25. **BELFAST.**—Erection of the proposed abattoir in Stewart Street, Belfast, for the Corporation. General conditions, specification, and drawings can be seen at the office of the City Surveyor, City Hall, Belfast, and bills of quantities obtained from W. H. Stephens and Sons, Surveyors, 13, Donegall Square North, on deposit of £5 5s. with the City Chamberlain, City Hall. Tenders to be lodged with R. Meyer, Town Clerk. The minimum rate of wages paid to labourers engaged on the contract shall be not less than 20s. per week. Fair wages clause.

Jan. 25. **PORTSMOUTH.**—Additions to the boys' secondary school, Victoria Road North, Southsea, for the Corporation. Specification, drawings, and general conditions of contract can be seen at the offices of A. H. Bone, Architect and Surveyor, Cambridge Junction, Portsmouth, and form of tender, general conditions, and bill of quantities can be obtained on application to the Town Clerk, at the Town Hall, Portsmouth. Tenders must be delivered to G. Hammond Etherton, Town Clerk, The Town Hall, Portsmouth. Fair wages clause.

Jan. 25. **BETHNAL GREEN.**—Repairs to the roof of the relief hall and new flat roof with lantern lights above the relief offices in Bishop's Road, Victoria Park, N.E. (nearest station, Cambridge Heath, G.E.R.), for the Board of Guardians. Specification, conditions of contract, and form of tender can be obtained of the Clerk on deposit of £2 2s. Plans may be seen either at the Clerk's office, or at the office of the Architect, W. A. Finch, 76, Finsbury Pavement, E.C. Tenders to be sent to D. Thomas, Clerk to the Guardians, Guardians' Offices, Bishop's Road, Victoria Park, N.E.

Jan. 25. **LONDON, E.**—Erection of a coroner's court at High Street, Poplar, E., for the L.C.C. Persons desiring to submit tenders may inspect the drawings, and obtain the specifications, bills of quantities, form of tender, and other particulars, at the Superintending Architect's department, General Section, 19, Charing Cross Road, W.C., upon deposit with the cashier of the Council, at the County Hall, Spring Gardens, S.W., of £2. Full particulars of the work may be obtained on application at the County Hall, before the payment of a fee for the specification, etc. Tenders must be delivered to G. L. Gomme, Clerk of the London County Council, County Hall, Spring Gardens, S.W.

Jan. 26. **AVONMOUTH.**—Erection of ten cottages at Avonmouth, for the City and County of Bristol. Plans and specifications may be seen at the offices of Peter Addie, City Valuer, The Exchange, Bristol. Quantities can be obtained on deposit of £1 1s. Tenders must be delivered at the above offices.

Jan. 26. **HALIFAX.**—Reinstating "Kingston Confectionery Works," belonging to John Mackintosh Ltd. Plans and specifications may be seen and bills of quantities obtained of Medley Hall and Son, Architects and Surveyors, 1, Harrison Road Halifax, to whom tenders are to be sent.

Jan. 26. **ALLOSTOCK.**—Alterations and additions to present buildings at the Cheshire County Council school at Allostock, for the C.C. Plans and specifications can be seen at the office of H. Beswick, F.R.I.B.A., County Architect, Newgate, Street, Chester, and quantities obtained on deposit of £1. Tenders are to be delivered to J. H. Cooke, Solicitor, Winsford.

Jan. 26. **ABERTILLERY.**—Extension of the Queen Street infants' school, for the U.D.C. Drawings and specifications may be inspected at the office of the Architect, W. H. Hiley, Chapel Street, Abertillery. Bills of quantities supplied by the Architect on deposit of £1 1s. Tenders to be sent to N. J. Llewellyn, Secretary, Council Offices, Abertillery.

Jan. 26. **SPURSTOW (near Tarporley).**—Alterations and additions to the school buildings, Spurstow, near Tarporley, for the Cheshire C.C. Plans and specifications can be seen at the office of H. Beswick, County Architect, Newgate Street, Chester, and quantities obtained on deposit of £1. Tenders to be sent to C. E. Speakman, Clerk, Education Office, Crewe.

Jan. 26. **MANCHESTER.**—Erection of wash baths and washhouses at Miles Platting. Drawings may be seen and specifications and bills of quantities obtained at the office of the City Architect, Town Hall, upon deposit of £2 2s. All cheques or postal orders are to be made payable to the order of "The Corporation of Manchester." Tenders to be delivered at the above office.

Jan. 26. **LIVERPOOL.**—Construction of a public washhouse at Netherfield Road North, and also the engineering work required therewith, for the Corporation. Plans and specifications may be inspected and quantities for builders' work obtained on application to the Engineer and Chief Superintendent, W. R. Court, at his office, Municipal Offices, Liverpool, on deposit of £1 1s. Tenders must be posted to Edward R. Pickmere, Town Clerk, Liverpool.

Jan. 27. **OSWESTRY.**—Additions and alterations to house, Cae Glas, and all other work in connection therewith, in accordance with the plans and specification prepared by the Borough Engineer and Surveyor, for the Corporation. Plans, specification and general conditions may be seen and bill of quantities and form of tender obtained, on deposit of 10s. 6d., and on application to G. William Lacey, C.E., Borough Engineer and Surveyor, Guildhall, Oswestry. Tenders must be delivered to S. Pryce Parry, Town Clerk, Town Clerk's Office, Guildhall, Oswestry.

Jan. 27. **OSWESTRY.**—Additions and alterations to buildings for conveniences, shelters, etc., at Cae Glas Park, and all other work in connection therewith, for the Corporation. Plans, specification and general conditions may be seen and bill of quantities and form of tender obtained, on deposit of 10s. 6d., on application to G. William Lacey, C.E., Borough Engineer and Surveyor, Guildhall, Oswestry. Tenders must be delivered to S. Pryce Parry, Town Clerk, Town Clerk's Office, Guildhall, Oswestry.

Jan. 28. **HOLYWELL GREEN.**—Erection of new offices and cart sheds at Springwood Mills, Holywell Green, for R. and J. Holroyd. Plans may be seen and quantities obtained of Fred F. Beaumont, Architect, Southgate Chambers, Halifax, to whom tenders are to be sent.

Jan. 28. **PITTENWEEM.**—Execution of mason and brickwork, joiner, plumber, plaster, and slater work of extensions, at Ovenstone Hospital, Pittenweem. Plans may be seen with Mr. Henry, Architect, St. Andrews, from whom schedules of quantities may be obtained and with whom tenders must be lodged.

Jan. 28. **GUILDFORD.**—Supply of all material for and erection of nine arches, one main flue, and one chimney at the gas works, Onslow Street, Guildford, for the Gaslight and Coke Company. Specification, blue print, and further particulars can be obtained, on deposit of £1 1s., from P. C. Cleasby, Gas Works, Guildford. Tenders, addressed to the Chairman of this Company, to be delivered to Wm. Titley, Secretary, Gas Offices, Onslow Street, Guildford.

Jan. 28. **CORK.**—Execution of proposed new additions and alterations to the existing fitter's shop and store, for the Corporation. Drawings, general conditions, and specification may be seen and tender form and all information obtained at the City Engineer's Office, City Hall, Cork. Intending contractors must first lodge with the City Treasurer £1. Each person tendering must also lodge with his tender £10. Tenders must be deposited in the Town Clerk's Office, City Hall, Cork. Fair wages clause.

Jan. 29. **LLANDILO, S. WALES.**—Erection of the following:—(1) Entrance lodge, Abermarlais Park, for Mrs. de Rutzen; (2) residence at Llanedy, for Rev. B. Morris. Particulars may be obtained from W. D. Jenkins, F.S.I., A.R.I.B.A., Architect, George Street, Llandilo, S. Wales.

Jan. 29. **TREHERBERT.**—Erection of new premises at Treherbert for the Conservative Club. Plans and specification can be seen at the offices of J. Rees, Architect, Pentre, and bills of quantities obtained upon deposit of £2 2s. Tenders to be addressed to the "Chairman of Committee," Conservative Club, Treherbert.

Jan. 29. **PLYMOUTH.**—Erection of a store at the Victoria Wharves, Cattedown, Plymouth. Plans and specifications can be seen at the office on the wharves. Tenders endorsed "tender for store" to be sent in to The Manager, Victoria Wharves, Cattedown, Plymouth. Any further information can be obtained from W. F. Tollit, Architect, Totnes.

Jan. 31. **SHEFFIELD.**—Extension of women's hall of residence, Ecclesall Road and Collegiate Crescent; also heating apparatus and electric installation, for the Corporation. Plans and specifications may be seen and copies of the bills of quantities obtained on application at the offices of the Architects, Gibbs, Flockton, and Teather, 15, St. James' Row, Sheffield. Tenders to be delivered at Education Office, Leopold Street, Sheffield. Fair wages and sub-letting clauses.

Feb. 2. **YARM.**—Contractors desirous of tendering for the whole of the work proposed to be done in connection with certain Alterations and improvements at the Yarm Council school, for the North Riding of Yorkshire County Council, may inspect the plan and specification and obtain forms of tender at the school, on application to the master or caretaker. Tenders to be delivered to J. C. Wrigley, Secretary, County Hall, Northallerton

Feb. 3. **EAST AND WEST MOLESEY.**—Erection of an isolation hospital within the district, in accordance with plans and specifications and bills of quantities prepared by Foster, Lovell, and Lodge, of 23, Old Queen Street, London, S.W., for the U.D.C. Plans, specifications, and bills of quantities may be seen at the Architect's office and at the Council Offices, East Molesey. Applications for bills of quantities and forms of tender to be made to the Clerk to the Council, and can be obtained upon deposit of £1 1s. Tenders, addressed to the Chairman to the Isolation Hospital Committee, to be sent to D. Cann, Clerk to the Council, Council Offices, Dundee Villa, East Molesey.

Feb. 4. **WAKEFIELD.**—Execution for the West Riding Education Committee of the following works:—Bradfield, Oughtibridge provided school; alterations (builder, joiner, plumber, and painter). Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders to be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

Feb. 4. **WAKEFIELD.**—Execution of the following works for the West Riding Education Committee:—Thornton-in-Craven, Earby New School (builder, joiner, slater, plasterer, plumber, painter). Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. £1 deposit must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders must be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

Feb. 7. **PETTAUGH (near Stowmarket).**—Erection of a new school for about 60 children at Pettaugh, near Stowmarket, for the East Suffolk County Education Committee. Builders who desire to tender should send in their names, accompanied by a deposit of £1 1s. (cheques to be made payable to W. E. Watkins), by 8th inst., to W. E. Watkins, Secretary, Education Office, County Hall, Ipswich, to whom tenders are to be sent.

Feb. 7. **CARDIFF.**—Erection of proposed riding school and stabling, on the Barracks Field, Cardiff, for the Glamorgan County Territorial Force Association. Plans and specification to be inspected at the office of the Architect, W. H. Dashwood Caple, F.R.I.B.A., 2, Church Street, Cardiff. Copies of the bills of quantities may be obtained on deposit of £1 1s. Tenders to be delivered to Capt. C. J. Wilkie, Secretary, 20, Dumfries Place, Cardiff.

Feb. 7. **ENFIELD.**—Construction of pumping station buildings, together with chimney, stores, coal bays, cottage, broadway, drainage, and other contingent works, at Hadley Road, Enfield, for the Metropolitan Water Board. Drawings, conditions of contract, and specifications may be inspected at the offices of the Chief Engineer, Savoy Court, Strand, W.C. Contractors desirous of tendering may obtain forms of tender, conditions of contract, specifications, list of drawings, bills of quantities, etc., from the Chief Engineer, on the production of an official receipt for the sum of £10, which must be deposited with the Accountant at Savoy Court, Strand, W.C. Tenders must be delivered to Offices of the Board, Savoy Court, Strand, W.C.

Feb. 9. **LLANFAIR, P.G.**—Erection of a new Council school at Llanfair, P.G., for the Anglesey Education Committee. Plans and specifications may be inspected with Jos. Owen, F.R.I.B.A., County Architect, Menai Bridge. Tenders to be sent in to R. H. Williams, Secretary of Education, Education Offices, Llangefni.

Feb. 10. **ASPATRIA.**—Execution of excavating, concreting, and walling, in connection with diversion of River Ellen at Stockdale; drainage at Stockdale; drainage at Whitefield House, for the Aspatria, Silloth, and District Joint Water Board. The whole of the works to be carried out in accordance with plans and specification prepared by Joseph Graham, Civil Engineer, Castle Street, Carlisle. Contractors may obtain copies of the specification and bills of quantities, with form of tender, and inspect drawings at the office of the Engineer upon deposit of £1 (cheque only). Tenders to be delivered to F. Richardson, Clerk, Aspatria.

No date. **ASHTON-UNDER-LYNE.**—Builders desirous of tendering for the whole of the works required in the erection of a pump house and elevated brick water tower, situate at Lydgate, in the Springhead U.D.C. area, for the Joint Committee, are requested to forward their names, with cheque value £1 1s., to Fred. J. Dixon, A.M.Inst.C.E., Water Engineer, Engineer's Office, Town Hall Chambers. Quantities will be forwarded when ready.

ENGINEERING.

Jan. 26. **HULL.**—Supply and fixing of certain cast-iron, wrought-iron, and copper pipes, and fittings, and alterations to existing pipes, and other work, for the Corporation. Forms of tender and other particulars may be obtained of A. E. White, M.Inst.C.E., City Engineer, Town Hull, Hull. Blue prints of a drawing showing the pipes, etc., will be supplied upon payment of 2s. each, not returnable. Remittances to be made payable to T. G. Milner, City Treasurer. Tenders are to be addressed to the Chairman of the Tramways Committee, and delivered at the Town Clerk's Office.

Jan. 31. **CARDIFF.**—Construction and maintenance of an elliptical skew-arch bridge, 60ft. span, over the River Rumney, in lieu of the existing masonry bridge, which is to be removed, and execution of certain road works in connection therewith, for the C.C. Contract drawings and deed of contract may be inspected and form of tender, specification, and bill of quantities obtained at the City Engineer's Office, City Hall, Cardiff, upon deposit with the City Treasurer of £3. Tenders are to be delivered at the office of the Town Clerk, City Hall.

Feb. 1. **LONDON (for India).**—Supply of bridgework for the Secretary of State for India. Conditions of contract may be obtained on application to the Director-General of Stores, India Office, Whitehall, S.W. Tenders are to be delivered at that office.

Feb. 2. **BRIDGEND.**—Supply, delivery and erection of (a) one new Lancashire boiler; (b) a central heating apparatus, for the Parc Gwyyt Asylum near Bridgend, Glamorgan, for the Committee. Specifications, with general conditions and forms of tender, may be obtained from the undersigned on deposit of £2 2s. for each specification. Drawings may be seen at the offices of the Consulting Engineer, Herbert T. Sully, Scottish Widows Buildings, Bristol, or at the Glamorgan County Offices, Cardiff. Tenders to be sent to W. E. R. Allen, Clerk to the Committee of Visitors, Glamorgan County Council Offices, Westgate Street, Cardiff.

Feb. 15. **TORONTO, CANADA.**—Execution of the following work and supply of materials:—3, laying sewer outlet; 4, building sewage tanks; 5, supply of iron castings; 7, supply of structural steel; 7, supply of sludge valves, penstocks, and pedestals; 8, supply of cast-iron pipe; 9, supply of cranes; 10, supply of special tile. Plans may be seen and specifications obtained at the Office of the City Engineer, Toronto, and at the office of the Commercial Intelligence Branch of His Majesty's Board of Trade, 73, Basinghall Street, London, E.C. Specifications may also be seen at the office of Mr. Farnell, 21, Charing Cross Mansions, Glasgow. Tenders by registered post to be sent to Joseph Oliver (Mayor), Chairman, Board of Control, City Hall, Toronto.

IRON AND STEEL.

Jan. 24. **LONDON (for Abroad).**—Supply of the following stores, for the Agent-General for the Cape of Good Hope:—1,500 tons rails, 80lbs. section, Bessemer or open-hearth steel; 2, 28,000 fishplates, Bessemer or open-hearth steel, for 80lbs. section rails. Forms of tender and all particulars may be obtained on application at the office of the Agent-General, 100, Victoria Street, London, to whom tenders are to be sent.

Jan. 25. **LONDON (for Madras).**—Supply of structural steelwork, etc., carriage lifting shop and shelter for steam-hammer boilers, as per the specification which may be seen at the offices of the company, for the Madras and Southern Mahratta Railway Company, Limited. The charge for the specification is £1 1s., which will not be returned. Tenders must be sent in to H. Bonham-Carter, Secretary, Offices: 91, York Street, Westminster, S.W.

Jan. 25. **LONDON (for abroad).**—Supply and delivery of:—22 40ft., 30 20ft., 25 12ft., and 31 6ft. deck spans, as per specification to be seen at the Company's offices, for the Rohilkund and Kumaon Railway Company, Limited. Tenders are to be sent to Alexander Izat, Managing Director, 237, Gresham House, Old Broad Stret, London, E.C. For each specification a fee of 10s. will be charged, which cannot be returned.

Feb. 1. **LONDON.**—Supply of about 430 tons of steel bridge girders and other iron and steel work of British manufacture, to be let in two contracts, for the Great Western Railway. Plans and specification may be seen and forms of tender and bills of quantities obtained at the office of the Engineer at Paddington Station. Tenders to be sent to G. K. Mills, Secretary, Paddington Station, London.

Feb. 8. **CAIRO.**—Supply of the following cast-iron pipes required for the Government Giza Waterworks:—300 pipes, 10in. diameter, 9ft. 4ins. length; 1,600 pipes, 6in. diameter, 9ft. 3¾ins. length; 5,000 pipes, 4ins. diameter, 9ft. 3¾ins. length; 65 sluice valves; 131 pipe fittings. Price must include delivery into stores. Each tender must include the whole of the pipes, fittings, and valves. The whole of these goods to be delivered into stores 3½ months after signing the contract. Prices must be in Egyptian currency for pipes, per English ton of 2,240 lbs.; valves, per value according to size; pipe fittings, per piece. Persons wishing to tender can see specification and plans at the office of the Chief of the Administrative Service, Public Works Ministry, Cairo. Tenders on stamped paper, should be addressed to the Chief of the Administrative Service, Public Works Ministry, Cairo.

PAINTING.

Feb. 1. **MANCHESTER.**—Painting at the undermentioned places, for the Lancashire and Yorkshire Railway:—1, Liverpool Exchange Station; 2, Mill Hill to Preston, Preston Junction to Lostock Hall, etc.; 3, Bolton to Euxton Junction, and Horwich Branch; 4, Bolton passenger and goods stations; 5, Pendleton to Crow Nest Junction, and Dobbs Brow Junction to Hindley and Blackrod Junction; 6, Manchester to Bolton, including ship canal and Kearsley branches; 7, Bolton to Castleton and Heap Bridge branch; 8, Oldham Road branch and goods station; 9, Clifton Junction to Accrington; 10, Halifax to Bradford; 11, Wakefield to Normanton. Specifications and separate forms of tender may be obtained on personal application at the Engineer's Office, Hunt's Bank, Manchester. Tenders to be sent to R. C. Irwin, Secretary, Hunt's Bank, Manchester.

Feb. 2. **LONDON, S.W.**—Cleaning, painting, repairs, and other work at the public baths, Manor Street, for the Council, in accordance with the specification which may be seen with T. Holland, Town Clerk, Town Hall, King's Road, Chelsea, S.W., to whom tenders are to be sent.

Feb. 2. **DARTFORD (Kent).**—Execution of (1) Cleaning and painting work, etc., at the Smallpox Hospitals, near Dartford, Kent; (2) removing and refixing corrugated iron roofing at the Orchard Smallpox hospital, in accordance with drawings, conditions of contract, and specifications prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., Engineer-in-Chief, for the Metropolitan Asylums Board. Drawings, conditions of contract, specifications, and forms of tender, may be inspected at the office of the Board, Embankment, E.C. and can be obtained upon deposit of £1 for each work. Tenders must be delivered at the office of the Board.

PLUMBING AND SANITARY.

Jan. 25. **HOLMROOK.**—Laying a water main between Holmrook Hall and Irton school, provision of a water supply to Irton school and school-house, and such other work as specified. Specifications can be obtained and plans seen on deposit of 10s. with Kenneth Pughe, Holmrook Hall Estate Office, Holmrook, Cumberland, to whom applications are to be made, and to whom tenders are to be sent.

Jan. 25. **MARDY.**—Relaying about 750 yards of 12in. main sewer at Mardy, for the Rhondda U.D.C. Plans and specification may be seen and forms of tender obtained at the Council Offices, Pentre, on deposit of £1 1s. Tenders must be delivered, addressed to the Chairman of the Health Committee, Public Offices, Pentre. Fair wages clause.

Jan. 25. **GUISELEY.**—Making about 269 yards of 12in. stoneware pipe sewer, with the necessary manholes and appurtenances thereto, in Park Road, Guiseley, for the U.D.C. Plans and specification may be seen, and bills of quantities and full particulars may be obtained on application to Joe Battye, Surveyor, Town Hall, Guiseley, on deposit of 10s. 6d. Tenders must be sent to M. Rennard, Clerk to the Council, Guiseley, near Leeds.

Jan. 27. **LEEDS.**—Erection of a urinal in Meanwood Road, Leeds, for the Corporation. Drawings and specification can be seen, and forms of tender and bills of quantities obtained of W. T. Lancashire, City Engineer, Municipal Buildings, Leeds. Tenders must be received at the Town Clerk's office.

Jan. 29. **NEWMARKET.**—Laying about 260ft. of 6in. glazed socketted pipes with inspection chambers, etc., at Lode, Cambs, for the R.D.C. For particulars apply to Thomas Gardner, Highway Surveyor, Woodditton, Newmarket. Tenders to be delivered to Sidney J. Ennion, Clerk to the Council, Newmarket.

Jan. 31. **YEOVIL.**—Construction of certain sewers, drains, and other works, within the borough and in the parish of Yeovil Without, for the Corporation. Drawings may be inspected and specifications and forms of tender, with schedules and quantities, can be obtained on payment of £2 2s., on application at the office of the Borough Surveyor at Yeovil, or at the office of T. and C. Hawksley, Civil Engineers, Caxton House, Westminster, S.W., on and after Jan. 10. Tenders to be addressed to the Town Clerk at his office, Yeovil.

ROADS AND CARTAGE.

Jan. 25. **GATESHEAD.**—Paving (randoms) the following streets:—Egremont Gardens, back Sunderland Road (between Duncan Street and King Edward Street), back Primrose Hill; also paving with granite Coulthard's Lane, for the Corporation. Plans and specifications may be seen and quantities obtained at the office of N. P. Pattinson, Borough Surveyor, Town Hall, Gateshead. Tenders are to be sent to W. Swinburne, Town Clerk, Gateshead.

Jan. 25. **KINGSTON-ON-THAMES.**—Supply of high-class granites, basalts, and tar macadam, at railway stations or wharves, also flints and fine gravel for footpaths, either at stations or wharves, or at the roadside, for the Surrey County Council. Also hauling from stations or wharves, and for day work upon the several main roads. Specifications, schedules, and forms of tender may be obtained on application to the County Surveyor, County Hall, Kingston-on-Thames, to whom tenders must be sent.

Jan. 26. **CHISWICK.**—Making up of parts of Airedale Avenue and Beverley Road, for the U.D.C. Forms of tender may be had by application to E. Willis, A.M.I.C.E., Surveyor, Town Hall, Chiswick, where plans, specifications, forms of contract and bond, and other documents may be inspected. Tenders are to be delivered to Ernest F. Collins, Clerk of the Council.

Jan. 26. **CHESTER-LE-STREET.**—Making-up 19 private streets, at Grange Villa (in the parish of Pelton), comprising lot 2, for the R.D.C. The work consists of excavating and levelling, rubble foundation, ordinary slag macadam, concrete kerbing, and cementing footpaths, glazed earthenware and scoria brick channels, surface water drains, with gulleys and manholes complete, etc. Plans, sections, and specification may be seen, and schedule of quantities, together with form of tender, obtained on deposit of £2 2s. with Geo. W. Ayton, Highway Surveyor, Chester-le-Street, to whom tenders are to be sent.

Jan. 27. **CHATHAM.**—Execution of 1, laying about 6,300 superficial yards wood paving at High Street; 2, construction and supply of a tank van for sewage; for the Corporation. Drawings may be seen, and specifications, forms of tender, and all particulars obtained on application at the Borough Surveyor's Office, Town Hall, Chatham, on deposit of £1 1s. Tenders to be delivered to Charles Day, Borough Surveyor, Town Hall, Chatham.

Jan. 27. **WANDSWORTH.**—Forming new roads and paths and laying out grounds at the new infirmary, St. James Road, Wandsworth Common, in accordance with the drawing and specification prepared by the Architect, J. S. Gibson, 5, Old Bond Street, W., for the Guardians of the Union. Drawings, specification, and conditions of contract may be inspected, and form of tender obtained, at the Architect's office, upon deposit of £10 Bank of England note. Tenders to be delivered to F. W. Piper, Clerk to the Guardians, Guardians' Offices, St. John's Hill, Wandsworth, S.W.

Jan. 29. **DERBY.**—Supply of broken granite, basalt, limestone, slag, of other suitable materials required for the main roads, delivered at various railway stations and wharves in the county, during the year ending March 31, 1911. Form of tender and ditions of contract may be obtained of J. W. Horton, A.M.I.C.E., County Surveyor, County Offices, St. Mary's Gate, Derby, to whom tenders are to be sent.

Jan. 31. **SANDGATE.**—Steam rolling and scarifying within the district, for the U.D.C. Particulars and forms of tender can be obtained on application at the Surveyor's Office, Sandgate. Tenders must be sent to J. Shera Atkinson, Clerk to the Council, Council Offices, Sandgate, Kent.

Feb. 2. **HATFIELD.**—Supply of broken granite and slag required for the main roads during year ending March 31, 1910, for the Hertfordshire C.C. Forms of tender and conditions of contract may be obtained upon receipt of a stamped addressed foolscap envelope, by Urban A. Smith, M.I.C.E., County Surveyor, County Surveyor's Office, Hatfield, to whom tenders are to be sent.

Feb. 2. **HATFIELD.**—Supply of the under-mentioned materials, cartage, etc., required for the main roads during year ending March 31, 1911, for the Hertfordshire C.C.:—Hand-picked surface flints, dug gravel, hoggin, shingle and sand, team labour. Also purchase and removal of road drift accruing from the main roads for the like period. Further particulars and forms of tender can be obtained of Urban A. Smith, County Surveyor, County Surveyor's Office, Hatfield, to whom tenders are to be sent.

Feb. 2. **DARTFORD (Kent).**—Execution of repairs to external roads at Joyce Green Smallpox Hospital, near Dartford, Kent, in accordance with drawing, conditions of contract, and specification prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., Engineer-in-Chief, for the Metropolitan Asylums Board. Drawing, conditions of contract, specification, and form of tender, may be inspected at the office of the Board, Embankment, E.C., and can be obtained upon deposit of £1. Tenders, addressed as noted on the form, must be delivered at the office of the Board.

Feb. 9. **CHELMSFORD.**—Re-topping and repairing footpaths in a number of streets, for the Corporation. Copies of the specification, particulars of the work to be executed, and forms of tender, may be obtained at the Borough Surveyor's Office, 16, London Road. Tenders must be delivered to W. Smith, Town Clerk, Municipal Offices, 16, London Road, Chelmsford.

Feb. 16. **GLOUCESTER.**—Supply of stone for use on main roads, for the year beginning April 1, 1910, and ending March 31, 1911, for the C.C. Forms of tender can be obtained from the County Surveyor on and after Jan. 22. Tenders must be sent to E. S. Sinnott, M.Inst.C.E., County Surveyor, Shire Hall, Gloucester.

Feb. 28. **LITTLE HULTON.**—Supply of broken granite, grit setts, granite and limestone chippings, grit kerbs, artificial flags, stoneware pipes, and gullies, cement, steam road rolling, and scarifying, disinfectants, pitch, and oil, for the U.D.C. Forms of tender and particulars can be obtained from the undersigned. Tenders are to be delivered to James H. H. Heyes, Clerk, Council Offices.

March 15. **BRISTOL.**—Construction of a new road, about 800 yards in length, in the parishes of Nempnett and Winford, for the Clutton R.D.C. Specification on application to the Council's Surveyor (T. Orchard, The Grange, Haliatrow, near Bristol), by deposit of £1 1s. Tenders must be sent to J. Sumner Dury, the Clerk to the Council, Temple Cloud, near Bristol. For further information apply to the Surveyor.

MISCELLANEOUS.

Jan. 24.—**NEWPORT, MON.**—Supply of stores as follows, for the Corporation:—Paints, varnishes, insulating varnishes, emery, carborundum, and glass papers, paint brushes, brooms, chamois, various cloths, waste, general ironmongery; wood service boards, electrical accessories, dry batteries, fuse wire, insulating tapes, enamelled steel tubing. Specification and quantities may be obtained on application to the Clerk, on deposit of 5s. Tenders must be sent to H. Collings Bishop, Borough Electrical Engineer and Tramways Manager, Electricity and Tramways Dept., Town Hall, Newport, Mon.

Jan. 24. **LONDON.**—Supply of the undermentioned stores and the execution of works, etc., for the 12 months ending March 31, 1911, for the Metropolitan Water Board:—1, Brushes; 2, cast-iron pipes; 3, bricks and cement; 4, clothing; 5, cotton waste; 6, hemp rope; 7, ironmongery; 8, iron and steel; 9, lead pipe; 10, oils (lubricating and lighting); 11, oilman's sundries; 12, paints; 13, pipe laying; 14, ferrules, etc.; 15, sluice valves; 16, small castings; 17, wood plugs; 18, plumbing work; 19, scrap iron; 20, mutton cloths; 21, repair of meters; 22, cartage; 23, tackings and rubber goods; 24, maintenance of weighing machines. Tenders must be made on official forms, which may be obtained from the Clerk, Savoy Court, Strand, W.C., by personal application or on receipt of a stamped addressed envelope. Tenders must be sent to the Clerk, Metropolitan Water Board, Savoy Court, Strand, W.C.

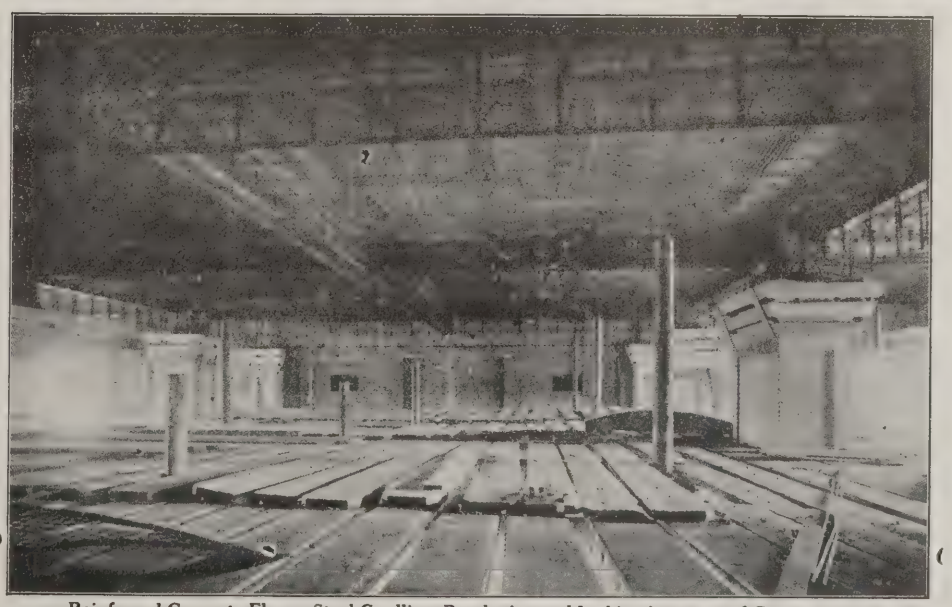
Jan. 24. **CAMBERWELL.**—Execution of work, or supply of stores, materials, etc., contracts to commence April 1, 1910, and terminate March 31, 1911, or alternatively for three years, for the Corporation:—(a) Timber for carts, vans, etc.; (c) white lead, colours (in oil and dry), varnishes, oils, turps, lubricants, soaps, candles, cotton waste and oilman's sundries, tar, pitch, creosote, etc., leather belting, various packings, rubber goods, glass; (d) brooms, brushes and combs; (e) picks, hammers, shovels, forks, gully tools, axes, handles (various), piles, brands, pails, skips, etc., etc., screws, nails, bolts, nuts, and washers, wrought-iron, mild steel, tool and spring steel, cast-iron foundry goods,

(*Continued on next page.*)

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coach and builders' miscellaneous ironmongery, lead pipe, sheet, etc., unions, valves, etc., W.I. gas, water, and steam tube and fittings, rainwater goods, etc.; (f) hire of horses, harness, driver, carts, vans, brougham, etc.; (j) flints, ragstone, hoggin, hardcore, Thames and crushed ballast, broken granite, York and other pavings, tar materials, lime, cement, and miscellaneous building materials; (k) asphalt paving work; (l) removal of street refuse, trade refuse, and excavation by barge, and house refuse by rail; (n) stoneware drain-pipes and sewer ironwork; (o), dininfectants, etc.; (s) electric lamps, incandescent and other gas fittings. Forms of tender may be obtained on application to the Borough Engineer's Office, Town Hall, Camberwell, S.E., by specifying sections desired. Sealed samples may be inspected at Grove Vale Depot, opposite East Dulwich Station. Tender must be delivered at the Town Hall.

Jan. 26. **CHISWICK.**—Persons desirous of tendering for the supply and erection of about 170 yards of close-paled oak fencing at the sewage disposal works, Chiswick, may obtain form of tender by application to J. H. Abbott, Engineer, Sewage Disposal Works, Chiswick, where the specification, etc., may be inspected. Tenders are to be delivered to Ernest F. Collins, Clerk of the Council.

Jan. 28—Feb. 7. **HALIFAX.**—Supply of the following stores and materials required in the undermentioned Departments of the Halifax Corporation during the twelve months ending March 31, 1911:—Highways and Tramways Departments: Portland cement, stoneware pipes, etc.; oils, paints, etc.; bass brooms cotton waste, filter cloths, caskin, gunpowder, iron castings, steel shovels, picks, etc.; ironmongery, team labour, artificial flags, manhole covers, ventilator covers, lamphole covers, gullies, timber, granite, limestone, lime, paving setts (sandstone), paving setts (granite), kerbstones, flags. Forms of tender, specifications, and further particulars, may be obtained on application to James Lord, M.I.C.E., Borough Engineer, Town Hall, Halifax. Tramways and Electricity Departments: 1, iron and steel; 2, timber; 3, bolts and nuts; 4, ironmongery, including washers, nails, screws, etc.; 5, glass; 6, lighting fittings; 7, electrical accessories; 8, vulcanised rubber cable, copper and phosphor bronze wires; 9, single conductor vulcanised-bitumen cable finished; 10, single conductor vulcanised-bitumen finished (braided); 11, low tension lead covered and armoured cable (taped); 12, anti-friction metal; 13, oils and grease; 14, paints and varnishes; 15, paint brushes; 16, cleaning materials; 17, castings (malleable iron, cast-iron, and brass); 18, tubes and fittings; 19, meters; 20, overhead material; 21, car accessories; 22, general stores. Samples may be seen on application at the Stores, Skircoat Depot, up to Jan. 28. Forms of tender and full information may be obtained at the General Manager's Office, Skircoat Road. Intending contractors must state the number of schedule required. Tenders must be sent to Herbert Ashling, Town Clerk.

Jan. 29. **CHELTENHAM.**—Supply of the following for the year ending March 31, 1911, for the Corporation:—1, Portland cement; 2, forage; 3, stoneware pipes; 4, broken stone; 5, kerbs and setts; 6, coal for boilers, etc.; 7, disinfectants; 8, oils, colours, etc.; 9, castings (for two years); 10, ironmongery; 11, timber; 12, India rubber goods; 13, lead pipes, brass fittings, etc.; 14, tools for highways, etc.; 15, wrought iron, steel, files, etc.; 16, electric light fittings; 17, household goods, sundries, etc.; 18, lias lime, bricks, etc.; 19, cast-iron pipes (for two years). Forms of tender may be obtained from J. S. Pickering, Borough Surveyor, Municipal Offices, Cheltenham, to whom tenders are to be delivered.

Jan. 29. **CHISWICK.**—Execution of work and supply of stores (separately) as under, for one year, commencing April 1, 1910, for the U.D.C.:—2, oils, etc.; 3, ironmongery, etc.; 4, disinfectants; 5, Clay Cross (or Buxton) and grey lime; 6, aluminoferric or copperas; 7, cement; 8, Kentish pit flints; 9, blue Guernsey granite; 10, granite kerb, channel and setts; 11, York or other paving; 12, tarpaving; 13, asphalte; 14, pipes, gullies, etc.; 15, stationery, etc.; 16, uniforms; 17, forage; 18, jute cloths for sludge presses, for one, two, or three years; 20, maintenance of fire alarms, telephones, etc., for five years; 21, harness. Forms of tender on application or by sending stamped addressed foolscap envelope to Edward Willis, A.M.I.C.E., Surveyor, Town Hall, Chiswick, where specimens of certain of the goods (other specimens are deposited at the High Road and river depots), and forms of contract and bond may be inspected. Tenders to be delivered to Ernest F. Collins, Clerk of the Council, Town Hall, Chiswick, W.

Jan. 31. **WEST HAM.**—Supply of:—Paving materials, broken granite and chippings, road flints, sand for tramways, tar and pitch, ironmongery, etc.; iron castings, lime, plaster, etc.; Portland cement, rope and tarpaulins, etc.; hardwood, lead, zinc, and solder; oils and colour, etc.; stoneware pipes, etc.; brooms and brushes, sanitary articles and disinfectants, domestic articles. Forms of tender and further particulars may be obtained at the Borough Engineer's Office, Town Hall, West Ham, E. (where the standard samples may also be seen). A deposit of £1 will be required in respect of each form of tender. Tenders to be delivered at the office of the Town Clerk, Town Hall, West Ham, E., in the envelope supplied, by registered post. Fair wages clause.

Feb. 1. **LONDON.**—Supply of building materials, and tools, general stores, and materials, including canvas, cotton, linen, and woollen materials, warps and wefts (cotton and woollen), weaving gear, leather, grindery, tin-plates, brushmaking materials, rope, etc., for the Prison Commissioners, to any of H.M. Prisons, State Inebriate Reformatories, and Borstal Institutions, in England and Wales. Forms of tender, with all necessary particulars can be obtained at any of the prisons, etc., or at the Prison Commission, Home Office, Whitehall, London, S.W. (where also samples may be seen). Tenders must be delivered at the Prison Commission.

Feb. 2. **NORTHALLERTON.**—Execution of the work proposed to be done in connection with alterations and improvements at the Yarm Council School, for the North Riding of Yorkshire County Council. Plan and specification and forms of tender at the school on application to the master or caretaken. Tenders to be delivered to J. C. Wrigley, Secretary, County Hall, Northallerton.

Feb. 4. **ISLINGTON.**—Execution of the undermentioned contracts for one year from April 1, 1910, for the Corporation:—1, engine room stores; 2, arc lamp carbons and globes; 3, oils and lubricants; 4, transformers and accessories; 5, iron, tools, belting, cotton, rope, etc.; 6, earthenware pipes, troughs, bricks, firebricks, fireclay, etc.; 7, electricity supply meters and prepayment meters; 8, cables; 9, electrical sundries, lamps, brushes, arc lamp parts, etc.; 10, cable terminal, service, and network boxes, and tapes. Forms of tender, specification, and contract, may be obtained upon application at the Town Hall. Tenders must be delivered to Wm. F. Dewey, Town Clerk, Town Hall, Upper Street, N.

Feb. 5. **WALLASEY.**—Supply during the twelve months ending March 31, 1911, of the following materials for the U.D.C.: 1, limestone chippings; 2, granite chippings; 3, macadam; 6, pitch, refined tar, and creosote oil; 7, Portland cement; 8, curbs, channels, etc.; 9, timber; 10, stoneware street and passage gullies; 11, drain and sewer pipes; 12, granite concrete flags; 13, wrought and cast iron materials (manhole covers, name plates, etc.); 14, brushes, buckets, shovels, etc.; 17, paints, oils, white and red lead, etc.; 18, iron, steel, bolts, nuts, etc.; 19, lead and iron pipes, etc.; 20, lime; 21, drawing materials. Further particulars, specifications, and tender forms may be obtained on application at the office of W. H. Travers, A.M.I.C.E., District Engineer and Surveyor, Public Offices, Egremont, Cheshire. Tenders to be sent to H. W. Cook, Clerk and Solicitor, Public Offices, Egremont, Cheshire.

Feb. 15. **TORONTO, CANADA.**—Execution of the following work and materials for the Corporation: 3, Laying sewer outlet; 4, building seweage banks; 5, supply of iron castings; 6, structural steel; 7, sludge valves, penstocks, and pedestals; 8, cast iron pipe; 9, cranes, 10, special tile. Plans may be seen and specifications obtained at the Office of the City Engineer, Toronto, and at the Office of the Commercial Branch of His Majesty's Board of Trade, 73, Basinghall Street, London, E.C., also at the Office of John A. Farnell, 153, St. Vincent Street, Glasgow.

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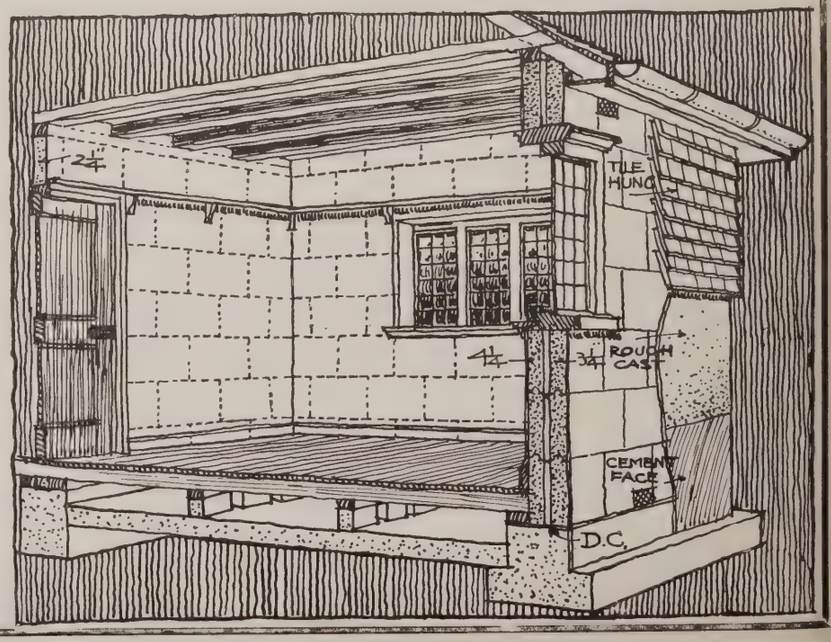
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HOURS AND WAGES IN QUEENSLAND.

It is officially reported from Queensland that although building material is selling at rates considerably higher than a few years ago, while timber particularly is at a figure which but a short time since would have been regarded as prohibitive, new buildings and extensions, plans and proposals, are very plentiful. The Minister of Works has given his approval to the following award which has been made by the Wages Board, and which was to come into operation on Jan. 1, 1910.

Hours.—The ordinary working hours shall not exceed 44 in any one week, and shall be confined between the hours of eight o'clock a.m. and 5 o'clock p.m. on Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays, and between the hours of eight o'clock a.m. and 12 o'clock noon on Saturdays, provided that during such ordinary working hours one shall be allowed for a meal on such days, except Saturdays.

Wages.—The lowest wages, price, or rate payable to bricklayers shall be 1s. 6d. per hour, or £3 6s. per week of 44 ordinary working hours; provided, however, that when bricklayers are engaged in preparing the brickwork of furnaces and settings in connection with boilers, bakers' ovens, or furnace work of any description, they shall be paid not less than at the rate of one and a quarter time the rate therein set forth.

Apprentices and Improvers.—The number, or proportionate number, of apprentices or improvers who may be employed, shall not exceed one apprentice or improver to five, or any fraction of five, bricklayers, who are in receipt of not less than the minimum rate set forth in clause 2 hereof. Provided, however, that one apprentice or improver may be employed by any employer. The lowest wages, price, or rate payable to apprentices or improvers shall be:—7s. 6d. per week for the first year, 12s. 6d. per week for the second year, 20s. per week for the third year, 25s. per week for the fourth year, and 35s. per week for the fifth year. Thereafter, not less than the minimum rate.

Overtime.—All time worked in excess of the ordinary weekly working hours before eight o'clock a.m. shall be paid for as follows:—For the first two hours, not less than at the rate of one and a quarter time the minimum rate set forth in clause 2 hereof, and for subsequent hours, not less than at the rate of one and a half time such minimum rate.

Holidays.—All time worked on any Sunday, Christmas Day, Good Friday, or eight-hour day, shall be paid for at not less than the rate of double the minimum rate set forth in clause 2 hereof. All time worked on any New Year's Day or Sovereign's birthday shall be paid for at not less than the rate of one and a quarter time the minimum rate set forth in clause 2 hereof.

The determination for stonemasons contains the following provisions:—For the purpose of the determination the following definitions shall apply:—"Building mason" shall mean a stonemason who has been working not less than four years at his craft in connection with building construction, and who is over 21 years of age. "Monumental mason" shall mean a stonemason who is engaged in preparing or fixing all stone for cemetery purposes or in preparing marble or cutting inscriptions for cemetery or other work. "Porphyry mason" shall mean a stonemason who is engaged in preparing or fixing prophyry stone for all purposes.

Hours.—Same as bricklayers' trade hours.

Wages.—The minimum rate of wages shall be as follows:—Building masons, 1s. 4½d. per hour; monumental masons, 1s. 4d. per hour; porphyry masons, 1s. 4½d. per hour.

There are also special provisions for "apprentices and improvers," "overtime," and "travelling allowances," which would take up too much space to give in detail.

It is surprising to read that the Royal Palace at Athens, which was greatly damaged by fire on January 6th, was not insured, as regards the fabric, although the contents were partly covered. The central facade and the upper storey, including the Hall of Trophies (in which were some famous frescoes), the ball-room, banqueting-hall, theatre, chapel, and service rooms. Bluejackets from the British and Russian warships in Phalerum Bay were sent ashore to help, but, for some reason or other, very little use was made of them. So far as the British sailors are concerned, this is a great pity; the handyman being, as we all know, a particularly doughty fire-fighter. It is not for nothing that ex-Navy men are preferred in recruiting our fire-brigades.

* * *

The "South Wales Argus" having published a list of amounts applied in aid of the rates from the profits of municipal undertakings, in certain large towns, during the years 1902-6, a correspondent (Mr. J. P. Elms, secretary of the Newport Ratepayers' Association) points out that during the same period, that is, commencing with the accounts for the year ending March 31st, 1903, and ending with those for the year ending March 31st, 1907, the Newport Corporation made direct payments amounting to £27,019 out of the rates, to cover the deficits upon the trading undertakings and he estimates that the indirect losses to the rates through inadequate assessments, street-lighting, misallocated charges, etc., would amount to at least as much more. He adds that his statement may possibly help to dispel the fallacy that because certain businesses can be made to yield a profit in very large towns, it necessarily follows that they will prove equally profitable in much smaller towns, where the capital required is inevitably greater in proportion to the returns, and where other circumstances militate against such an assumption.

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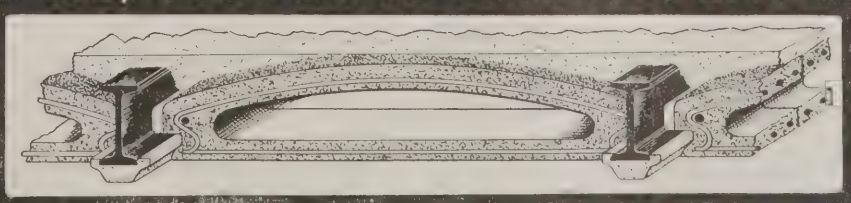
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Those desiring to tender and to receive a copy of the Bills of Quantities must apply to the Director of Barrack Construction not later han Friday, January 28th. The application must be accompanied by a deposit of ten shillings, which will be returned if a bona-fide tender is received from the applicant. Cheques or orders to be made payable to the Assistant Financial Secretary and crossed "Bank of England for credit to Army Funds."

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Signed) H. DE LA BERE,
Director of Army Contracts.

War Office,
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January 1910. 5481

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The Secretary of State does not bind himself to accept the lowest or any tender.

(Signed) H. DE LA BERE,
Director of Army Contracts.

War Office,
Whitehall, London, S.W.
January, 1910. 5479

January 26, 1910. Volume 31, No. 782.

THE BUILDERS' JOURNAL

AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Competition Ethics.

The letter which appeared in our last issue concerning the revised regulations of the R.I.B.A., in regard to competitions, advances propositions that are hardly likely to receive support from the majority of competing architects. Mr. Bulkeley Creswell appears as the champion of the competitor who violates the essential conditions, and he defends the right of the assessor to select such a design in preference to those which have been prepared strictly in accordance with the instructions. In such circumstances, Mr. Creswell's second proposition, that the promoters should be at liberty to discard the selected design without any imputation of bad faith, is only the barest measure of justice, since it requires but little logical progression of his view to imagine a competitor furnishing a design for a cathedral instead of a chapel, getting it accepted by the assessor, and holding up to the promoters the dread alternatives of either building it or incurring moral obloquy in the architectural world. For Mr. Creswell's idea leads to chaos; nay, more, invites it. If conditions are not to be observed, or, at all events, not to be binding, why have them? If assessors are to choose anything they please, whether it is the thing desired by the promoters or not, why have competitions? The abolition of competitions may, or may not, be a desirable reform; it is one that would doubtless please many architects who have few gifts for competitive work. But we do not expect such an outcome in our time; and, as far as present evidences go, competitive work is likely to increase in the future, rather than diminish. If our view be correct, it is the more necessary that the rules under which they are promoted should be fair and just to all the entrants. There is nothing wrong with the competitive system itself; the injustices and the difficultjes so frequently complained of are due entirely to pusillanimity and want of right feeling among the architects themselves. If architects boycotted all questionable competitions, and if assessors refused to act in any competition for which they had not drawn up proper conditions, these competition troubles would quickly disappear. It is idle to blame the system for the faults of the architects. But while some architects will eagerly compete where their more high-minded brethren refrain, and while, apparently, some assessors consider their fees of more moment than the conditions under which their fellow architects work, the evils will continue. On one point only are we in agreement with Mr. Creswell; that is concerning the nature of the conditions in many of the modern competitions. In nine-tenths of the competitions promoted, the only essential conditions are those of the site, the accommodation, and the cost. In a few cases there may be some special or local requirement which must be fulfilled. That such ridiculous conditions as the provision of a skylight to the Mayor's parlour, etc., to which Mr. Creswell alludes, are ever included, argues ineptitude on the part of the assessor. It is his duty both to his art and to his fellow artists to resist the inclusion of all such absurd and stultifying restrictions. For the same reason an assessor should refuse to assess any competition for which he has not drawn up the conditions. That architects should undertake to assess competitions at the eleventh hour, promoted under conditions which they strongly disapprove, or, in many cases, do not even trouble to read, is a great and crying evil. In such circumstances the selection of designs which transgress conditions deliberately laid down and insisted upon as essential, is an unendurable aggravation of the original evil. Mr. Creswell's contention that hard-working architects may be treated with cruel injustice in order to protect the public from the follies of its representatives, is not one that we can countenance. The cause of Architecture is a great one; but it will not be advanced by attempts to redress one grave wrong by committing another.

"Tremendous" Effects.

An American contemporary rejoices in the belief that, "to the lasting benefit of New York architects, Italian is becoming a more and more prevalent source of inspiration." Brick, in patterns and variations of colour, is, as we indicated in an illustrated article a week or two ago, being much employed; "and some of the best of the later buildings, such as the Brooklyn Academy of Music, the Home Club, the Lotos Club, have employed decorative treatment of the flat surfaces in brick with tremendous effect." We hope, not too tremendous! The Lotos Club is by Donn Barber, whose name is the more familiar to British readers from the illustrations of his work which have appeared in the "Architectural Review" and in the special issue of this Journal for December 31st, 1909. The height of this building is divided by balconies into three portions, the lowest of which is in stone, the second of brick simply treated, and the third of a very decorative brick surface; while the façade is surmounted by a "tremendously wide cornice, not so suggestive of Italy as of Spain." The writer seems to have so great a liking for the word "tremendous," that possibly it has not much more force than Dominie Sampson's "prodigious"; but the important point to notice is that brickwork of various patterns and colours is undoubtedly becoming very popular in America, and that the fashion may possibly be imported to this country. Would it satisfy Mr. Halsey Ricardo's demand for coloured frontages?

The Making of By-Laws.

When by-laws are in the melting-pot, architects and builders rightly insist on being allowed to take a hand in the recasting; and public bodies are usually aware of the many advantages of calling them into consultation. For one thing, it strengthens the position of the Corporation to say that the by-laws have received this expert approval. In too many instances this sanction is rather rushed. For instance, we hear that the Urban District Council of Handsworth, whose by-laws, being thirty years old, have become somewhat stale, had been for about six years considering a new set, but nevertheless seemed to consider that about the same number of days would afford ample time for the consideration of the revised laws by the Birmingham Building Trades Employers' Association. This period, upon protest, was slightly extended, but was still quite inadequate for anything like thorough examination of the proposals, which, however, were at once seen to embody changes that were open to strong objection by builders. Among these are some of the definitions. In that of mortar, the use of unslaked lime is required. The builders object that such lime could not be used in a mill. A further definition seems to exclude the use of lime concrete, which the builders contend is often quite sufficient for the purposes to which it is applied. Another, it is contended, lacks elasticity, and "would prevent any possible improvement in materials." This is certainly a by-law tendency that should be watched, as it has operated detrimentally in large matters as well as in small. Other items in the Handsworth proposals are objected to as being in restraint of trade; and, on the whole, we are strongly disposed to agree that the proposed new by-laws "need drastic amendment in order to make them reasonable." Similar objections are made against the new Birmingham by-laws, and in these, with respect to the composition of mortar, it is provided that the onus of proof of quality would be thrown upon the builder! It is questionable whether this provision would hold good in a court of

law. Exception is also taken to the requirement that all metal stanchions, in the case of any building exceeding one storey in height, shall be encased in not less than three-quarters of an inch in thickness of fire-resisting material; the objection referring to needless increase of cost in buildings, in which such precautions might happen to be entirely unnecessary. No fewer than six pages of the by-laws relate to the timbers of buildings, and the structure of the roofs of new buildings and floors, and specify the actual sizes of joists relatively to their length. To these and other rigid requirements the Birmingham Building Trades Employers' Association object because "they are excessive in their demands for sizes and strengths, and because the minute prescription of so many details will unnecessarily limit architects and builders in their work. Further new requirements are—that every boarded floor in a domestic building shall be so jointed that liquid cannot pass between the boards, and that water-closets in a building shall be so constructed that there shall be no doorway, window, or other opening into a habitable room. It is pointed out that this requirement, being somewhat ambiguous, might be subject to arbitrary and inconvenient interpretation by officials. The merits of these particular objections need not be here discussed. Our main point is that in the framing of by-laws it is not only necessary that the advice of architects and builders should be sought, but that such consultation should not be unduly hurried, and that it should be orderly and systematic. In some instances, corporations have taken the wise course of inviting architects and builders to join the committee charged with the duty of revision. Even then it is still necessary to submit the work of the joint committee for the consideration of properly constituted bodies of experts, and to afford ample time for exhaustive examination.

Fugitive and Perishing Particulars.

A sane view of art, for which we are duly grateful to a writer in one of the daily newspapers, is that it "is merely one of the forms in which the human spirit reveals itself. But," he continues, "it is not at any particular time the chief or even one of the most important of these forms. The institutions, customs, family arrangements, religion, laws, of any particular group of people are of infinitely greater importance to them than their art. But all these things, so far as they are merely facts of daily life, are fugitive and perishing particulars. The works of art alone remain." That they are not imperishable, and that, in fact, some of them hardly endure from one generation to another, does not affect the argument that, since they, as a rule, have a much longer existence than the human span, they should be created and finished in the full realisation that they will outlive the times and the trivialities of the little day in which they are conceived and executed. It is a point of view which the architect finds it very difficult to impose upon his clients, whether public or private, and it is a consideration that no doubt weighs heavily with those leaders of architectural thought who so strongly insist on faithful adherence to accepted principles of design, to the rejection of glaring innovations which, however faithfully they may reflect the mood of the moment, are for that very reason but little likely to withstand the test of time. A building should not be the embodiment of "fugitive and perishing particulars." The aim should be to make it a joy for all time.

The Deadly Hedgerow.

A point in town-planning, or in road development, to which we were among the first to draw attention, is the serious inconvenience of the picturesque corner, with its spreading tree and tall hedgerow. The subject, we see, has since received a great deal of attention in the Press, with particular reference to recent fatal accidents to motorists. Mr. Rees Jeffreys, secretary of the Motor Union, believes that a remedy will be provided in the Development and Road Improvements Act, which authorises contributions towards the cost of cutting down high hedges, of which he knows three or four thousand that make dangerous corners. There can be no doubt, we fear, that in this case, as in so many other particulars, picturesqueness and utility are incompatible. Unless the necessary clipping is done with restraint and discretion, our rural roads will lose their chief glory, and the countryside may be reduced to a deplorable condition of Dutch primness. We should be, however, the last to deny that picturesqueness can be held too dear; and it seems to us a point on which stress may be laid, that for the inevitable disappearance of much natural beauty, the architects are in duty bound to render the utmost possible compensation by the provision of the most beautiful buildings that their art can yield.

Restoration Extraordinary.

After seven years' work, the Campanile of St. Mark's, Venice, is now nearing completion, the shaft being finished, and the separate parts of the belfry being ready for placing in position. Excellent progress is also being made with the exceedingly delicate labour of reconstructing the Loggia di Sansovino. This, it will be remembered, was shattered to fragments. If such a thing had happened in this country, the débris would probably by this time have been used up as aggregate for concrete; but in matters of art, at all events, the Italians are a patient and a pious race. The "rubbish" was all carefully taken to the Doge's Palace, where the larger pieces were photographed with a view to reinstatement. The shattered statues by Sansovino—Minerva, Apollo, Mercury, and Peace—the bronze gate by Antonio Gai, and Sansovino's gilded terra-cotta group of the Madonna and Child, and his statue of St. John, have been marvellously restored. The group was broken into 1,600 pieces, and these have been put together by Pietro Zei, of the Archæological Museum of Florence, whose skill in piecing together had been already attested by his restoration of the famous Francoi vase. But, alas! even his sublime patience is unequal to the restoration of the head of St. John, which, with the shoulders, hips, and part of one of the arms, had been reduced to absolute powder. Perhaps it is all well worth while; but we feel sure that in this country such a task would never have been undertaken. But then we have here no Sansovino and no Pietro Zei.

Ornamental Leadwork Revived.

Interest in ornamental leadwork has been greatly stimulated by the publication of the fine book on the subject by Mr. Lawrence Weaver, F.S.A., which was noticed in our columns a week or two ago, and Mr. John E. Pritchard, F.S.A., in referring to Mr. Weaver's book as "a great work," did not use the language of exaggeration. The book is, in truth, remarkable for its rare combination of thoroughness, scholarship, and literary finish. Its position as the standard authority is assured, but we should certainly be surprised and disappointed to find that its value and importance are merely historical or archæological. It should be the herald and portent of a renaissance of leadwork in England. For some years past, a good deal of attention has been given to the subject in technological classes; and arts and crafts exhibitions usually include some more or less ambitious specimens of lead-bossing. The decadence of the art was no doubt due to the intense concentration on sanitary plumbing that resulted from the teaching and preaching of such hot-gospellers of sanitary reform as Simon, and Playfair, and Richardson, from which it was to be inferred that the whole duty of the plumber was to be crudely and emphatically hygienic. A strong prejudice arose in favour of perfectly plain surfaces in leadwork, and ornamentation was taboo. An enormous amount of rough pioneer work having been accomplished, the plumber has now more leisure for the study of refinements, and the scientific sanitarian is showing a disposition to moderate somewhat on his former insistence on uncompromising severity and simplicity in design. The almost superstitious dread of the slightest departure from sheer utilitarianism has given place to more discriminating views. Decorative leadwork, however, is not likely to become common—why not, Mr. Pritchard indicated in the course of a recent lecture delivered at a recent meeting of the Bristol and Gloucestershire Archæological Society. He described a lead head of exceptionally artistic design of the early Georgian period (circa 1720), which was taken from an old brick house, demolished in June last, opposite the Royal Infirmary in Bristol. "The beautifully moulded cherub's head, specially poised for the great height when fixed, first attracts one's attention, and then the circular ornament applied to the neck of the receiver just above the head, together with the well-defined mouldings, make it a truly pleasing work of art." Then comes the disconcerting comment that "nowadays similar requirement is generally supplied by a plain semicircular cast-iron snow-box, in value only a few shillings." Although ornamental leadwork cannot compete with cast-iron work where cheapness is the criterion, there is no reason why, in the increasing instances in which comeliness is the superior consideration, decorative leadwork should not find an ample field, whose expanse will doubtless be largely extended by the influence of Mr. Weaver's book, in which the examples illustrated prove conclusively that here the architect has a further valuable opportunity of adding considerably and characteristically to the many and varied charms of English domestic work.

OUR EDITION DE LUXE.

We are informed by our publishers that a few more copies of the Edition de Luxe of the "Builders' Journal" have now become available, and can for the present be supplied at the published price of 1s. net. Readers who have been unable to secure a copy of this valuable special issue, will be glad of this opportunity of obtaining a work that is admitted to be of unique and permanent interest. It contains a number of fine illustrations of current British work, and an important section is devoted to the most complete account of Modern American Architecture that has yet appeared in this country (140 illustrations). As the supply is limited, early application should be made.

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ARCHITECTS OF THE DAY—X. MR. PERCY MORLEY HORDER, F.R.I.B.A.

Sketched from life by our Special Artist.

Architects of the Day.

X.—Mr Percy Morley Horder, F.R.I.B.A.

Mr. Horder, whose work is fairly well-known to our readers, is one of the best-known domestic architects practising in London. He was articled to Messrs. Devey and Williams, and commenced practice in New Bond Street, on his own account, in 1895. Mr. Horder denies that there is anything more to be said about his career, and, unfortunately, illness has prevented him from being interrogated on the details, a fact that Mr. Horder may possibly regard as a silver lining to the otherwise unpleasant experience of being unwell.

Mr. Horder is more particularly known and famed as an exponent of the smaller English house, and examples of his work may be found in the majority of the counties of England. Among them may be mentioned: House at Walton Heath; "Birchington," Bexhill; house at Ealing; house at Cheltenham; two inns, Stroud, Glos.; house at Maidenhead; house at Compton; cottage at Beaconsfield; house at Dorchester; house at Blandford; Belle Isle, Lough Erne, Ireland; cottage at Dursley, Glos.; house at Warwick; alterations to Waterson Manor, Dorset; chancel, Brixton Independent Church; house at Milford Haven; house at Norwich (with Mr. H. G. Wyand); house at Walton-on-the-Hill; Stone House, Hawes, Yorkshire, etc.

Of the examples illustrated in this issue, the house at Walton-on-the-Hill, Surrey, is built with grey bricks, with courses of red facings and tiles which give a pleasant broken texture to the walls. Special hand-made tiles cover the roof, and the gable on the north elevation is hung with tiles. The situation of the house affords an uninterrupted view right across the well-known Walton Heath golf links, and the garden has been designed by the architect to be in keeping with the house. The interior is quite simple in its detail. In the dining-room is a fitted sideboard and ingle-nook with seats; the general decorative effect being obtained by the use of wooden rails and mouldings dividing up the wall spaces into panels. The little tiled hall has the advantage of complete privacy, and forms the centre of the three reception-rooms.

The house near Dorchester has just been completed, and is on the road between Dorchester and Charminster. There is the greatest difficulty in getting any building land near the town of Dorchester, so there is very little choice in the matter of sites. This particular site commands a pretty view of Dorchester, but until the garden scheme becomes matured it is somewhat bare and forms no setting for the house.

The natural building material of this locality should be stone, but none of the local quarries are now available, and the expenses of cartage prohibited general use of the stone. Some rough local stone has been introduced into the porch, and as a base to the house—using this in large unsquared pieces, irregularly mixed with the rough-cast and red brick of chimneys in the old local manner. The roof is covered with special hand-made roofing tiles of a very beautiful colour.

The general arrangement of house, stable, and garden explains itself and calls for no particular comments, beyond pointing out the value of thus connecting up all the building and forming a pleasing quadrangular form. The walled kitchen garden is a particular feature of the scheme, and on a bare site of this kind adds greatly to the sense of settled occupancy and gives unusual variety and privacy to the kitchen wing. When the walls get naturally clothed with fruit trees and the lines of garden get more definite, the value of the general arrangements of the house and garden will be apparent. Holt and Son, of Croydon, were the general contractors. Ham Hill stone was used for the window frames, which are fitted with casements and leaded lights.

Stone House, Hawes, has the advantage of a very beautiful if bare site on the moor above Hawes village, and overlooks the celebrated valley of Wensleydale, Yorkshire, which runs on the upper course of the Ure river from Hawes to Bedale. The ground slopes up from the road, and the house is reached by a short straight drive, opening into a square forecourt enclosed from the main gardens by a dwarf wall. On the right of the forecourt is the motor-house and stable, connected with the house by a wall which forms one side of the forecourt, and through which the kitchen entrance is reached. Shrubs and trees have been planted plentifully to screen the gardens and house from the road, and to the south-west of the house a rose garden has been formed, and beyond it a tennis lawn, which has necessitated excavation on two sides to get the level.

The accommodation on the ground floor comprises a large square hall, flanked on one side by the dining-room and on the other by a boudoir Beyond this, reached by a short lobby, is the drawing-room, which opens on to the terrace. The walls are built of rubble stone, quarried locally, with dressings of West Yorkshire stone to the doors, windows, etc., and the roofs are covered with Yorkshire flags. The local style has been adopted as far as possible. The builder was G. R. Wade, of Wellington Place, Richmond, Yorkshire.

One of the particular features of Mr. Horder's houses is the attention paid to local building characteristics and the adoption of the local styles and materials. It has always been his endeavour to preserve in his buildings the local traditions, and this fact has, no doubt, been largely instrumental in contributing to their artistic success.



DINING-ROOM, HOUSE AT WALTON-ON-ON-THE-HILL, SURREY. P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.

The dining-room has a fitted side-board and ingle-nook with seats, the general decorative effect being obtained by the use of wooden rails and mouldings divided up the wall spaces into panels.

CARR OF YORK.*

[By S. D. Kitson, M.A. Cantab.

The work of Carr of York is not well known, and has escaped the attention which has lately been given to the architecture of the eighteenth century. Carr's work is dull and uninspired. He was a busy and highly successful man.

The village of Horbury, near Wakefield, where John Carr was born in 1723, appears to have always been of some considerable size, and to have supplied its own wants. For the parish registers, which have been printed, record the names of workmen in many trades, weaving and building being the most numerous. The Carrs seem to have been masons for at least five generations; and John Carr was the son of Robert Carr, mason, who again was the son of John Carr, mason, and so on. Michael Angelo used to attribute his aptitude for sculpture to the fact that his foster-mother was the wife of a stone-cutter at Settignano; with far greater force could young Carr claim that his career was settled for him by hereditary circumstances.

After passing through the village school, young Carr was early set to work either in the quarry at Horbury which his father owned, or upon buildings, such as Chevet Park and Bretton Hall in the neighbourhood, on which his father was engaged as master-mason. Stories have been preserved which illustrate his youthful ability and accuracy. When the other masons engaged on a piece of work had all failed in setting it out correctly, Carr's father said, "Let the lad have a try," and young Carr successfully solved the problem. Again, before starting from home on a Monday morning for his week's work his mother would provide him with a large circular meat pie; Carr would divide this with his mason's compasses into six exactly equal parts.

Sometime before the year 1750 Carr removed to York.

In 1754 a grand-stand on the Knavesmire was designed and built by Carr. It was a broad and simple piece of Palladian design, and it gave the greatest satisfaction to his patrons. Lord Rockingham, who was the chief promoter, was delighted with it, and remained a good friend to Carr throughout his life, and the other country gentlemen who appreciated the amenities of the grand-stand followed his example and engaged Carr as their architect to the exclusion of anyone else.

Henceforward Carr seems to have ceased to practise as a master-mason, and to have become solely a designer of buildings. How did he gain the necessary knowledge, skill and experience to fit him for his new role? In his youth he had seen the straightforward work which James Paine was doing in the West Riding, and on his arrival at York he had the advantage of carrying out work under Lord Burlington and one of his professional architects. If the numerous pattern-books then existing and his own shrewd common sense are added to these qualifications, we have the whole of the equipment with which Carr started on his architectural career. His training equally explains the severe limitations which are so noticeable in his designs, the excellence of his masonry, and the practical character of his planning.

The first houses which Carr designed were in York itself; large red brick buildings which still look solemnly out into the narrow streets and rather dwarf their medieval neighbours. There are two such houses in Castlegate. One is built up to the street and contains elaborate plaster ceilings which show that Carr had ready to his hand at York an accomplished group of plasterers, schooled, probably by Lord Burlington, in a type of design which owed a great deal to French influence. The other house in Castlegate stands back from the street, and it is a happy example of Carr's "solid, masculine and unaffected" style. In Halifax there exists, though now much mutilated, the great establishment which Carr built for Mr. Rawson, banker and merchant. He dwelt in the centre part, and on one side was his bank, on the other side his warehouse. The large windows in the centre mark the parlour, decorated with plaster work in the florid George the Second manner.

There are two buildings which form the most important turning-points in Carr's career: the first was the grand-stand on the racecourse at York, the second was Harewood House, which he built for Mr. Edwin Lascelles. It brought him into contact with the Brothers Adam. Henceforward his work loses in robustness what it gains in "elegance."

A little higher up the river Wharfe than Harewood Carr built Denton Park, a typical example of his larger houses, with wings attached. The masonry is faultless, the design cold, regular and uncompromising. There is the usual entrance on the south front direct into a large square hall. Carr never built a porch to his entrances. There is his favourite device of a bay window extending the whole width of the room and balanced on the other side by chamfered angles, in which, when the room was intended for a dining-room, the side-boards were placed.

In the interior decoration of Denton, Carr had thoroughly assimilated the manner of the Brothers Adam, and his ceilings, door architraves and mantelpieces can hardly be distinguished from theirs. These rooms when sparsely furnished, with polished floors and lighted by wax candles, must have suited exactly the atmosphere of the time. But they were comfortable rooms also, for Carr never tried experiments, and his experience made every detail exactly right, whether it was the height of the window-sill or the size and position of the fireplace..

Basildon Park is the only example of Carr's work in the south of England. It was built for a Yorkshireman, Sir Francis Sykes.

One of the latest examples of Carr's domestic work is Hackness Hall, near Scarborough. It is one of the largest houses of his single-block type, but beyond a greater tendency to refinement of detail, due to the Greek revival fashion, and an unhappy attempt to broaden his windows, it is similar to the work he was doing thirty years earlier. The house itself is a fine example of mason's work, as is the case with all Carr's buildings. He was always at the greatest pains to select the very best stone and to use it with knowledge and judgment. For buildings in the neighbourhood of towns, he seems in several cases to have preferred brick. In Wakefield, for example, so near to his native village where he had learnt his mason's craft, he is responsible for some of those great plain, comfortable-looking brick houses in Westgate. Carr also made additions to many existing houses, to the Elizabethan Farnley Hall, and to the late eighteenth century Wentworth Castle, for example. But he never attempted to introduce any other style than his own. He planted down his additions exactly as and where practical requirements dictated.

The stables of an eighteenth-century Yorkshire establishment almost rivalled the house itself in importance. At Wentworth House Carr designed for his early patron, Lord Rockingham, what were perhaps the most magnificent stables in Europe. They are built round a quadrangle and entered through a fine gateway of the Doric order. Within all is spacious and substantial, the mangers are niches of solid stone. This building shows Carr at his best; it is work of the simple broad type in which he delighted, and with which he was very much at home.

Carr was for long an alderman, and on two occasions Lord Mayor, of York.

The portrait of Carr by Sir William Beechey shows him as a genial, shrewd and kindly old man.

The Court House and Debtors' Prison at York, which face each other on either side of the Castle Green, and which are precisely similar in design, form the only opportunity which Carr was given in York for regular and formal grouping. The plan of the Court House was modelled upon that of the basilicas of ancient Rome. The central doorway opened upon a columned hall, and at either end were two courts of justice, the civil court on one side and the criminal court on the other, each surmounted by a dome containing elaborate plaster work. Originally the building was open from end to end, and the effect must have been very stately. Unfortunately the various parts of the building have now been partitioned off; a development which was inevitable in view of the historic horror of draughts which is a characteristic of the judical temperament. The town halls of Lincoln, Newark, and Chesterfield, show Carr's usual careful treatment, and form an appropriate setting for the slow, deliberate municipal life of the period. In 1790 Carr obtained permission to pull down the village church at Horbury, where he had worshipped as a boy and where so many of his ancestors lay buried, and to build an entirely new church of classic character at his own expense. He had been successful in his work, he had amassed a large fortune, and he had been twice Lord Mayor of York. So in his native village—with mixed motives of piety and pride—he built the existing church at Horbury.



HOUSE AT WALTON-ON-THE-HILL, SURREY. P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.

*Abstract of paper read before the Royal Institute of British Architects, January 17th.

Carr made occasional excursions into Gothic, and the aisles of Dewsbury Church and the east part of Sheffield Church show that he neither understood nor appreciated Gothic architecture. His original drawings exist for the work at Sheffield Church. At the Soane Museum there is a bound set of drawings copied from Batty Langley's work on Gothic architecture, and on the frontispiece of this Carr's name is written. Whether or not Carr made these copies himself, the drawings for Sheffield Church show that he had been a student of Batty Langley's works. Carr also made a survey of York Minster for Dean Fountayne. He restored the roofs, employing as his clerk of works the son of the Archbishop's gardener, Joseph Halfpenny, who took advantage of the scaffolding to make those careful drawings which were afterwards published as "The Gothic Ornaments of York Minster."

The last work that Carr designed was the entrance gateway to Harewood Park. It dates from 1801, and is a fine piece of mason's work. In 1791 he was elected one of the nineteen original members of the London Architectural Club, who used to meet once a month at the Thatched House Tavern. He died in 1807 at the age of eighty-four.

Discussion.

Mr. J. A. Gotch proposed a vote of thanks, and said that Mr. Kitson had marshalled together a complete set of invaluable facts relative to the history of Carr of York. A slight injustice had been done, however, inasmuch as the lecturer made no reference to the work of the early seventeenth century. The hills and dales of Yorkshire offered rare examples of mullioned buildings, which were admirably suitable to the surroundings. The history of Carr was particularly interesting, he being one of the last mason-architects who did so much to fill England with the beautiful buildings which now exist. Usually at the time when Carr flourished, the mason was responsible for the details, if not for the planning. They had in Carr one who combined with eminent success the qualities of architect and mason. The fact that Carr was only thirty-one years of age when he designed the grand stand at York, prompted the reflection that far less training was required in those days than at the present time. Recent decisions in the law courts emphasised the heavy responsibility that rested with the modern architect, the question of dry rot being a case in point. Carr of York was entirely free from these minor troubles, and his simple training was quite sufficient for the requirements of the time. Sanitary equipment then being something which was never installed, no house had an ignoble side, but all fine façades. It was no disadvantage, in the speaker's opinion, to approach the house of the seventeenth century through the large courtyard, which was invariably a feature of the design, and was almost always occupied by servants. Plans, and the elements of design were simple, and the pattern books of the time were of immense assistance to the architect in the design of a house, perhaps to the disadvantage of architecture. To-day we suffered, perhaps, too much from originality, whereas in the old houses nothing was unexpected. When, however, one turned round the corner of a house nowadays, one was sure to find something unexpected. Perhaps the wish that it hadn't been found followed the encounter. Mr. Gotch then asked Mr. Kitson if Carr designed any work in 1806. He believed that at Wentworth House he designed the stables (Mr. Kitson: "Wentworth Castle, not Wentworth House."). Burton Constable, continued Mr. Gotch, was a mullioned house, totally different from Constable Burton. What curious people the Yorkshiremen were to get two such important houses so thoroughly confused. An extant drawing of Harewood House in its original state showed a good conception of the English country house. Quite as important to Capability Brown, however, was the landscape in which the house happened to appear. Concluding, Mr. Gotch quoted Carr's admirable ambition, which was deserving of emulation, to "arrange the necessary conveniences with some degree of art."

Mr. H. Avray Tipping seconded the vote of thanks, and compared with Carr of York, Smithson, the Tudor architect of Wollaton, who was also a mason. Smithson, in company with many other architects of the period, derived his knowledge from the workshop rather than from the drawing board. Carr carried on tradition: but it was a tradition without originality. He always belonged to the pattern-book class of architect, which commenced with Inigo Jones. In his concluding remarks Mr. Tipping suggested that a paper dealing with Smith of Warwick, an architect very similar to Carr, would make interesting and instructive matter.

Mr. H. H. Statham supported the vote of thanks, and observed that Elmes' idea for St. George's Hall, Liverpool, was, he had learnt from a resident of that city, a large hall with a vista, and accommodation for a judge at either end. The external staircase the speaker considered the finest feature of the 18th century house, and would be glad to see it revived in modern work. Referring to the profile portrait of Carr by Dance, Mr. Statham recalled the Loan Exhibition at the Royal Academy, where a number of Dance's sketches of his friends were shown. The personal equation was largely to be observed in this work, for they were all alike.

Mr. E. Guy Dawber remarked upon the peculiar interest attaching to local architects, of whom Carr was a good example. Stamford bore the indelible impress of one man, even as Bath clearly showed the stamps of Nash and Adam. Henry Bell, again, of



HOUSE AT WALTON-ON-THE-HILL, SURREY. P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.

The interior is furnished very simply. The little tiled hall has the advantage of complete privacy, and forms the centre of the three reception rooms.

Lynn, who was born in 1650, was one who had left a personal impression upon the town. In 1683 he built the Customs House at Lynn, and when, at the age of thirty, the building was completed, it marked him as a master of architecture.

Mr. Arthur T. Bolton observed that a notable feature of buildings designed by the mason-architect was their extraordinary similarity. When, however, the influence of a trained architect was felt, a marked change took place. The plasterwork in many of Carr's houses was probably executed by the men employed by the brothers Adam.

Mr. Kitson, in reply, said he was much obliged by the way in which his paper had been received. Dealing with Mr. Gotch's point, he said he believed that Mr. Gotch came from Rutland, where it would be impossible to have two houses with the same name. Constable Burton was a house built by Carr. He had it on the authority of the present owner, whose ancestor was in possession of the house at the time that Carr was called in to do some trifling alteration to the kitchen range. When he returned he found that the old house had been cleared away and a new mansion erected in its place. Personally, he would not vouch for the story. Burton Constable was an Elizabeth in mullioned house, in which complete plans prepared by Carr for its Palladianisation were found. The new design fortunately had not been carried out.

Correspondence.

[The Editor declines responsibility for the statements made or opinions expressed by correspondents.]

The Effect of Fire on Cast-iron.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—To those interested in the safety of buildings largely constructed of ironwork, an object lesson was afforded in the recent great fire at Clapham Junction, when the unprotected steel work caused the downfall of the structure. I happened to be an eye witness of the disastrous fire which occurred at the large drapery store in Kilburn, reported in your last issue, and was particularly interested in the fate of the cast-iron stanchions which supported the superstructure. The whole of the upper part of the front of the shop where the fire broke out was carried by a girder between the two party walls, and supported in the centre by a 9-in. cast-iron column, uncased, and for over four hours this column bore a terrific heat from blazing linoleum, combined with the stress caused by the tons of water poured on it by the firemen, without any apparent effect, whereas some rolled-iron stanchions of I section behaved very badly. I noticed that the girders were encased in match boarding, which caused the fire to spread rapidly and ultimately the girders sagged, causing the floors, roof, and part of the front wall to fall. The conclusion that one can draw from this demonstration is that cast-iron is more reliable when used for stanchions or columns, than wrought iron of I pattern, as the latter seems to present a greater surface for the fire to play upon. There are many buildings quite newly built in which the whole of the superstructure is carried by a few stanchions, quite unprotected from the effects of great heat, and it makes one shudder to think of the fate of the occupants of these tall buildings should a fire break out in the closely packed shop beneath them.

J. F. BURKINSHAW.

[Our correspondent makes an interesting point from a particular case. It has been the general experience, however, that cast iron is a treacherous material under fire stress, and the application of water to red-hot cast iron has caused it to "fly" with disastrous results. It would be interesting to know whether this particular stanchion became red-hot, or whether the "tons of water" referred to by our correspondent were not applied for the purpose of keeping it cool.—EDITOR.]

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

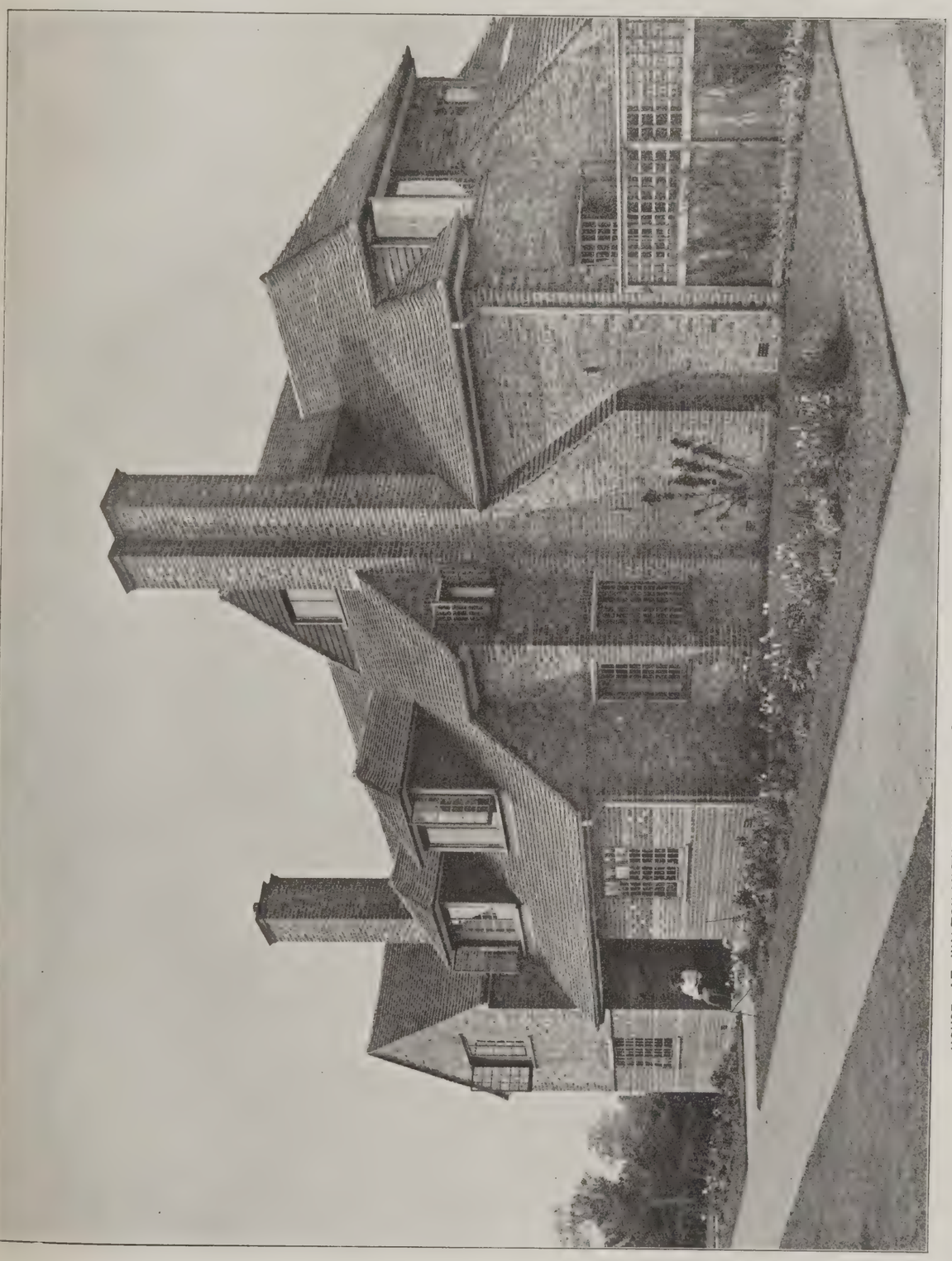
DATE OF DELIVERY.	COMPETITION.
Jan. 31.	NATIONAL MUSEUM OF WALES. The Council desires to receive competitive designs for the erection of a new National Museum at Cardiff. Three premiums are offered of £200, £150, and £100, for second, third, and fourth. The Council have appointed Sir Aston Webb, R.A., Mr. John J. Burnet A.R.S.A., and Mr. Edwin T. Hall, F.R.I.B.A., as Assessors. Particulars and plans of the site will be supplied to competitors on payment of a fee of £2 2s., returnable if all papers are returned within 14 days. Inquiries to be addressed to Dr. Wm. Evans, Hoyle, Director of the Museums. City Hall, Cardiff.
Jan. 31.	PEMBROKE (Co. DUBLIN) LAYING OUT HERBERT PARK. The U.D. Council invite schemes with estimates of cost, for the laying out of above public park, which is about thirty-five statute acres in extent, within their district. A premium of £50, which is to include all expenses, will be paid to the person whose scheme may be selected. All plans, estimates, etc., sent in by the successful competitor to become the property of the Council, The Council will not be liable for any payment to a competitor, other than the above premium to the successful party. A plan of the lands as now existing can be obtained from on and after Monday, 3rd January, 1910. J. C. Manly, Clerk to the Council, Town Hall, Ballsbridge, Pembroke, Co Dublin.
Feb. 1.	OLDHAM, EXTENSION OF THE TOWN HALL. Restricted to Architects practising or residing in the Borough. Premiums of £50, £30 and £20, for the three designs placed 1st, 2nd and 3rd, and a sum of £5 will be paid to all unsuccessful competitors who send in a complete set of plans in accordance with the instructions. Plan of site, with instructions and suggestions for architects obtainable from E. C. Foote, Borough Surveyor, Town Hall, Oldham. Deposit: 21s.
Feb. 8	POSTER FOR THE A.A. PLAY, 1910. The Committee invite designs for a poster illustrating this year's play. A prize of one guinea will be given to the author of the selected design. Full particulars may be obtained from Mr. Percy Lovell, 23, Old Queen Street, Westminster, S.W., to whom designs must be sent in by first post on date named. A jury of three will assess.
Mar. 1.	GLAZED BRICKWORK DESIGNS AND ESSAYS. A committee of glazed brick manufacturers invite designs for works to be executed in glazed brickwork, also essays as to the advantages to be derived from the use of this material in accordance with conditions to be obtained from J. Johnston Green, 142, Liverpool Road South, Southport. Premiums of 100 guineas, 50 guineas and 25 guineas awarded to designs and essays jointly. Assessor Mr. Max Clarke, F.R.I.B.A., appointed by the President, R.I.B.A.
Mar. 31.	SHEFFIELD: ENDCLIFFE PARK CHURCH. Plans desired for Church for 650, Institute for 150, Primary Department for 125, Junior Department for 95, and Caretaker's Apartments. Premium, not merged in commission, £35. Assessor, Chas. Hadfield, Esq., F.R.I.B.A. Questions until February 10. Delivery on March 31. On receipt of 5s. the Secretary, J. W. Nicholls, 64, Everton Road, Brocco Bank, Sheffield, will furnish conditions and instructions, with plan of site, showing existing buildings, levels and drainage—these not returnable. Deposit returned only to those who send plans.
May 31.	MUNICIPAL OFFICES, KARACHI. The Municipality offer a premium of 7,500 rupees (£500) for the best design, detailed plans and estimates for new Municipal Offices. Cost not to exceed 500,000 rupees, and the style of architecture is left open to the designers. Ferrotype plans of the site and a general arrangement of the floors of the building showing the accommodation to be provided, together with a copy of instructions to architects, will be supplied to intending competitors on application to the Chief Officer and Chief Engineer, Karachi Municipality. A charge of Rs. 5 will be made therefor, which will not be refunded. Each set of drawings must be sent in anonymously, but accompanied by a sealed envelope containing the author's name and address. Each set of drawings and all the documents required, including the sealed envelope, must be securely packed in a wooden box addressed as follows:—The Chief Officer and Chief Engineer, Karachi Municipality, Karachi, India, and forwarded, at the competitor's own risk and charges, in time to reach the Chief Officer on or before the 31st day of May, 1910. It is proposed to apply to Government for permission for one of the chief architects to act as assessor to decide on the design to which the prize shall be awarded. The decision of the assessor will be final and not be open to dispute. The decision of the Municipality will be made within three months of the latest date for submission of designs, and payment of one-half of the premium will be made thereafter to the author of the selected design, the balance to be paid when the further details specified in the instructions to architects have been supplied. On payment of the premium the Municipality will have all rights in the design, with power to erect the building under its own agency, either according to the design selected or with such additions or alterations as it may deem necessary.

Carnegie Library and Technical School, Tralee.

The successful competitor in the above competition was Mr. W. T. Clarke, A.R.I.B.A., of Bank Buildings, 60, Castle Street, Liverpool. Messrs. O'Callaghan and Webb, of Dublin, took second place.

Wood Green Public Baths Competition.

Some months ago the Wood Green Urban District Council invited architects with experience in the design, etc., of baths to send in their names with particulars of such experience, giving details of the baths in the design and construction of which they had been engaged. As a result, 15 architects were invited to send in competitive designs, premiums of 50, 25, and 15 guineas respectively being offered by the Council to the authors of the designs placed first, second, and third in the order of merit by the assessor. The result of the competition was that the assessor disqualified all the designs submitted upon the point of cost alone. In the conditions it was stated that "the Council are most anxious that the inclusive and completed cost of the buildings shall not exceed eight thousand pounds." In order to avoid rendering the competition abortive, and to save time, the Council eventually adopted the recommendation of the assessor, that under the circumstances the author of the design he considered the best, apart from the question of the cost, should be appointed architect to the work, subject to his reducing the cost of his design to the amount stipulated in the conditions of the competition. The author of the selected design is Mr. Harold Burgess, of West Green, South Tottenham. The second and third premiums have been awarded respectively to Mr. E. Harding Payne, of 11, John Street, Bedford Row, W.C., and Messrs. Francis J. and F. Danby Smith, of Parliament Mansions, Victoria Street, S.W. Mr. Burgess has been asked to proceed at once with the matter. The quantity surveyors are Messrs. Young and Brown, of 104, High Holborn, W.C. It will be recollected that the Council retained Mr. A. Hessell Tiltman, F.R.I.B.A., of 2, Verulam Buildings, Gray's Inn, W.C., as assessor and consulting architect. The assessor, in his report, considers that the first premiated design "is by far the best in arrangement, construction, and design, both externally and internally, whilst it offers the best opportunities for such modification in size as would enable it to be carried out for the stipulated cost." He recommends the shortening of the swimming pool by 10ft., and corresponding modifications. It was originally required to be 100ft. long by 30ft., and the spectators' gallery was to seat nearly 500 persons, and there is to be a club-room of some 250ft. area opening out of the swimming bath.



HOUSE AT WALTON-ON-THE-HILL, SURREY: GARDEN FRONT. P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.

This house is built with grey bricks, with courses of red facings and tiles which give a pleasant broken texture to the walls.



HOUSE AT WALTON-ON-THE-HILL, SURREY: ENTRANCE FRONT. P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.

Special hand-made tiles cover the roof, and the gable on the north elevation is hung with tiles. The house has an uninterrupted view across the well-known Walton Heath Golf Links.

BUILDING INTERESTS IN THE NEXT PARLIAMENT.

Petitions for 113 English private bills and 19 Scotch provisional orders were deposited in the Private Bill Office in December, which is a falling off from last year to some extent, and a very considerable decrease on the figures of five years ago. Already five of the Bills have been abandoned, so that whilst there are still left a good number of important measures yet, the members of the new Parliament will not be overburdened with work. The following summary will give some idea of the constructional works which are proposed:—

Railways.

Estimates have been prepared by various engineers for new railway works totalling to close on £3,000,000. A few years ago new tube and other railway schemes were numerous, and the estimates amounted to an enormous sum. In the present year, whilst the estimates are comparatively small, it should not be overlooked that in the case of existing companies only absolutely necessary works are projected, and consequently if the Bills are passed the work will be carried out. The largest contemplated expenditure is that of the Lancashire and Yorkshire Railway Co., amounting to close on £800,000, of which about half is needed for the extension of the Exchange Station at Liverpool. The balance goes in widenings of various parts of the system. The Great Central Railway Co. contemplate spending £433,000, the bulk of which will go on a deviation railway at Keadby, where a new bridge will be built over the Trent. The Great Western Railway will spend £118,000 chiefly on bridge extensions; the Great Northern Railway of Ireland £125,000; the Stratford-on-Avon Midland Junction Railway £2,500; Caledonian Railway £9,000; the Barry Railway £67,830; the Taff Vale Railway £900 (on a footbridge at Pontypridd); and the Midland Railway £18,000. The Baker Street and Waterloo Railway purpose spending £1,700 on a subway at Oxford Circus; the Metropolitan Company to construct subways at Edgware Road and Moorgate Street; and the Metropolitan District Railway to make a railway from Acton to Chiswick at a cost of nearly £300,000. This company also seek power to reconstruct and enlarge their Temple and Charing Cross Stations. There is one Bill for the incorporation of a new company to make a railway in the London district, and three for new companies to construct railways in the provinces. The first, which is the Wimbledon and Sutton Railway Co., asks for capital powers of £350,000, and amongst the first directors will be Mr. H. D. Searles-Wood. The provincial companies are the Coventry Railway Co., with a capital of £200,000, to make a line from Coventry to Whitacre; the Mansfield Railway Co., with a capital of £250,000, to make railways in Nottingham; and the Trent Railway and Bridge Co., with a capital of £150,000, to make a railway from Garthorpe to Aldborough. Of the remaining railway bills, for which no estimates have been prepared, it may be noted that the North and South Shields Electric Railway Co. ask for a revival of powers to construct a railway under the Tyne, and the North East London Railway, which some years ago was authorised to make a railway from the City to Waltham Abbey, are seeking powers to make agreements with the Metropolitan Company regarding the construction of the line.

Docks, Harbours, and River Works.

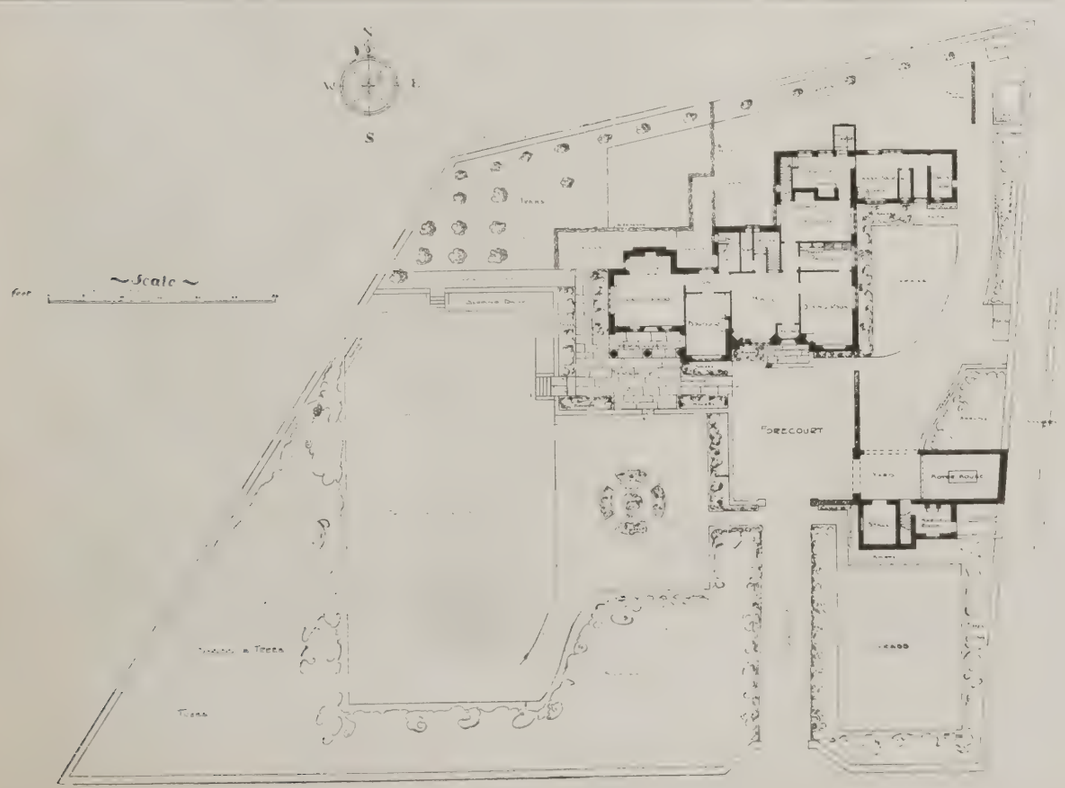
There is no dock scheme of first-class importance such as the Wembley and Southampton Bills of last year, and in fact only one really complete work is proposed, viz., the St. Austell and Pentewan Dock and Railway. By the Bill a company is to be incorporated with a capital of £300,000, to acquire and work the existing Pentewan Dock and Railway, and to make a new dock and entrance with piers or breakwaters. Sir J. W. Szlumper, the engineer, estimates the cost of the new works at £211,118, of which £86,401 is for the new dock. The Saint Just-in-Roseland Docks Bill enables the promoters to make experimental soundings and borings with the object of ascertaining and determining the practicability of making deep sea water docks at St. Just. The Kirkcaldy Corporation take power to borrow £26,500 for the completion of the harbour works, whilst the Commissioners of Padstow Harbour ask for authority to make a new pier or jetty, at an estimated cost of £23,000. The Tynemouth Corporation wish to borrow £20,000, and to erect warehouses, etc., at the fish quays. Of river works the Southampton Corporation seek to make a river wall and road in the parish of All-Saints at a cost of over £55,000; the Warrington Corporation propose constructing two bridges over the Mersey at a cost of £65,200, and to make approach roads, etc., at a cost of £54,882. The River Don Board intend constructing works to bring about a more economical abstraction of water from the river for manufacturing purposes.

Water Bills.

There are 25 Bills dealing with water matters, and four Scotch provisional orders, and the estimates which have been deposited of proposed expenditure on mains, reservoirs, land buildings, etc., are as follows:—Staffordshire Potteries Water, £198,033; East Grinstead, £19,000; Exmouth Urban District Council, £18,012; Pontypridd and Rhondda Joint Water Board, £407,000; Fylde Water Board (which supplies to Blackpool, Fleetwood, Lytham, and St. Anne's), £212,000; Thorne and District, £12,495; Cambridge University and Town, £167,500; Hastings Corporation, £128,486; Aberdeen Corporation, £1,396,000; Maltby and Tickhall, £6,205; Abertillery and District Water Board, £247,000; South Hants, £16,500; Clydesbank and District, £61,770; Mountain Ash, £74,765; Whitland, £3,278; Fraserburgh, £45,870; Montrose, £24,390. The Slough, the Kingswood, the South Lincolnshire, and South End Water Companies are each seeking to extend their present areas of supply, and to raise fresh capital, which will, of course, be ultimately expended on new works. One of the most important bills is that of the Pontypridd and Rhondda Joint Board, which, if authorised, will mean the purchase of the undertaking of the Pontypridd Water Co. by the new authority.

Gas Bills.

Gas Bills are as usual fairly numerous, and there are proposals for several new com-



STONE HOUSE, HAWES, YORKS: GROUND PLAN. P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.



STONE HOUSE, HAWES, YORKS: FROM THE ENTRANCE DRIVE. P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.

The entrance from the road is by means of a straight drive with a square forecourt. On the right is the motor-house and stable. The house, as far as possible, is built in the local Yorkshire style. The kitchen entry is through the connecting wall between the house and stable.

panies, which will mean the expenditure of capital on constructional and other work. New companies are proposed for Garnant, with a capital of £18,000; Maltby, with a capital of £24,000; and Chipping Norton, £12,000. Extensions of present areas of supply are asked for by the Exmouth, Shirebrook, Ammanford, and Gowerton Companies, and further capital powers are sought by the Bristol, Exmouth, Farnham, Great Grimsby, Mallow, Bishops Stortford, Wicklow, and Tipperary Gas Companies. The Corporation of Middlesbrough seek powers to spend £50,000 on their gas undertaking; Matlock Bath Urban District Council, £5,000; Egremont U.D.C., £14,800; and the Falkirk Corporation, £50,000. Forty-seven gas companies have combined, and are seeking to have the Metropolitan Argand burner No. 2 made the standard burner for testing in their various Acts.

Tramways.

Proposals for new tramways are few in number, and are as follows:—London County Council, £955,000 for tramways and £640,000 for street widenings; Dunfermline and District, £123,500; Wemyss Extensions, £62,636; Bradford Corporation, £120,036; Handsworth Urban District Council, £75,700; Rhondda Urban District Council, £69,768; Nottingham Corporation, £74,444; Leeds Corporation, £14 000; Southampton Corporation, £11,980 for tramways and £24,747 for street improvements; Kirkcaldy Corporation, £9,000. The Bradford Corporation seek powers to run tramways on the railless trolley system.

Miscellaneous Proposals.

Amongst the remaining proposals the London County Council ask for power to widen Church Street, Kensington, and divert and widen Belvedere Road fronting the proposed new county hall; to deal with smoke nuisance in the Met.; to obtain an extension of time for the completion of the widening of Southampton Row; and to enable the Camberwell Borough Council to acquire land for public baths in the Crystal Palace Road. The Bradford Corporation asks for authority to borrow £35,000 for an extension of the Town Hall. Estimates have been prepared for an expenditure of £59,500 by the Cleethorpes Urban District Council on sewage works, and Wishaw will spend £20,200 on similar work. Edinburgh Corporation have an important scheme for the establishment of an Improvement Commission to deal with the disused canal and basins at Fountain Bridge. The Commissioners are to be empowered to fill up the canal and basins and formulate building schemes "which shall conduce to the sanitary conditions, the architectural and other amenities of the area." The Worksop Urban District Council seek powers to erect public buildings on land already held by them. By the St. James Vestry Hall, Westminster, Bill, the City Council will buy out the rights of the Rector, who will be authorised to devote the £2,000 paid to him towards the erection of a mission church on part of the churchyard. Two Bills deal with public buildings, viz., the National Gallery and the Duke of York School Chapel, Chelsea. By the first it is proposed to acquire buildings on the west side of the gallery, and by the second to demolish the chapel and apply the site to any secular purpose deemed expedient. The Middleton Corporation propose spending £30,000 on a public hall and offices, £12,000 on public baths and washhouses, £14,556 on street works, and £3,000 on a mortuary chapel. Should the Crystal Palace Bill be carried, and the £75,000 as proposed, raised, a considerable portion of that sum is to be expended on repairs to the buildings. Blackpool Corporation ask for authority to acquire and improve the North Shore Baths at a cost of £10,000.

Building By-laws and Sanitation.

The Corporations of Eastbourne, Hastings, Middlesbrough, Middleton, Southampton, Warrington, and Bradford, and the Urban District Councils of Worksop, Surbiton, and Handsworth are each seeking additional powers for the making of regulations in respect of building and sanitary matters, relating to such things as defining the future lines of existing streets, the provision of means of escape from buildings used for other than private residential purposes in case of fire, the rounding off of corners, the prevention of *culs de sac*, the provision of intersecting streets, etc. Middleton, Warrington, and Worksop each lay down what shall be the minimum floor space in certain rooms in new houses as follows:—One living room of not less than 115 square feet, one bedroom of not less than 110 square feet, and no bed or habitable room of less than 70 square feet. The Bradford Corporation take powers to permit the laying out of any area in the City on the garden city principle; the Surbiton Urban District Council have a rather complicated Bill defining what a sewer shall be in the district; and the Southampton Corporation ask for authority to relax the present building by-laws in respect of iron, steel, or reinforced concrete structures, and to make rules governing such erections.

By permission of the architects, Messrs. Lanchester and Rickards, about fifty students attending the building construction classes at the Croydon Polytechnic made, on a recent Saturday afternoon, a tour of inspection over the New Wesleyan Hall at Westminster. The party was accompanied by Mr. J. Crewdson, the teacher of building construction at the Polytechnic. The build- is on the site of the old Westminster Aquarium. The party were shown over by Messrs. Howell and Elliott.

* * *

At a representative meeting of engineers held at the Midland Hotel, Manchester, on January 12th, it was resolved that a general engineering and allied trades exhibition shall be held in the spring of 1911, under the management of a committee of exhibitors, and to be organised by the International Trade Exhibitions, Ltd., London. The building is now in course of erection in Old Hall Lane, Rusholme, and will have a ground floor area of 100,000 sq. ft. This is two and a half times the ground floor area of any exhibition hall out of London. Particulars can be obtained of at the London address, Broad Street House, E.C., or at 20, Mount Street, Manchester.



STONE HOUSE, HAWES, YORKS: INGLE IN DRAWING ROOM. P. MORLEY HORDER, F.R.I.B.A., ARCHITECTS.

The drawing-room is panelled in oak, and has a large ingle. The windows look out over the tennis lawn and rose garden, and there is a door opening on to the veranda.

THE WARMING AND VENTILATION OF PUBLIC BUILDINGS AND FACTORIES.*

By T. W. Aldwinckle, F.R.I.B.A.

Climatic Consideration.

At the outset we approach a matter of difficulty which must be adjusted before due consideration can be given to the subject, and that is the matter of climate. We must think of the subject from *our* point of view, of ventilating and warming buildings in this country. The principal text-books on the subject are either American or German, and we are apt to be guided by those textbooks, without remembering that the climate in those countries is very different from our own. In the first place, the climate in those countries is dry, whilst ours is humid. One result of this is that the internal temperature of the rooms is with them about 70 degs. F., while with us it is about 60 degs. F. With a humid climate such as ours, an internal temperature of 70 degs. F. is distinctly uncomfortable. Then again, the winter temperatures are different. It is usual in America, in calculating heating surface for warming apparatus, to assume the winter external temperature at the zero of Fahrenheit, or 32 degs. of frost, and in Germany at 4 degs. below zero. Now the English winter is not a pleasant one; it is long and disagreeable in a variety of ways; but we are not subject to very low temperatures, and in designing heating apparatus it is certainly not necessary to allow for an extreme external temperature of lower than 20 degs. F., if indeed so low. Thus we see that we must adjust the American and German systems to the conditions of our own climate before they can be serviceable to us.

The Primary Object.

As the primary object of ventilation is to provide pure air in rooms and halls, it is necessary to find some standard or standards of purity. The usual standard is a certain proportion of carbon dioxide (CO_2). Normal air contains three parts in 10,000 of CO_2 in the country, and about four parts in large towns. As human beings give off a certain quantity of CO_2 per hour, it is obvious that the number of parts in 10,000 will be increased in an inhabited room, and the object of ventilation is to prevent such an increase as shall be unhealthy or uncomfortable. There are other impurities produced in an inhabited room, such as watery vapour ejected from the lungs, dust particles, and exhalations from the skin and alimentary canal. There are also the products of gas combustion when the same is used as an illuminant.

It is generally accepted that to ensure a perfectly healthy room the added impurity of CO_2 should not exceed two parts in 10,000, making a total of 6 parts per 10,000. There are, however, many conditions in connection with inhabited rooms or halls, which render it well-nigh impossible to attain such a result, and we have then to be content with a standard which is not so good. This is generally the case with theatres and similar buildings, school classrooms, and crowded factories.

The amount of CO_2 given off by persons is shown in cubic feet per hour in the following table:—

	In repose.	In gentle exercise.	In hard work.
Adult Male ...	0.6	0.9	1.8
Adult Female ...	0.4	0.6	1.2
Children ...	0.3	0.45	0.9

Gas as an illuminant produces in combustion a little more than ½ cubic foot of CO_2 for each cubic foot of gas burnt, and about double this quantity of aqueous vapour. Gas combustion also produces other impurities, such as carbon disulphide, etc. The introduction of the incandescent gas mantle, however, by reducing the amount of gas burnt per candle-power, has considerably reduced the impurity from this source, while there are no impurities resulting from the electric light.

Human beings produce a certain quantity of heat, which is expressed in units of heat per hour, and this is, according to Pettenkofer, about 400 units for adults, and 200 for children in an atmosphere of 70 degs.

From these tables it will be apparent that the occupants of a room exercise a very considerable influence upon the purity of the air, and upon its temperature.

As to the amount of fresh air per head which should be supplied, authorities differ somewhat, some of the suggested quantities being quite impracticable; but the following may be taken as reasonable, and capable of being put into execution under normal conditions:—

Class of Building.	Cub. ft. of air per person per hour.
Hospitals (ordinary)	3,000 to 5,000
Hospitals (fever)	6,000
Theatres	500 to 1,000
Workshops	1,000
Halls of assembly	1,000
Classrooms (elementary schools)	1,000 to 1,500

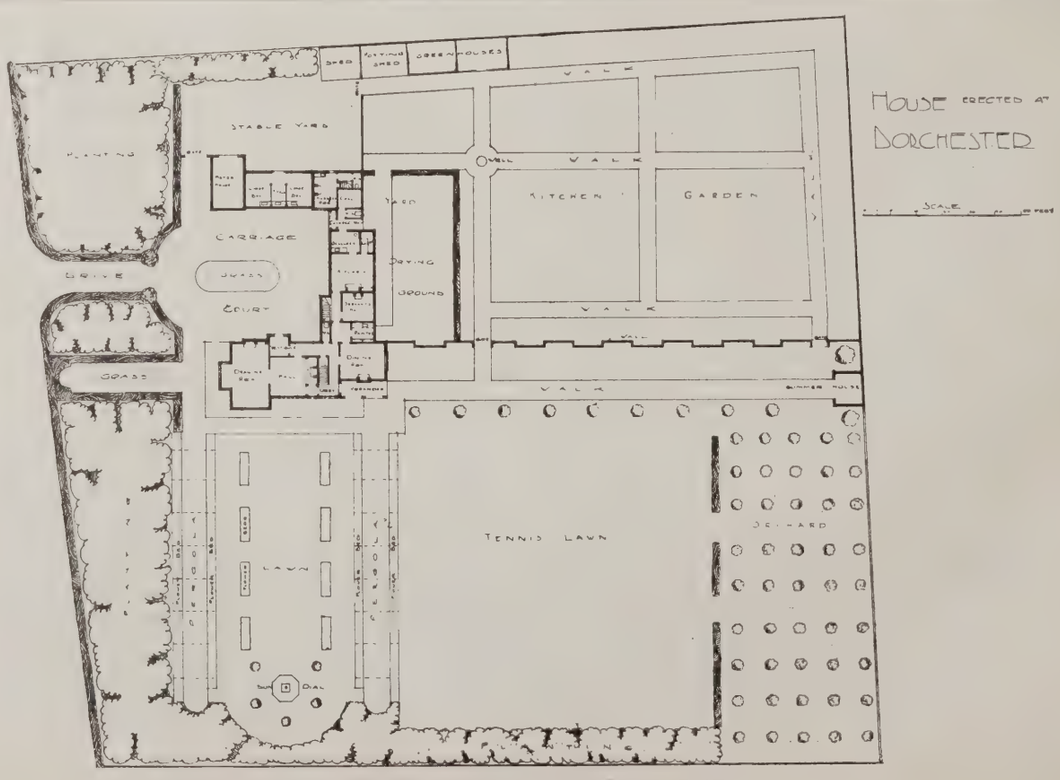
Amount of Air per Head.

In deciding the amount of air to be provided per head, regard should be had to the period during which the room or hall will be occupied. Thus, hospital patients occupy the ward by day and by night, and therefore require a higher standard of purity in the air than the audience at a theatre or concert-hall, who are only in the building about three hours.

The cubic space per head is not so important as might be imagined, so long as the requisite amount of fresh air is supplied without draughts and at a suitable temperature. A room may have a large cubic space per head, and yet, from imperfect ventilation, the amount of CO_2 may be found to be unusually high. An interesting illustration of this is to be found in Haldane's Departmental Report on the Ventilation of Factories and Workshops (CD 1302) (1902). The instance quoted was a cotton spinning mill, having a cubic space of over 10,000ft. per worker, where, owing to the absence of suitable ventilation, the CO_2 rose to 16.5 parts per 10,000, and this with a high internal temperature, viz., 92 degs. F., and without gas lighting.

It must be borne in mind that no rigid system can be successfully applied to all buildings alike, but that the nature of the building, and the purposes for which it is

*Abstract of a paper read before the Association of Engineers-in-Charge.



P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.



HOUSE AT DORCHESTER: THE ENTRANCE FORECOURT. P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.

Local stone was not available for the whole building, but some has been introduced into the porch and as a base to the house, used in large unsquared pieces, irregularly mixed with the rough-cast and red brick in the old local manner.

intended, must be separately considered in each case; and as there are numerous methods of ventilation, both natural and mechanical, we have several good systems from which to make a wise selection.

Natural and Mechanical Ventilation.

Our climate lends itself to natural ventilation because it is a temperate one, admitting of open windows, and this system of ventilation, which is the cheapest of all systems, is suitable for most domestic purposes—for offices, committee rooms, entrance halls, corridors, staircases, and factories and workshops having a large cubic space per worker. For rooms and offices open fireplaces are much preferable to radiators as a means of warming, as they are exhaust ventilators, and induce a current of air to flow in through the open windows. Nothing is more oppressive than to have to sit for some hours in a room where there is a radiator and no open fireplace. As regards staircases and corridors, it is not necessary to put them under a plenum or exhaust system. Radiators with open windows will be quite sufficient for all purposes. Generally speaking, with a climate favourable to natural ventilation, I think that every effort should be made to use this system wherever practicable.

In the so-called natural ventilation with vertical pipes and cowls, or other terminals, these are all dependent upon the action of the wind to produce an upward current and are therefore useless when the external air is still and close.

Ventilation of Hospitals.

A hospital ward is also an instance where our climate lends itself to natural ventilation. I believe that the great majority of medical superintendents of hospitals will tell us that there are from 300 to 330 days in the year when the windows of a ward can be opened without injury to the patients. This at once obviates the necessity for close mechanical ventilation. I will just describe to you the ideal ventilation of such a ward. In the first place, you have good cross ventilation. The windows will be on both sides, and will extend from 2ft. 6ins. above the floor to close up to the ceiling. There will be double-hung sashes, finishing at the top with a transom and a hopper ash, to open in glazed cheeks. Thus the rate and position of the admission of the fresh air can easily be regulated. There will also be cold, fresh air inlets in the external walls at the floor line to prevent the accumulation of vitiated air at that level. There may be also supplementary inlets in the side walls admitting air, to be passed through low-temperature, hot-water radiators, for use in very cold weather. Lastly, you have the large open fireplaces in the centre of the ward radiating heat, a bright and cheerful view for all the patients, and withal powerful exhaust ventilators, removing the vitiated air at a velocity of about 6ft. per second, close to the floor level. Some may say that this is not scientific ventilation and warming. It may not be, but its results cannot be challenged.

In this connection it may not be out of place, although anticipating a little, to consider the alternative of mechanical ventilation in relation to a hospital ward. I regard the plenum system as entirely unsuitable, for the following reasons: As the air will have to travel a considerable distance from the fan to the several inlets to the ward, it has to be warmed to a high temperature to start with, in order that it may enter the ward sufficiently warm. Then it has to pass along a series of ducts difficult of access for cleaning purposes. Anyone conversant with the plan and section of a ward pavilion will understand this. Exhaust ventilation is more suitable for a ward than the plenum, but it is not equal to natural ventilation, on account of the absence of open fireplaces and the necessity for closed windows. This system was adopted at the South-Eastern Hospital carried out by me in 1905, in deference to the wishes of the committee, who desired to dispense with open fireplaces, so as to avoid the expense of labour in attending to them, and the dust arising therefrom. The extraction is by means of propeller fans in vertical shafts removing 6,000 cub. ft. of used air per bed per hour. The inlets for fresh air are in the side walls under the windows, and the air is warmed in winter by impinging upon low-pressure, hot-water radiators enclosed in removable cases, the inlets being capable of regulation. The heating surface of the radiators on the east, or colder, side of the ward is 10 per cent. in excess of that on the west side. One important matter must be borne in mind in relation to an exhaust system of ventilation in a ward, and it is that the extracting power of the fans may draw in the air from undesirable inlets, such, for instance, as from the sanitary turret. To obviate this at the South Eastern Hospital I provided a separate fan to extract the air independently from the sanitary turret, of sufficient power to resist any pull in the direction of the ward.

Churches and Chapels.

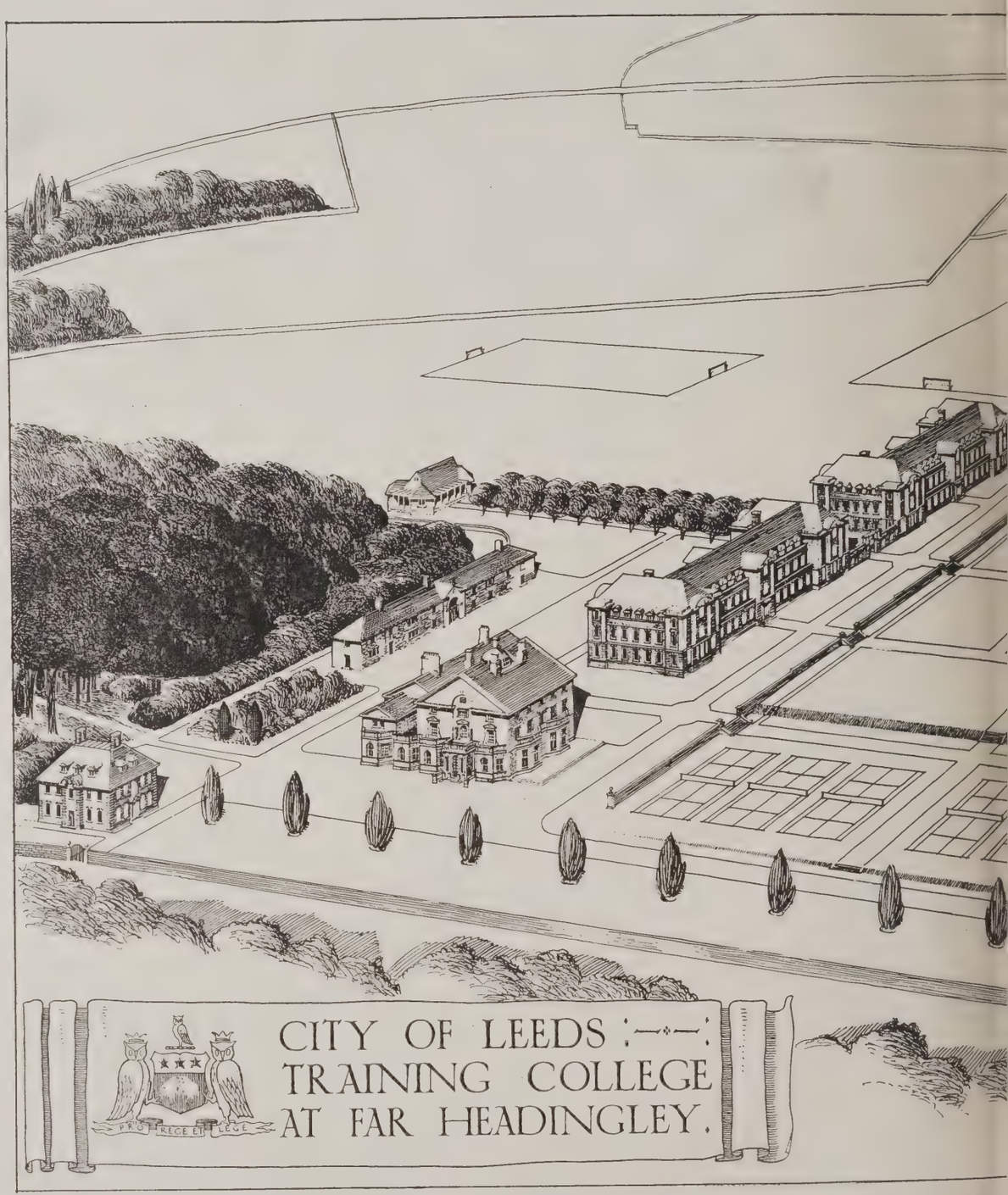
The warming and ventilating of churches and chapels are seldom satisfactory, particularly churches with a lofty nave and clerestory windows. Cold draughts are usually much complained of. This is caused by the very large cooling surface of the walls and windows as well as the open roof. It is a good plan, whatever the warming apparatus may be, to keep it going constantly throughout the winter. If allowed to go down when the building is not in use, the walls soon become cold, and the warming process has to be gone over again. Means should be provided for warming the air at the upper part of the building.

We may safely assume that natural ventilation is unsuitable and non-effective in most cases where a considerable number of persons are congregated together in a hall, room, or factory, with a less cubic space per head than 300ft. This is because it is impossible to put into the room the requisite amount of fresh air, without creating unpleasant draughts, and without lowering the temperature of the room during the winter to a point below that which is requisite for health and comfort.

Tests of Ventilation.

In dealing with the records of any tests of natural ventilation taken during the winter months, it is advisable to take careful note of the internal temperature of the room. It is a very easy matter to throw open the windows and flood the room with cold air, and thus produce a low proportion of CO_2, but the problem of ventilation is not thereby satisfied. A suitable temperature must also be provided, and this is often a matter of considerable difficulty, and one which is sometimes wholly ignored.

Mechanical ventilation can be conveniently divided into three classes, viz.:—Exhaust ventilation, plenum ventilation, and plenum and exhaust ventilation, and with a variant upon all three as "upward" or "downward."

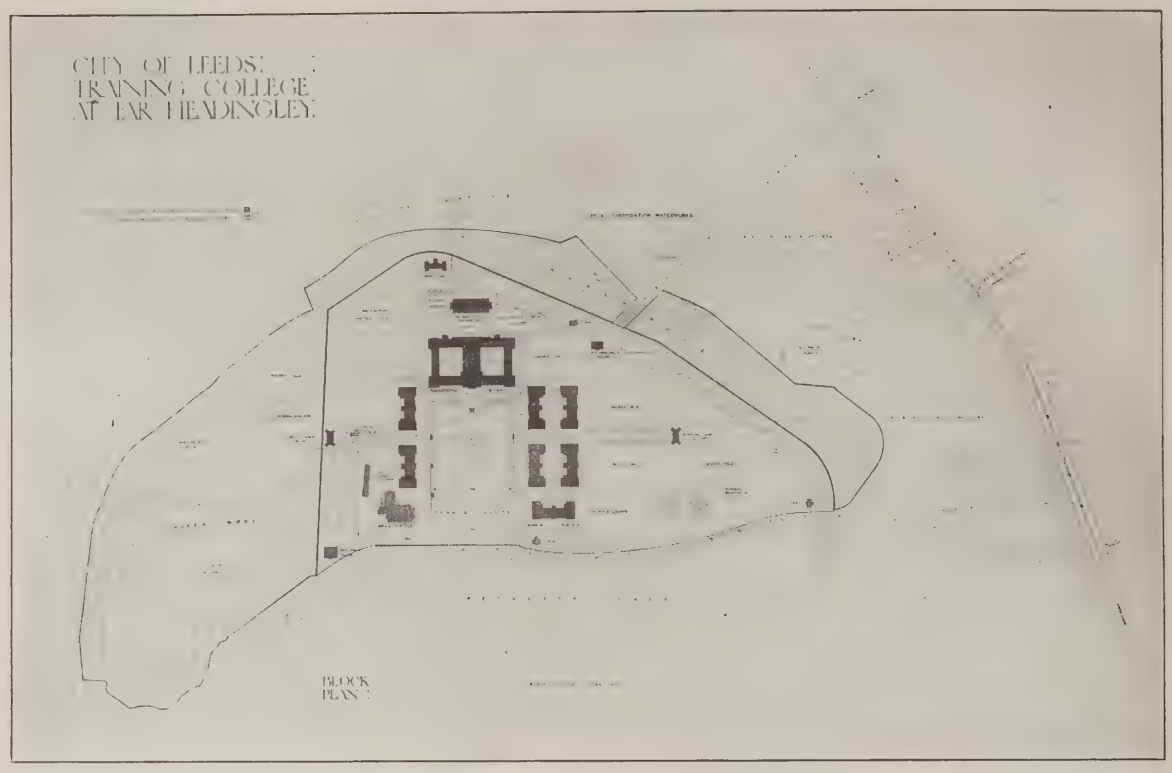


CITY OF LEEDS TRAINING COLLEGE AT FAR HEADINGLEY.

ACCEPTED DESIGN.



ATKINSON, ARCHITECT.



ACCEPTED DESIGN. G. W. ATKINSON, ARCHITECT.

Mechanical ventilation is suitable for, and in some cases only adaptable, for the following buildings:—Theatres and concert halls, courts of justice, town halls, council rooms, waiting halls for outdoor patients, crowded factories and workshops, operating theatres, laboratories.

Economy, Effectiveness, Comfort.

To render any system of mechanical ventilation economical, effective, and also comfortable to those who must pass a good deal of their time in it, we should provide large duct areas and low velocities in delivering or exhausting the air, and large heating surfaces and low temperatures in the warming parts of the system. I do not myself consider that air for warming purposes should ever be passed over or through heating surfaces having a higher temperature than 150 degs. F., for the reasons which will be hereafter given.

Exhaust ventilation has usually the advantage of being simpler and more economical in construction than the plenum system, and more easy of adaptation to existing buildings, and it is free mostly from the necessity of long air inlet ducts. With suitable and efficient means of extraction provided, a definite quantity of the vitiated or used air is removed per hour, this operation drawing in a corresponding quantity of external air to take the place of that which is removed. In the old days, and indeed until about twenty-five years ago, the air was extracted by means of vertical shafts, in which an upward current was induced by heating the air to a temperature considerably higher than the external air.

This system of producing an upward current was very costly, and has been entirely superseded by the use of fans, which, if driven at a moderate speed, are very economical to run. The current of air induced by a heated shaft is at best rather a feeble one, and varies with the temperature of the external air, being the least effective when it is most required, viz., when the external air is warm and close.

Exhaust Ventilation.

Exhaust ventilation is generally of an upward character, the extraction being in the ceiling or roof, and the inlets near the floor or near the breathing line. The arrangement of the extraction is generally a simple matter, if care is taken to provide fans of suitable capacity. Where the resistances are small and the extraction ducts (if any) are short, propeller fans can be used, but where the resistances are high, the ducts long and numerous, and the quantity of air to be removed is large, centrifugal fans are necessary. Generally speaking, it may be stated that propeller fans should not be used for a resistance of over ¼in. of water, as the quantity of air passed will be small against a high resistance. In this connection it should be borne in mind that the work done by an extracting fan consists not only in removing the vitiated air, but also in bringing in the fresh air through the authorised inlets, and that these inlets offer, in many cases, considerable resistance.

When the quantity of air to be removed is large, and coming possibly from several rooms into one extraction shaft, the direction, shape, and size of the extraction ducts require great care and consideration, with a view to reducing the resistance, and to secure that each inlet into the duct shall carry its due proportion of air. It is very important that all inlets into the main trunk should be well curved in the direction of the air current in the duct, and that the duct should be tapered or otherwise enlarged so as to be able to carry the increased volume of air brought in by successive inlets without altering the general velocity. It should also be borne in mind that very high velocities should be avoided, as not only does this increase the resistance due to friction in the ducts, but the horse-power necessary to drive the fan increases as the cube of its speed. Thus, if a fan is running at 400 r.p.m., and drawing 4,000 cubic ft. per minute through the duct, and taking 2 h.p., doubling the speed of the fan in order to draw double the quantity of air through the same duct, will require 16 h.p., to say nothing of the increased friction in the duct. This means that it is more economical in horse-power, and consequent annual cost, to arrange good-sized ducts, with the air travelling at a moderate velocity. It is also important to have plenty of access doors to the ducts for cleaning purposes.

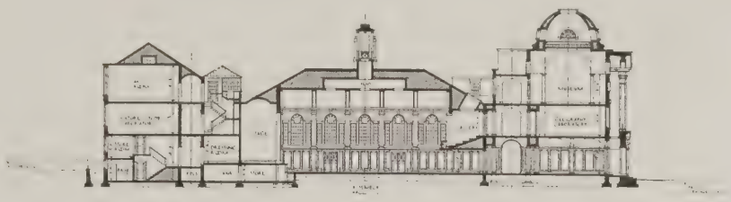
The extracting arrangements being complete, let us now consider the inlets. The position of these will vary according to the requirements of the hall or room, but it is essential that the external air shall enter as direct as possible from the outside, not near the ground level, and far from any source of air pollution. In a simple system of extraction ventilation there will generally be openings in the external walls, with gratings and channels through the walls, close, if possible, to the floor level. All these inlets should be regulated by dampers, as with a strong wind blowing upon the inlets a large influx of air would be uncomfortable. The net area of the inlets should be such as will admit the necessary quantity of air at a velocity of not more than 3ft. per second. The channels through the walls should be lined with glazed bricks, and means of access should be provided for cleaning purposes. Then the incoming air has to be warmed during the winter. This requires that a radiator should be placed in front of the inlet, with baffles so arranged that the incoming air impinges well upon the surface of the radiator before entering the room. This is preferable to enclosing the radiators in cast-iron cases, as these harbour dirt inside.

"Authorised" Inlets.

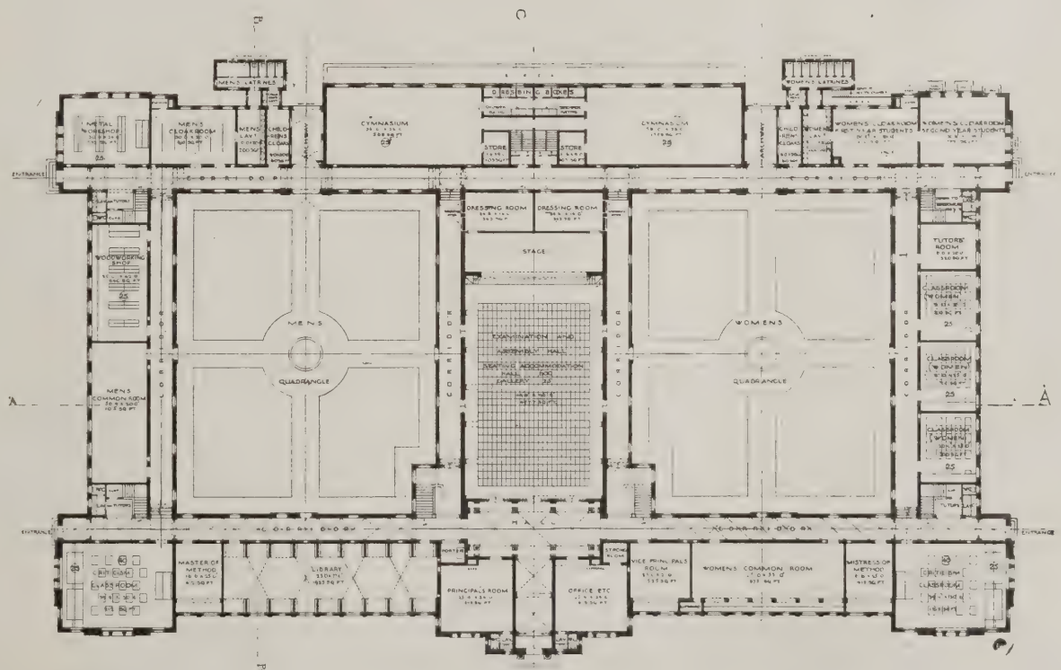
The inlets just described we term "authorised" inlets. The suction power of the fan will, however, to some extent be felt all over the hall or room, and a certain amount of external air, not by any means a small quantity, will be drawn in from any point through which the air can enter, such as through external walls, chinks in windows, and the like. These are called "unauthorised" inlets, and must be reckoned with. Care must in the first place be taken that air is not drawn in from any polluted sources. The risk of this is one of the disadvantages of the "exhaust" system. Also in calculating the heating surface for the general warming of the rooms, allowance must be made for the air which will come in through these "unauthorised" inlets. This air will be cold, and will require warming, and this is another drawback to the exhaust system from which the plenum system is free. This in-leakage or air through walls, especially in cold weather, is considerable even with natural ventilation, but it is much greater when there is a partial vacuum in the room caused by the exhaust fan.



FRONT ELEVATION



SECTION C—C



GROUND FLOOR PLAN.

CITY OF LEEDS TRAINING COLLEGE, FAR HEADINGLEY. ACCEPTED DESIGN. G. W. ATKINSON, ARCHITECT.

We must always bear in mind that to render a system of exhaust ventilation complete and efficient, at all events in the winter, the windows must be kept closed, and the air supply obtained from the authorised inlets. It will be obvious that if the extracting fan is efficient the external air will be sucked in at the point of least resistance. If a window 3ft. wide is open, say, to a height of 3ft, that would be an inlet area of 9ft., which would be, at least, three times larger than the net area of any authorised inlet, and that the external air will consequently enter through the window and not through the inlet. This can be verified by any one who wisely possesses a Tobin tube in his own dining-room. In the winter, with a fire going, the air will enter through this tube at a velocity of about 2 or 3ft. per second, but if a window is opened the inlet entirely ceases to act.

The exhaust system is suitable for town halls, council rooms, large city offices, and banks, schoolrooms, and under some conditions for factories and workshops.

Plenum Ventilation.

The primary advantage of plenum ventilation is that it puts into the hall or room a specific and measurable quantity of fresh air, in specific positions, at definite and ascertained velocities, and at definite temperatures, and that this air can be filtered, moistened, and warmed at the main air inlet. No other system admits of these advantages. The exits of air can be arranged at "authorised" outlets, which should be carefully protected against wind influence, but a portion of the air can also escape, and is always pretty cure to do so, through some "unauthorised" outlets. In this case, however, no harm can accrue from any pollution or from any lowering of the temperature of the room.

The main drawbacks to the plenum system are (*a*) that as a rule, long ducts are necessary for the distribution of the air, and (*b*) that as the air has to travel a considerable distance along these ducts, the initial temperature as it leaves the heating battery is generally arranged somewhat high, in order to compensate for the cooling in the ducts. These heating batteries are generally heated with steam from 10lbs. to 40lbs. pressure, or at temperatures from 240 degs. F. to 285 degs. F. This causes a baking or drying of the air, and as in our climate we are accustomed to air with a fairly high degree of humidity, the artificial drying of the air causes unpleasant sensations. We constantly hear complaints on this score from those in this country who pass a considerable portion of their time in halls or rooms under plenum systems. One hears of no such complaints in America or Germany, because they are accustomed to a drier atmosphere. I am strongly of opinion that we can remedy these defects and render plenum ventilation more acceptable, become more comfortable to us, by working upon somewhat different lines in the manner I shall hereafter describe, in connection with a building which I have recently warmed and ventilated upon the plenum system for the Metropolitan Asylums Board.

The Most Effective Form of the Plenum.

It is when plenum is coupled with auxiliary exhaust that I consider it most effective. The outlets can be better regulated, and the intended direction of the air currents better ensured. The word "plenum" suggests that the air of the rooms is under a mild kind of pressure, ensuring its equal distribution (assisted by the law of the diffusion of gases) throughout the room, and this is the primary object of all effective ventilation. Care must be taken to avoid short circuiting of the air, either by having the exhaust too powerful, or by having the outlets placed too near to the inlets. It is desirable for this reason that the power of the plenum fan shall always be in excess of the exhaust. There is no fear of the air not getting out, it will always find a way when necessary.

It is essential that the fresh air should be brought in from a pure and uncontaminated source, and at some height above the ground level, particularly in large towns, and the inlet should be well protected against wind and rain. It is preferable, if possible, to have the air intake on the southern or warmer side of the building. The incoming air generally requires some kind of filtration, if only to remove the particles of dust. It is very important that this filter should be either self-cleansing or easily cleansed. There should also be a good water spray to prevent drying of air. I have used a filtering screen consisting of a large number of galvanised steel rods placed to break joint about ¼in. apart, all being removable. A water trough is placed above these, from which water trickles down the rods.

For the purpose of driving the air through the duct a centrifugal fan is almost necessary, a propeller fan being not equal to overcome the resistance. The fan should, for the reasons already given, be driven at only a moderate speed, and should have a fair reserve of power, so that there may be no question as to the amount of air supplied. An electric motor is the best kind of power to drive the fan, and there should be means of speed regulation.

The heating battery through which the air is driven for warming purposes should not, in my opinion, have a higher temperature than 150 degs. F. In order to prevent undue loss of temperature in the main ducts, these latter should have hot-water pipes placed in them.

In theory the effectiveness of heating surfaces in thermal units increases with the velocity of the air passing over such surfaces, but there is a limit to this, and it is found in practice that air moving at a very high velocity does not give proportionally high temperatures, as a larger volume of air is passed, and the time of contact is decreased. It was found by experiment that air passed through a battery of 75lbs. steam at a velocity of 27ft. per second gave a much lower temperature than at a velocity of 15ft. per second.

Control of Temperature.

In order to secure adequate control over the resulting temperature in the rooms, the battery should be so constructed that parts of the heating surface can be shut off by valves. This will enable the room temperature to be regulated to meet the varying temperatures of the external air.

As the plenum will be required without warming during the summer, a by-pass duct should be provided by which the air driven by the fan can enter the main duct without passing through the heating battery. One reason for this is that these batteries offer considerable resistance to the air, and thereby increase the work of the fan. In America the main ducts are frequently in duplicate, one for warm air and one for cold air, with mixing chambers and regulating dampers at the base of each vertical air-shaft. This admits of the temperatures of the air entering the room being well regulated. In that country they use, however, as a rule, small ducts with high velocities of air. There is no room for this duplication of ducts upon the principles proposed in this paper.

The general arrangements of the main and branch ducts will depend upon the nature of the building, the number of floors, and the purpose for which the rooms or halls are used. But one general principle should be followed, viz., that of large sectional areas and low velocities as already explained. Another good reason is that the ducts should, as far as possible, be large enough for access for cleaning purposes. This is of the highest importance, as, without the means for frequent and thorough cleaning these ducts can, and indeed frequently do, become very dirty and foul, and as such are a source of danger to health. As a matter of sound principle there should be no portion of any ducts, or any inlet, which cannot be easily cleansed out. This may appear a large order, but it is perfectly feasible and is absolutely essential. This matter of foul and unclean ducts is a strong argument frequently used against the plenum system, and it is one to which the most careful attention should be given.

The velocity at which the air enters the room or hall will vary with the conditions—with downward ventilation, say, in a theatre, with the air entering at or near the ceiling, and consequently well above persons' heads, a fairly high velocity in allowable, especially if the air current will have to travel some distance; but where the inlets are near the occupants of the room a velocity of 3 to 4 ft. per second will be sufficient, provided that the collective area of the inlets is sufficient to provide the requisite amount of air at such a velocity. The angle at which the air jet will enter has to be carefully considered, according to the circumstances of the case. Each inlet should also have a regulatory valve, as simple and ready control is the essence of all good ventilation. The temperature at which the air will enter the room must be definitely arranged, and must be capable of ready adjustment at the heating battery as already described. This comes to be a matter of much importance in places where large numbers of persons assemble, such as theatres and the like. Each adult person gives off about 400 thermal units of heat per hour, so that an audience in a theatre numbering, say, 1,500 persons, with an air allowance of 1,000 cub. ft. per head per hour, will, in one hour, have given off sufficient heat to raise the temperature of the air 22 degrees F. Such being the case, it is obvious that the incoming air would usually have to enter at a temperature lower than that of the auditorium.

(To be concluded.)

Proposed New Works.

ABERAVON.—The L.G. Board has held an enquiry into the application of the Town Council for a loan of £10,000 to build a new market.

ABERDEEN.—The Town Council has approved the following plans:—Alterations in connection with business premises on the east side of Loch Street, for the Northern Co-operative Company, Ltd., per Messrs. Brown and Watt, architects; addition at the rear of premises No. 415, Union Street, for Messrs. Wm. Cay and Sons, per Messrs. Brown and Watt, architects; four dwelling houses on the south side of Westburn Road, for Mr. James King, builder, per Messrs. W. Henderson and Son, architects; alterations in connection with the Palace Theatre, Bridge Place, for the United Counties Theatres, Ltd., per Mr. W. E. Bickers, architect, Bradford, and Mr. John Rust, architect; dwelling-house on the north side of an un-named street running westwards from Clifton Road to the south of the entrance to Hilton House, for Mr. Joseph Shirras, jun., builder. The committee also approved plan of proposed alterations on the building in Guild Street, formerly known as Her Majesty's Theatre, for the Tivoli (Aberdeen), Ltd., per Messrs. Frank Matcham and Co., architects, London. From the burgh surveyor's report it appeared that it was intended to make extensive internal alterations on the building, for the purpose of converting it into a music hall; that when the alterations were carried out the building would be greatly improved, and would provide accommodation for 1,148 persons.

AMERSHAM.—The R.D. Council has passed plans for the following:—Three cottages, Hyde Heath, H. Kennard; gymnasium, Milton Avenue, A. M. Taylor; 22 cottages, Church Lane, Great Missenden, L. L. Greaves; dwelling-house, Packhorse Road, Chalfont St. Peter; cottage, Chalfont Common, F. Mead; house, Ridgway, Chalfont St. Peter, W. T. Walker; house and shop, Gold Hill, Chalfont St. Peter, D. Ryder; house, Shardeloes Estate, Amersham, H. Kennard; new stables, Ashley Green, G. Darvell; cottages, Chalfont

St. Peter, Francis and Jones; six cottages, Chalfont St. Peter, Y. J. Lovell.

BLACKBURN.—A scheme is on foot for the erection of new assembly halls, sessions house, and police headquarters, to be erected on Blakey Moor. The buildings are in two blocks, being separated by a gateway and courtyard. The main assembly is designed to give accommodation for 3,500 persons. Two smaller halls will accommodate 1,271 and 524 persons respectively. The whole of the buildings are to be constructed of stone obtained from local quarries, and the cost is estimated at £113,000. The joint architects are Messrs. Briggs, Wolstenholme, and Thornley, and Messrs. Stones and Stones.

BOURNEMOUTH.—The Guardians have decided to erect a new infirmary at the Christchurch Workhouse, which will involve an expenditure of about £11,000.

BOURNEMOUTH.—The Local Government Board inquiry into the application of the Bournemouth Corporation to borrow £77,000 for the purposes of erecting a pavilion or kursaal upon the Belle Vue site, near the pier, has been concluded.

BRADFORD.—The Site Selection Committee for the New Bradford Infirmary have arranged to purchase the Field House Estate of 23 acres at Daisy Hill, as a site for the new building.

CARDIFF.—The question of the site for the proposed new fire station has been discussed at some length by the Town Council, and on the proposition of Alderman F. J. Beavan it was decided, by 19 votes to 8, to erect a station on Cathays Park at a cost not exceeding £15,000. The city engineer (Mr. Harpur) submitted three alternative plans and estimates, as follow:—Westgate Street, £17,323; Womanby Street, £13,078; Cathays Park Site, £23,829.

DUNFERMLINE.—Permits have been granted Peter Macdonald, brick builder. Thistle Street. to erect a block of three dwelling-houses in the new street running from Victoria Terrace to Thistle Street. James Beveridge, manufacturer, Park Avenue, to erect three double cottages of four houses each in Elliot Crescent.

FAREHAM.—The L.G. Board has held an enquiry into the application of U.D. Council to borrow £2,000 for the erection of a fire brigade station.

HASTINGS.—The Town Council has passed plans for the following:—Conversion of No. 111, Priory Road, into two tenements; Mr. E. G. Hutchinson, owner; Mr. A. Dray, architect. Store at Branksome Road. Filsham Park Estate; Mr. E. P. Haviland, owner; Mr. Thos. Elworthy, architect. Glass covering at the rear of No. 130c, Queen's Road; Mr. H. Blackman, owner; Mr. E. Pollington, architect. Double cottage, road leading from Elphinstone Road to Dover Terrace; the Misses Oakley, owners; Mr. A. R. Jemmett, architect. Alterations to No. 8, West Hill, St. Leonards; Miss Norah Harris, owner; Messrs. Wm. Gibbins and Son, builders.

LONDON, E.C.—It is proposed to demolish the Great St. Helen's Synagogue, sell the site and build a fresh edifice in the Commercial Road, E.

LONDON, S.W.—A faculty has been granted by Dr. Tristram, presiding over a Consistory Court in St. Paul's Cathedral, for the erection of a marble reredos in Holy Trinity Court, Sloane Street, S.W., at a cost of about £2,000. Mr. Gregory, solicitor, in making the application, said the reredas was the gift of an anonymous donor. The design is by Mr. John Tweed.

NELSON.—The following plans have been approved by the Town Council:—Plan for Messrs. Fewster and Wilcock, two houses, Barkerhouse Road; Mr. A. Edmondson, eight houses, Pont Street; Netherfield Men's Institute, conversion of two houses into club premises, Crowther Street.

ROCHDALE.—The Town Council have appointed Mr. P. W. Hathaway, architectural assistant in the Borough Surveyor's Department, as architect to advise the General Purposes Committee on the question of alterations and additions required at the Town Hall.

ROWLEY REGIS. — The vicar and churchwardens of the Parish Church are again experiencing great difficulties with respect to the church fabric owing to mining operations. Some years ago it was necessary for the safety of the congregation to take down the tower, and it has been re-erected in sections at a great cost. At the present time the work of restoration is not complete, and a very considerable debt has yet to be liquidated. Recently it has been ascertained that the foundations of the new sections of the church are giving way. Streams of water percolate through the roofs after snowstorms. It will be necessary for the new sections of the church to be repaired and the parishioners are hopeful that the churchmen in other parishes will come to their aid.

SCARBOROUGH.—The L.G. Board has held an enquiry into the application of the Town Council to borrow £3,000 for the erection of a pavilion in the Alexandra Gardens, North Cliff.

WESTMINSTER.—The City Council are seeking Parliamentary sanction to acquire, for the sum of £2,000, the right of user of St. James's Vestry Hall, Piccadilly, now possessed by the vicar and churchwardens. By the bill the vicar and churchwardens are empowered to expend £2,000 in the erection of a Mission Hall or Clergy House.

WOOLWICH.—It is proposed to erect a permanent church, to supersede the small iron building dedicated in 1884, in the mission district of St. Augustine's, Belvedere. When the permanent church has been provided the mission district will be formed into an ecclesiastical parish. The estimated cost of the proposed structure, plans for which have been prepared, is £7,000, but the Building Committee are anxious to start at once with the first portion only, which will cost £4,050. This will include the chancel, nave, choir, clergy vestries, and four bays of the nave and aisles, accommodating 500 worshippers.

WORTHING.—The L.G. Board has held an enquiry into the application of the Town Council to borrow £3,000 for the purchase of Gloster Lodge, Chapel Road, as a site for municipal offices.

LONDON MASTER BUILDERS' ASSOCIATION.

The meeting of the Council which took place on Thursday January 20th, was largely attended, and the items comprising the agenda were unusually interesting to the trade. The president (Mr. F. G. Rice) presided.

The report of the Organisation Committee was read by the deputy chairman, Mr. G. Bird Godson, and approved by the Council.

The telephone card giving list of associate members was submitted and approved, and it was ordered that it be distributed.

It was also decided to distribute to the London members of the Royal Institute of British Architects, the Surveyors' Institution, and the Quantity Surveyors' Association, the handbook published by the London Master Builders' Association, and it is hoped that it will prove useful and interesting to them.

One ordinary member and eleven associate members were proposed and duly elected.

The report of the Finance Committee was received, and the items of the income and expenditure account, and those of the balance-sheet of the year ending on December 31st, 1909, were submitted by the treasurer (Mr. James S. Holliday), and the professional auditor (Mr. G. A. G. Robertson) made his report, and stated that he had carefully audited the books, vouchers, and investments of the association and found them correct. They were approved and recommended to the annual general meeting for adoption.

The President (Mr. F. G. Rice) reported to the Council that he, together with Mr. Leonard Horner, Mr. G. Bird Godson, Mr. Frank May, Mr. J. Carmichael, Mr. F. Higgs and the secretary, met in conference representatives of the London Association of Master Masons (Mr. F. Corben, Mr. Walter Tomes, Mr. L. F. Chislett, and Mr. Walpole Collins), on January 18th.

The possibility of affiliating the two associations was discussed very fully at this conference. The conditions to be observed were carefully considered, and the president laid it down very distinctly that the agreements made by the London Master Builders' Association with the Workmen's Societies must be strictly and honourably observed.

Another conference was held on the same day, but separately, with the London Association of Master Decorators, when the London Master Builders' Association was represented by the president (Mr. F. G. Rice), Mr. Leonard Horner, Mr. G. Bird Godson, and Mr. James S. Holliday, with the secretary in attendance; and the London Association of Master Decorators was represented by the president (Mr. H. A. Campbell), Mr. J. Anderson, Mr. F. Dakin, and the secretary (Mr. A. Davidson). The affiliation of the two bodies was carefully considered, and the president of the London Master Builders' Association (Mr. F. G. Rice) drew attention to the importance of strict observance of rules made by the L.M.B.A. with the trade unions.

At both the above-mentioned conferences, many expressions of sympathy and desire for affiliation were made, and it is hoped that eventually these and other bodies of employers in the building trade will be combined in taking united action in matters interesting to all those engaged in the industry.

An interesting discussion took place on this report, and the Council considered affiliation desirable, and appointed a committee, consisting of the president (Mr. F. G. Rice), Mr. Leonard Horner, Mr. G. Bird Godson, Mr. James S. Holliday, Mr. Frank May, Mr. Wm. Shepherd, Mr. B. I. Greenwood, and Mr. F. Higgs, to consider what terms to recommend for affiliation to the London Master Builders' Association of other bodies, and to report to the Council in due course.

The recommendations of the Rules Committee as to the amendment of the association rules were fully considered, and much interest was displayed in the consideration of them. The question of sub-contractors occupied a good deal of attention, and several glaring instances were given of what master builders have to put up with from many who are employed on work which could be done more quickly, with less interference with the organisation of the working of the job, and perhaps better, by the master builder himself. It was considered to be a great hardship on builders to be responsible for the work of sub-contractors, who do the work that they (the builders) have facilities and ability to carry out, and of whom they have no selection, and although it is admitted in some cases architects cease to employ sub-contractors whose want of consideration to the master builder warrants such a course, great hopes were expressed that architects would revert to the former practice of entrusting the master builder with the whole of the work formerly undertaken by him, and which would undoubtedly give him an added interest and pride in his work..

It was decided to hold the annual dinner on February 24th, and the President hopes to be well supported on that occasion.

The question of beginning work before the recognised "starting time" was considered.

It has for some time past been urged on the Council the desirability of issuing to its members a paper giving an official record of its proceedings, and on the motion of Mr. E. J. Brown, who pointed out that the "Builders' Journal" was the official organ of the National Federation of Building Trade Employers, it was decided to send that paper free for the ensuing twelve months to the ordinary members of this association.



HOUSE AT WARWICK. P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.

BUILDING TENDERS AND CONTRACTS.

The following notice appears in the "Journal of the Royal Institute of British Architects" for January 22nd:—

On December 13th, 1909, deputations from the London Master Builders' Association and the National Federation of Building Trades Employers of Great Britain and Ireland were received at 9, Conduit Street by the President, Vice-presidents, and Hon. Secretary of the Institute.

Mr. Rice, president, and Messrs. Wm. Shepherd and Randall represented the London Master Builders' Association, and Mr. Ernest J. Brown, president, and Messrs. F. Smethurst, J. W. White, James Wright, F. Higgs, and W. Thomas represented the National Federation of Building Trades Employers of Great Britain.

The deputation stated that for some time a practice has been growing amongst architects in London and the provinces of asking builders to send in tenders for works without quantities being supplied to the builders upon which the tenders might be based. Secondly, that architects attempted to make a written acceptance of the tender an agreement binding the builder to sign a certain form of contract. Thirdly, that when quantities for the works were supplied to the builders, the latter were asked to deliver their priced schedules with the tenders.

With respect to the first point it was felt that sometimes unnecessary expense was thrown upon the builders in requiring each of them to take out the quantities necessary for the preparation of their estimates, and members of the Institute are recommended to have quantities prepared for all ordinary works above £500 in value. If the works are below £500 in value, it would be advisable for architects (if quantities are not supplied) to invite tenders from not more than two builders so as to reduce the cost of preparing estimates, this economy being ultimately beneficial to the client.

Wherever it is practicable for quantities to be prepared without unduly increasing the cost of the works, it is desirable that these should be supplied, but if in the discretion of the architect these quantities are not prepared, then the invitations to builders to tender should be restricted in number.

With reference to the second point, it was urged by the deputation that often there was no time for builders to read carefully through the form of contract before sending in the tender, and, therefore, that a written acceptance of the tender should not constitute a binding agreement to sign a form of contract to which exception might properly be taken.

The Institute representatives, while expressing no opinion upon the legality or otherwise of the practice above referred to, urged upon the deputation the great desirability of only signing the form of contract issued by the Institute.

The third point was exemplified by instances of public bodies and architects demanding the submission of priced bills of quantities along with the tender, with the grave risk of these being used in an unfair or improper manner.

It is, therefore, recommended that members of the Institute should not adopt this practice, but adhere to that set out in clause 3 of the conditions of contract issued by the Institute, and that they should do all in their power to stop the continuance by public authorities of the practice complained of.

JAMES S. GIBSON, Vice-President.

CARPENTERS' HALL LECTURES.

Art of Building, with Special Reference to the Use and Abuse of Building Materials.

Mr. Baillie Scott, lecturing on the above subject at the Carpenters' Hall, on Wednesday evening, remarked that nowadays when we speak of art we generally confine ourselves to pictures and statues. The art news of the newspapers have nothing to say about buildings; and while our modern buildings are defacing the countryside, our art is in the land of dreams and shadows. Whenever one sees an artist sketching in an old-world village, one realises how debased is our modern art. Of course, we have architecture in our midst, but this is now almost as much withdrawn from the main streams of art as the other arts.

The training which the young architect undergoes seems to imply that the whole of his architectural career is to be spent designing ambitious structures on antique models. The study of Greek temples will do little to enable us to fit ourselves to deal with small houses, as at Surbiton.

We should study the old cottages and farmhouses and forget the grand manner. I do not want to be impressed by empty grandeur. Build me a town where the houses of the people are comely and comfortable. Instead of grandeur I will put before you another and more worthy ideal—the ideal of romance. A building with a soul, in short. What power can be in bricks and mortar rightly handled! I know of numbers of buildings, manor houses, and farmhouses of the Tudor period, full of illusive charms. The walls may be hung with tapestry or merely whitewashed, it matters not. Everything is as surely right as everything in the modern building is surely wrong.

After a few slides of old buildings in Norfolk and elsewhere, the lecturer proceeded to deal with the materials used in building.

Stone, taken first, varied he said, according to the district in which it was found, and the old masons varied the treatment accordingly. In Surrey you often find the buildings decorated with a Mosaic of flints, etc. The modern mason always wants to improve on these, and can only give us an exaggerated concoction in the middle of each stone called "rock base." Our modern architect is obsessed by tradition and the grand manner: he can take no hints from the old methods. His masonry is the masonry of the drawing board and T square.

Consider the matter from the office point of view. Having got out the elevation and put in the openings, he sees if he cannot enrich the building with pilasters, mouldings, and carvings, and other elements dear to the office mind. It seems to me, he continued, that we are putting the cart before the horse. Instead of letting the material guide us and give us ideas, we do the design and settle the material later. Passing on to consider bricks and brickwork, he said: Every architect has in his office one of those bricks which are the manufacturer's pride and joy, perfectly even in form and colour; in fact, all that a brick should not be. A good brick should have the characteristic qualities of the material from which it is made. It should be of the earth, earthy. The mortar joints should not be a succession of mechanically ruled lines, and should be neither too dark nor too light. In roofing materials the most important quality is that of texture, and if tiles are used they should be thick. If new tiles have to be used they should have a texture which will weather rapidly, also that slight irregularity of form and surface which gives so charming an effect. There are at the present moment no tiles entirely satisfactory to the building artist. If it is impossible to obtain old tiles we had better choose a tile which will weather readily in a few years. Slates have a kind of harshness about them which renders them particularly suitable for breezy uplands and wind-swept stretches by the sea. Thatch, if treated with some fireproof preparation, is well adapted to small buildings. In using timber as a building material, the lecturer continued, it is wise to aim at securing some of those natural graces which belonged to it in its living form—the tree. Oak is best finished in most cases with the adze rather than the plane. Mahogany, rosewood, etc., should not be highly polished, but their surface should be just as much alive as the marble figure of the sculptor. Above all, we should avoid the crudeness of French polish. Wax polish gives a much better effect. In wood-carving, what suggestions has the material to offer? Our modern wood carver must be the means of bringing out the woodenness of the work. Old stuff has a sort of blunt nobbiness about it, but with the advent of the Renaissance, woodwork became just a means to producing the design of the carver. Grinling Gibbons is such a master of his tools that he has not interested himself in his timber. He only wants an accommodating material, so he works in soft wood. He gives us a lobster or a pair of pheasants reproduced with marvellous exactness. But art should move us to something better than that. So the work of Grinling Gibbons becomes only an object of curiosity, an example of mechanical skill.

The lecturer next showed us some examples of modern buildings, including a view of the courtyard of the ladies' flats at Hamp-

stead, designed by Mr. Baillie Scott, and a village hall in the Isle of Man.

It is a difficult matter, he continued, for a building artist to find a glazed tile that he can use. Most of them are unfortunate in pattern, and have a staring glassiness of glaze which renders them unsuitable. Certain makers have, however, done much to improve this. Where, then, is the perfect glazed tile to be found? Probably only in the old Dutch tiles. Beauty here has been obtained by the sympathetic use of the materials of which they are made, and an appreciation of their qualities. He expressed a hope that before long manufacturers would be able to give us such a tile. Of plaster, he said, Mr. Bankart will speak to you. No one has done more to revive its possibilities. As to its colour, it had better take the tint natural to the sand, but, if tinted, then let the colour be one which is natural to the material. Having dealt briefly with metals, namely, wrought and cast iron, the lecturer passed on to what he called that extremely revolutionary material, called ferro-concrete. If we are going to use ferro-concrete, he proceeded, let us be perfectly frank about it. Let the adornment both with and without be superficial in character. In Venice they adorned their walls with paintings. These would be unsuitable for our climate; but nothing could be better than mosaics. In the country local features could be introduced, namely, patterns of pebbles and flints. Several slides of modern German work were shown. Some of you here, he continued, think all this talk about art is not practical. More and more in this modern world we come to regard work as merely a means of getting money to buy our pleasures with. If we are going to spend the greater part of our lives in some pursuit, should we not try to get as much delight as possible out of it? In conclusion, let us try and evolve our art, as our fathers did, from natural conditions of climate and race.

Societies' Reports.

The Society of Engineers.

A prize, to be called the Status Prize, will be awarded by the Society of Engineers each year for the next four years, ending 1913 (if papers of sufficient merit are received) for the best paper written by any person on the subject "How to Improve the Status of Engineers and Engineering, with special reference to Consulting Engineers." The prize will consist of books and or instruments, of the value of three guineas, selected by the author of the premiated essay. The essay shall be written in the third person, shall contain not fewer than 4,000 nor more than 6,000 words, and shall be typed on one side only of foolscap paper, the distance between the lines being ⅜in. or more. All essays submitted in competition for this prize and the copyright therein shall become the property of the society, but the donor shall also have the right of publishing such essays or any part thereof. The Council of the Society may, at their discretion, permit the publication of any essay by its author, on such conditions as they may think fit to require. The premiated essay shall be read and discussed at a meeting of the Society, the reading being done by the author if possible, and such essay shall be published in the usual manner in the Society's Journal, the author being entitled to receive 50 copies of his paper upon publication thereof. The prize shall not be awarded to any member of Council or officer of the society. Essays sent in for competition must be received by the secretary, Mr. A. S. E. Ackermann, 17, Victoria Street, Westminster, on or before May 31st, in each year.

L.C.C. School of Arts and Crafts.

The following courses of lectures will be delivered at the L.C.C. Central School of Arts and Crafts, Southampton Row, during the term now commencing:—"The Technology of Leather, Paper, and Glue" (under the auspices of the Consultative Committee on Book Production), by Dr. Gordon Parker and Messrs. R. W. Sindall, F.C.S., and S. R. Trotman, M.A., F.I.C., on Thursdays, January 13th to March 3rd inclusive, at 7.30 p.m. "Metallurgy for Art Metal Workers," by Mr. Noel Heaton, B.Sc., F.C.S., on Wednesdays, January 12th to February 9th, at 8 p.m. A course on "Historic Arts and Crafts" will be delivered on Fridays at 6 p.m., as follows:—January 14th, "The Work of the Della Robbia," Mr. E. R. D. Maclagan; January 21st, 28th, "Embroideries," Mr. A. F. Kendrick; February 11th, 18th, "Lettering and Book Ornament," Mr. E. F. Strange; February 25th, March 4th, "Silversmiths' Work," Mr. W. W. Watts, F.S.A.; March 11th, 18th, "Ancient Textile Patterns," Mr. Alan S. Cole, C.B.; April 1st, "Illuminated MSS. and Early Printed Books," Mr. G. H. Palmer. Each lecture will be fully illustrated with lantern slides, etc., and admission is free to all persons interested. Full syllabuses and prospectus of classes can be had on application to the secretary at the school.

Leeds and Yorkshire Architectural Society.

At a meeting of the Society on January 13th, Professor S. D. Adshead, of Liverpool, introduced the subject of Town Planning with special reference to the Housing and Town Planning Act and its bearing upon suburban dwellings. Professor Adshead, in discussing the Act, pointed out to what extent the exercise of good-will and tact on the part of those concerned in negotiations would be required for its satisfactory administration. He urged the necessity for a unity of purpose, and warned against the danger of isolated areas being "town planned" without due reference to the whole, a possible result of a too literal reading of the Act.

Town Planning had in the past been largely responsible for the tastes and inclination of the working man. He was, unless taken in hand by his employer, either driven into a slum or catered for by the speculating builder, whose taste was the very worst. What could Town Planning do for him? With improved communications there was no reason why working men should not, if they so desired, live outside the town where land was plentiful and cheap and the pleasures of a garden could be enjoyed. So long as town dwellings were adhered to, these should be on the block system—an arrangement adapted in many ways to modern conditions.

Concerning the middle classes, here again a lack of appreciation of real art had rendered a ready prey to the speculating builder, who, while conforming to the by-laws, had produced monotonous rows of cubicles which attracted the unsophisticated with a thin veneer of respectability in the shape of sham ornament. The individual building owner had attempted to make his building the climax of the street. Self assertion had been unchecked. Thus, the Town Planning Act was destined to become one of the most important and consequential of all recent reforms.

For the future, a new beginning was impossible: we must make the best of what we possess. Terraces could be with little alteration converted into blocks of tenements, while stripped of its "ornament" the Mid-Victorian house might even attain to a stuccoed simplicity. The chief opportunity for real development, however, was offered by the outer ring of undeveloped land extending beyond our suburbs. Here, the choice of a suitable and utilitarian style for future buildings, suggested wide possibilities. There was much to be said for the pedimented villa of the Regency and Early Victorian periods, the fine simplicity of which combined with its compatibility with modern needs must appeal to the increasing artistic intelligence of the people. Referring to recent examples of suburban development, Professor Adshead pointed out that they must by no means be regarded as final results, but as experiments in a far reaching movement. There was much confusion of refinement with rusticity. These did not go necessarily hand in hand; the magnificent cottage did not suggest the residence of pretension; there was a limit to the stretching capabilities of the rustic cottage. In planning the residential quarter of a town, the occupation and taste, the tendencies either rusticated or refined of its prospective population must all be equally considered, and a disposition and an architecture evolved at once utilitarian, harmonious and beautiful.

The lecture was illustrated by plans and views having reference to town planning both in this country and abroad.

Birmingham Architectural Association and Birmingham Clerks of Works and Builders' Foremen's Association.

A joint visit was recently paid by the combined members of the above association to the new secondary schools at Yardley, recently erected by the Worcestershire County Council at a cost of about £25,000.

The parties were conducted over the buildings by Mr. Arthur Harrison, F.R.I.B.A. (the architect), Mr. Turberville (clerk of works to the County Council), and Mr. Harvey Gibbs (the contractor). The buildings are in the Georgian style, and are carried out with very fine deep-coloured red bricks, with artificial stone dressings, the roofs being covered with hand-made tiles. The interior of the main hall is beautifully finished with decorative plaster work, the whole forming an up-to-date school, complete in all modern conveniences and requirements.

There is an elevation to Warwick Road, but all rooms where quietude is essential are placed at the sides and in the rear, as far removed from the main road as possible.

The buildings consist of a central hall or assembly room, with class-rooms around, and consist of two floors—ground floor and first floor—the latter being of reinforced concrete laid with wood blocks. Besides the ordinary class-rooms there are an art studio, library, laboratary, gymnasium, dining-room, cookery room, cycle stores, etc.

At the conclusion of the inspection, a vote of thanks was accorded to Mr. Harrison, the architect, who was heartily congratulated. Votes of thanks were also accorded to the contractor, Mr. Harvey Gibbs, and to Mr. Turberville, the clerk of works, for their kindness in receiving the visitors.

Later in the afternoon the same party visited the new Primitive Methodist Church and buildings, lately erected in the same neighbourhood. The church, which is a large building in modern Gothic style, is constructed of red bricks and terra-cotta. There are also a Sunday school building, an institute and social meeting rooms, one of the principal features being an excellent billiard room. The whole of the buildings were designed by Mr. W. Harper, of Nottingham, and carried out by Mr. Harvey Gibbs. Both the design and workmanship were greatly admired and appreciated by the visitors, who expressed the pleasure and gratification which the visit had given them.

Messrs. Wailes, Dove and Co., Ltd., of Newcastle-on-Tyne, manufacturers of the patent "Bittumastic" enamels, have this month opened a new branch office at 49, Blackfriars Street, Manchester.

* * *

The Court of the Carpenters' Company, at their last meeting voted the sum of over £800 in donations and subscriptions to various charitable and other institutions. This sum is quite apart from the amount expended by this company on education, technical and otherwise.

* * *

Mr. William H. Thorp, F.R.I.B.A., has taken his son, Mr. Ralph W. Thorp, A.R.I.B.A., into partnership. The name of the firm in future will be William H. Thorp and Son, and will continue to practise as architects at Phœnix Chambers, South Parade, Leeds, as heretofore.

Coming Events.

Wednesday, January 26.

THE CARPENTERS' COMPANY LECTURES.—Mr. Banister Fletcher on "The Carpenters' Craft," 7.30 p.m.

MANCHESTER SOCIETY OF ARCHITECTS.—Professor S. H. Capper on "Truro."

CAMBERWELL SCHOOL OF ARTS AND CRAFTS.—Second day of Annual Exhibition of Students' Work at South London Art Gallery, 2 p.m. to 10 p.m. daily, until February 25th.

Friday, January 28.

THE ARCHITECTURAL ASSOCIATION DEBATING SOCIETY.—Church Architecture—Gothic v. Classic. Mr. W. G. B. Lewis and Mr. A. E. Bullock, 7 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Students' Meeting. Mr. H. F. Donaldson on "Some uses of Mechanical Power in Engineering Construction," 8 p.m.

Saturday, January 29.

R.I.B.A.—Exhibition of Prize Competition Drawings, at the Alpine Club, closes.

THE ARCHITECTURAL ASSOCIATION.—Second Spring Visit to No. 8, Barton Street, Westminster. Members meet at the house, 2 p.m. Visit afterwards (limited to 30 members) to No. 34, Queen Anne's Gate, S.W. Tickets from the Secretary.

Monday, January 31.

R.I.B.A.—President's address to students. Presentation of prizes and studentships. Announcement of Council's nomination for the Royal Gold Medal. Announcement of nomination of candidates for membership. Election, February 28.

THE SURVEYORS' INSTITUTION.—Junior Meeting. Discussion on "Leasehold Enfranchisement," 7 p.m.

Tuesday, February 1.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCHITECTURE.—Mr. Banister Fletcher on "Roman Architecture—Theatres and Amphitheatres," British Museum, 4.30 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Council meeting, 7 p.m. Ordinary meeting, 7.30 p.m. Paper by Mr. George Hubbard.

Wednesday, February 2.

CARPENTERS' COMPANY LECTURES.—Sir Brumwell Thomas, on "The Joiners' Craft," Carpenters' Hall, 7.30 p.m.

Friday, February 4.

ARCHITECTURAL ASSOCIATION.—Mr. W. H. Ward, on "Renaissance Church Architecture in France during the 16th Century," 7.30 p.m.

LEICESTER AND LEICESTERSHIRE SOCIETY OF ARCHITECTS.—Mr. Arthur Marshall on "Some Spanish Places and People," 8 p.m., at 5, St. Martins East.

Saturday, February 5.

ABERDEEN ARCHITECTURAL ASSOCIATION.—Discussion meeting. Mr. H. F. David, on "Alfred Stevens: his life and work," 7.30 p.m.

Monday, February 7.

THE ROYAL SANITARY INSTITUTE LECTURES.—Dr. Charles Porter on "Sanitary Law," 7 p.m.

THE SURVEYORS' INSTITUTION.—Mr. T. A. Dickson on "The Report of the Royal Commission on the Poor Laws," 8 p.m.

Tuesday, February 8.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCHITECTURE.—Mr. Banister Fletcher on "Roman Circi, Triumphal Arches and Town Gateways," British Museum, 4.30 p.m.

Wednesday, February 9.

CARPENTERS' HALL LECTURES.—Mr. Arthur Stratton on "Native Craftsmanship in Timber, Brick, and Stone, before the 18th Century," 7.30 p.m.

THE ROYAL SANITARY INSTITUTE LECTURES.—Dr. Charles Porter on "Sanitary Law," 7 p.m.

Friday, February 11.

THE ARCHITECTURAL ASSOCIATION DEBATING SOCIETY.—(Joint Meeting with the Junior Institution of Civil Engineers). Mr. F. R. Durham, A.M.Inst.C.E., on "Architectural and Engineering Consideration Town Planning," 7 p.m.

THE ROYAL SANITARY INSTITUTE LECTURES.—Dr. Charles Porter on "Sanitary Law," 7 p.m.

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS (Southampton Row, W.C.).—Mr. E. F. Strange on "Lettering," 8 p.m.

Monday, February 14.

THE ROYAL SANITARY INSTITUTE LECTURES.—Mr. Wellesley Harris on "The Duties of a Sanitary Inspector," 7 p.m.

Tuesday, February 15.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCHITECTURE.—Mr. Banister Fletcher on "Roman Tombs, Pillars of Victory, Aqueducts, and Bridges," British Museum, 4.30 p.m.

Wednesday, February 16.

CARPENTERS' HALL LECTURES.—Mr. Lawrence Weaver on "The Art of the Leadworker," 7.30 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Students' Meeting. Mr. W. Milburn, jun., on "Notes on Continental Hospitals," 7.30 p.m.

Thursday, February 17.

THE ROYAL SANITARY INSTITUTE LECTURES.—Mr. Wellesley Harris on "The Duties of a Sanitary Inspector," 7 p.m.

Friday, February 18.

THE ARCHITECTURAL ASSOCIATION.—Mr. E. Swinfen Harris on "The Life and Work of William Butterfield," 7.30 p.m.

THE ROYAL SANITARY INSTITUTE LECTURES.—Mr. Wellesley Harris on "The Duties of a Sanitary Inspector," 7 p.m.

LEICESTER AND LEICESTERSHIRE SOCIETY OF ARCHITECTS.—Mr. S. Perkins Pick on "Drainage and Sanitary Fittings," 8 p.m. at 5, St. Martin's East.

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS (Southampton Row, W.C.).—Mr. E. F. Strange on "Book Ornament," 6 p.m.

Saturday, February 19.

ABERDEEN ARCHITECTURAL ASSOCIATION.—Mr. J. A. Ogg Allan on "A Recent Architectural Tour in the United States," 7.30 p.m.

Tuesday, February 22.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCHITECTURE.—Mr. Banister Fletcher on "Palaces of the Roman Emperors, Roman Dwelling-houses; Pompeii and Pompeian Decoration," British Museum, 4.30 p.m.

Wednesday, February 23.

CARPENTERS' HALL LECTURES.—Mr. Geo. P. Bankart on "The Art of the Plasterer," 7.30 p.m.

Friday, February 25.

THE ARCHITECTURAL ASSOCIATION DEBATING SOCIETY.—"That the Employment of a Quantity Surveyor is to the Interest of the Building Owner," Mr. Percy Gleed, R.A.S.I., for; Mr. S. L. Dale, A.R.I.B.A., against, 7 p.m.

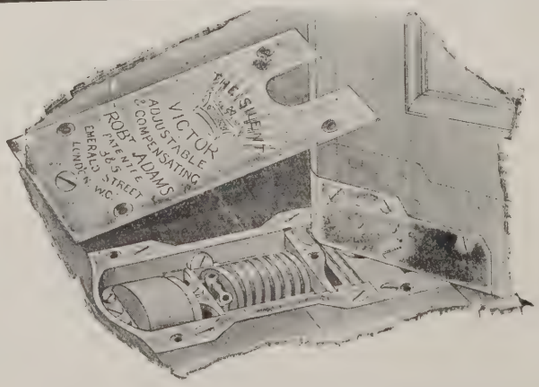
CAMBERWELL SCHOOL OF ARTS AND CRAFTS.—Annual Exhibition of Students' Work at South London Art Gallery, closes at 10 p.m.

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS (Southampton Row, W.C.).—Mr. W. W. Walts' First Lecture on "The History and Development of English Silversmiths' Work," 6 p.m.

Messrs. H. J. Skelton and Co., Royal London House, Finsbury Square, London, E.C., announce that owing to the increasing growth of their business they have decided, for greater convenience of management, to transfer to a separate company their business in broad flange beams. The transfer was made on January 15th, 1910, but took effect as from January 1st. The name and address of the new company is R. A. Skelton and Co., Moorgate Station Chambers, Moorfields, London, E.C. Telephone: 4635 London Wall (2 lines). Telegrams: "Skeltonica, London." Codes: A.B.C., Liebers, and Western Union. The two companies will be independent concerns; Mr. R. A. Skelton assumes the sole control and management of the new firm, and retires from H. J. Skelton and Co. for that purpose. It is requested that in order to avoid delay all correspondence relating to broad flange beams may be addressed direct to the new firm, who take over all outstanding contracts, agreements, and correspondence of the "D" Dept. Remittances in payment of "D" Dept. accounts dated January 1st, 1910, or subsequently, should in like manner be made out and forwarded direct to R.A. Skelton and Co., whose business in broad flange beams will be conducted precisely as heretofore, by the same staff and under the same management.

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Subscribers can have their volumes bound complete with Index, in cloth cases, at a cost of 3/6 each.
Advertisements for the current week, alterations to serial advertisements, etc., must reach the office not later than first post on Saturday.
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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, *Caxton House, Westminster.*
Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Axminster.—Accepted for two villas for the Axminster Development Syndicate, Limited, on the Hakes Building Estate, Axminster, Devon. Symes and Madge, architects, Somerset House, Chard.
Nembury and Sons, £412.

Barmouth (Wales).—Accepted for alterations and additions to Caersalem C.M. Chapel. Messrs. Owen Morris Roberts and Son, Portmadoc, architects.
J. H. Roberts £2,278
D. Davies, Barmouth 2,125

Bristol.—Accepted for alteration and extension of the casual wards for the Guardians:—
S. Lovell, Cotham Road, £1,759.

Evesham, Worc.—For the erection of new factory premises for the English Concentrated Produce Company, Ltd. Messrs. Dicks and Waldron, architects and surveyors, Journal Buildings, Evesham. Quantities by the architects.

G. Whateley and Sons, Stratford-on-Avon	£1,800	0	0
E. Spicer, Worcester	1,594	0	0
Tilt Bros., Bromsgrove	1,590	0	0
J. E. White, Evesham	1,570	0	0
Lissaman and Co., Mickleton	1,525	0	0
Collins and Godfrey, Tewkesbury	1,456	0	0
Gorton and Shapcott, Gloucester	1,455	1	6
A. Cliff and Co., Evesham ...	1,390	0	0
Espley and Co., Ltd., Evesham	1,325	0	0

Constructional Steelwork erected by David Rowell and Co., Westminster.
Roof glazing by British Challenge Glazing Co., Ltd., London, S.E.

Fairlee (Isle of Wight).—For erection of hospital at Fairlee for the Isle of Wight Joint Hospital Board.
H. E. Day, Cowes £8,877
J. Rousell, Ventnor 7,080
G. Hayles and Son, Shanklin ... 6,958
G. F. Quinton, Newport 6,928
White, Freshwater 6,866
H. Linington, Wroxall 6,825
T. Westbrook, Cowes 6,720
J. Ball and Son, Cowes 6,690
A. Sims, Ventnor 6,440
Meader, Cowes* 5,960
E. W. Jenkins, Newport 4,964
*Accepted.

Fulbourn (Cambs.).—For drainage work at Fulbourn Asylum. Messrs. MacAlister and Skipper, architects, Cambridge.

Brebner and Co., Edinburgh	£1,929	15	6
W. Beattie	1,708	0	0
S. Redding and Sons, Cambridge	1,595	0	0
F. Bailey, Fulbourn	1,547	9	11
A. E. Nunn and Co.	1,508	10	0
L. Lown and Co.	1,488	15	0
R. Shanks, Chatteris	1,350	0	0
C. Scott, Cherry Hinton ...	1,290	13	0
Kidman Bros., Cambridge ...	1,282	4	6
Willmott and Sons, Cambridge	1,261	0	0
Dean and Perkins	1,148	10	10
A. M. Macdonald, Nottingham and Cardiff	1,075	6	7

Rest of London.

Llandovery (Wales).—For additions and alterations to the County school at Llandovery, for the Carmarthenshire County Council. Mr. W. Vincent Morgan, A.R.I.B.A., county architect, County Offices, Carmarthen.

T. and J. Brown, Llanelly	£3,150
D. Davies and Sons, Trade Street, Penarth Road, Cardiff	3,106
Thomas Bros., Llandilo	2,950
B. Howell and Son, Ltd., Llanelly ...	2,046
E. G. Groom, Aberavon, Port Talbot	2,870
G. Mercer, New Road, Llanelly ...	2,825
R. Davies,* St. Catherine Street, Carmarthen	2,599

*Accepted subject to the approval of the Education Committee and the Local Government Board.

Merthyr Tydfil.—For building cottage homes at Abercwmboi, for the Merthyr Board of Guardians.

D. Davies and Son, Cardiff	£1,880	0	0
W. and J. Watson, Ltd. ...	1,659	0	0
Hatherley and Co., Rhymney	1,597	0	0
W. E. Willis, Ystrad	1,590	0	0
T. Morgan and Son, Aberdare	1,548	0	0
Jones Bros., Barry	1,478	0	0
D. Rees,* Trecynon	1,460	6	8
J. A. Colbourne, Swindon ...	1,429	14	4

*Accepted.

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COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about **five days** after the date of this issue.
Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders.
The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Jan. 27. **ILFORD, ESSEX.**—Erection of a hospital at Newbury Park, Ilford, Essex. Plans and specification, prepared by the Architect, R. Banks-Martin, M.S.A., of 121, Plashet Grove, East Ham, E., and conditions of contract may be inspected at his office on and after Jan. 31. Any person desiring to tender and receive copy of bills of quantities must send in his name to the Architect, accompanied by a deposit of a £10 Bank of England note, not later than noon on 27th inst.

Jan. 28—Feb. 7. **DEVONPORT.**—Erection of nursing staff quarters and reconstruction of the military families hospital, at the Raglan Barracks, Devonport, in the Southern Command, for the Secretary of State for War. Plans, specification, and conditions of contract may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., or at the Barrack Construction Office, Old Granby Barracks, Devonport, up to Jan. 26. Those desiring to tender and to receive a copy of the bills of quantities must apply to the Director of Barrack Construction not later than Jan. 28. The application must be accompanied by a deposit of 10s. Cheques or orders to be made payable to the Assistant Financial Secretary and crossed "Bank of England for credit to Army Funds." Tenders must be delivered to H. De la Bere, Director of Army Contracts, War Office, Whitehall, London, S.W.

Jan. 28—Feb. 7. **DUBLIN.**—Erection of mortuary and disinfecting establishment, Arbor Hill Hospital, Dublin, in the Irish Command, for the Secretary of State for War. Plans, specification, and conditions of contract may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., or at the Barrack Construction Office, Arbor Hill Hospital, Dublin, on Jan. 24, 25, and 26. Those desiring to tender and to receive a copy of the bills of quantities must apply to the Director of Barrack Construction not later than Jan. 28. The application must be accompanied by a deposit of 10s. Cheques or orders to be made payable to the Assistant Financial Secretary and crossed "Bank of England for credit to Army Funds." Tenders must be delivered to H. De la Bere, Director of Army Contracts, War Office, Whitehall, London, S.W. The bills of quantities should accompany tender in a separate sealed envelope, similarly addressed.

Jan. 28—Feb. 7. **ABERDEEN.**—Execution of mason, carpenter, slater, and plaster works of the following buildings:—Tarves:—1, James Lewis, Old-mill of Schivas, dwelling house; 2, John Bruce, Hunkerhill, dwelling house; 3, Mrs. Scorgie, Court-stone, additions to dwelling house; 4, W. G. Smith, Upper Kirton, dwelling house. Methlick:—5, John Beaton, Brownhill, dwelling house; 6, George Gibb, Newton, dwelling house; 7, James Coutts, Cairn-orrie, dwelling house; 8, George Simpson, Belnag-oak, dwelling house. Fyvie:—9, John P. Sleigh, St. John's Well, cottage; 10, Alexr. Chalmers, Swan-ford, dwelling house; 11, George Young, Little Gight, dwelling house; 12, James Taylor, Blackhil-lock, dwelling house; 13, Peter Castle, Clovery, dwelling house; 14, John Forsyth, Blackpool, dwel-ling house. New Deer:—15, James Ironside, Myre of Bedlam, additions to house. Contractors for Swanford should meet the architect there on 28th inst., at 1 p.m. Plans and specifications may be seen with the tenants and at the estate office. Sealed tenders to be lodged with Charles G. Smith, Factor, Haddo House.

Jan. 29. **LEEDS.**—Contractors desirous of tendering for the bricklayers' and masons', carpenters' and joiners,, plumbers', plasterers', slaters', painters', ironfounders' work, and hot-water heating, required in the erection of new dining-hall at the Union Workhouse, Beckett Street, Leeds, can view the plans and specification, and obtain quantities on application to the Architect, G. Fredk. Bowman, 5, Greek Street, Leeds, from Jan. 24 to 29.

Jan. 29—Feb. 9. **REDFORD.**—Execution of the following work, for the Secretary of State for War:—Foundation work for barrack block, excavating and levelling site for new cavalry barracks, Red-ford, in the Scottish Command. Plans, specifica-tion, and conditions of contract may be inspected at the Office of the Director of Barrack Construc-tion, 80, Pall Mall, London, S.W.; or at the Tem-porary Barrack Construction Office, Colinton, on Jan. 27. Those desiring to tender and to receive a copy of the bills of quantities must apply to the Director of Barrack Construction not later than Feb. 1, accompanied by a deposit of 10s. Cheques or orders to be made payable to the Assistant Financial Secretary, and crossed "Bank of England for credit to Army funds." Tenders must be de-livered, addressed to the Director of Army Con-tracts, War Office, Whitehall, London, S.W.

Jan. 31. **CARTMEL (Lincs.).**—Alterations and additions to the King's Arms Hotel, Cartmel, for E. Sattenstall. Bills of quantities may be obtained from and drawings inspected at the office of J. W. Grundy and Son, Architects and Surveyors, Central Buildings, Ulverston.

Jan. 31. **SHEFFIELD.**—Extension of women's hall of residence, Ecclesall Road and Collegiate Crescent; also heating apparatus and electric in-stallation, for the Corporation. Plans and specifi-cations may be seen and copies of the bills of quantities obtained on application at the offices of the Architects, Gibbs, Flockton, and Teather, 15, St. James' Row, Sheffield. Tenders to be delivered at Education Office, Leopold Street, Sheffield. Fair wages and sub-letting clauses.

Jan. 31—Feb. 19. **PAULTON (near Bristol).**—Erection of church house, for the Committee. Builders desirous of tendering should, before the 31st inst., send their names to the Rev. S. Herbert, The Vicarage, Paulton. Plans and specifications may be seen at the Rev. S. Herbert's, or Melhuish and Sons, on and after Feb. 4. Bills of quantities may be obtained on deposit of £1 1s. Tenders are to be delivered to the Rev. S. Herbert.

Feb. 1. **BROMLEY.**—Erection of a lodge on the Whitehall Recreation Ground, Bromley, for the Corporation. Drawings and specification may be seen at the office of the Borough Engineer, Munici-pal Buildings, Bromley, from whom copies of the bill of quantities may be obtained on deposit of £1 1s. Tenders to be delivered to Fred. H. Nor-man, Town Clerk, Municipal Offices, Bromley.

Feb. 1. **LONDON, N.W.**—Erection of fire proof screens at the children's receiving home, Tren-mar Gardens, College Park, N.W., for the Guar-dians of the Poor of the parish of Paddington. Specification and form of tender may be obtained at the offices of the Architect, E. Howley Sim, Mowbray House, 14, Norfolk Street, Strand, W.C., on deposit of cheque £1. Tenders must be de-livered to Henry F. Aveling, Clerk to the Guardians, 313-319, Harrow Road, W. Fair wages clause. Local men.

Feb. 1. **GLASGOW.**—Alterations and additions to tramway depot at Maryhill, for the Corporation:—1, digger, mason, and brick works; 2, carpenter and joiner works; 3, cast iron and steel works; 4, patent roof glazing; 5, slater work; 6, plumber work; 7, painter work. Plans can be seen and specifications and forms of tender obtained on ap-plication to Jas. Dalrymple, General Manager, 46, Bath Street. Bank draft for £2 2s., payable to Jas. Dalrymple, must be sent with application for the above schedules. Offers must be lodged with A. W. Myles, Town Clerk, City Chambers.

Feb. 2. **NORTHALLERTON.**—Execution of the work proposed to be done in connection with al-terations and improvements at the Yarm Council School, for the North Riding of Yorkshire County Council. Plan and specification and forms of ten-der at the school on application to the master or caretaken. Tenders to be delivered to J. C. Wrig-ley, Secretary, County Hall, Northallerton.

Feb. 2. **YARM.**—Contractors desirous of tender-ing for the whole of the work proposed to be done in connection with certain Alterations and improve-ments at the Yarm Council school, for the North Riding of Yorkshire County Council, may inspect the plan and specification and obtain forms of ten-der at the school, on application to the master or caretaker. Tenders to be delivered to J. C. Wrigley, Secretary, County Hall, Northallerton

Feb. 2. **LIVERPOOL.**—Erection of a new laundry at Walton Workhouse, for the West Derby Union. Contractors having business premises and work-shops, and being bona-fide contractors carrying on business within the West Derby Union, the Township of Toxteth Park, or the parish of Liver-pool, are invited to tender. A set of quantities can be obtained from the undersigned on deposit of £2 2s. Specifications and drawings can be seen at the office of the Architect, C. H. Lancaster, Brough-ham Terrace, West Derby Road, Liverpool. Ten-ders must be delivered to Harris P. Cleaver, Union Clerk, Brougham Terrace, West Derby Road, Liver-pool.

Feb. 2—9. **MITCHAM (Surrey).**—Erection of ad-ditions to the schools at Mitcham, Surrey, for the Holborn Union. Specification, form of tender, and a copy of the drawings, up to Feb. 2, upon applica-tion to the Guardians' Architect, A. Saxon Snell, F.R.I.B.A., 22, Southampton Buildings, Chancery Lane, W.C., and depositing with him a £5 Bank of England note. Tenders to be delivered to J. Allan Battersby, Clerk to the Guardians, Guardians' Offices, 53, Clerkenwell Road, E.C.

Feb. 3. **MORLEY.**—Various works required in the extension of mill premises, Perseverance Mills, Morley, for A. Marshall and Son (Ltd.). Plans and specifications may be seen and quantities obtained of T. A. Buttery, F.I.A.S., Architect, Queen Street, Morley. Tenders to be sent to A. Marshall and Son (Ltd.), Perserverance Mills, Morley.

Feb. 3. **EAST AND WEST MOLESEY.**—Erection of an isolation hospital within the district, in ac-cordance with plans and specifications and bills of quantities prepared by Foster, Lovell, and Lodge, of 23, Old Queen Street, London, S.W., for the U.D.C. Plans, specifications, and bills of quanti-ties may be seen at the Architect's office and at the Council Offices, East Molesey. Applications for bills of quantities and forms of tender to be made to the Clerk to the Council, and can be obtained upon deposit of £1 1s. Tenders, addressed to the Chairman to the Isolation Hospital Committee, to be sent to D. Cann, Clerk to the Council, Council Offices, Dundee Villa, East Molesey.

Feb. 4. **TRENCH, SALOP.**—Erection of six cot-tages and six sets of farm buildings for small hold-ings at the Trench, about two miles from Ellesmere Station, for the C.C. Plans and specifications can be inspected, and quantities and form of ten-der may be obtained, at the office of the Agent, Wm. T. Hall, College Hill, Shrewsbury, on deposit of £2 2s. Tenders should be delivered to E. Cress-well Peele, Clerk to the Salop County Council, Shire-hall, Shrewsbury.

Feb. 4. **MARSDEN (near Huddersfield).**—Persons desirous of tendering for any or all of the various works required in the erection of a tower to St. Bartholomew's Church, Marsden, near Hudders-field, may see the drawings, and obtain bills of quantities at John Kirk and Sons' offices, from Jan. 28 to Feb. 4. Tenders must be delivered to C. Hodgson Fowler, F.S.A., and John Kirk and Son, Joint Architects, John William Street, Hudders-field.

Feb. 4. **WAKEFIELD.**—Execution for the West Riding Education Committee of the following works:—Bradfield, Oughtbridge provided school; alter-ations (builder, joiner, plumber, and painter). Plans may be seen and specifications with quantities ob-tained on application to the Education Architect, County Hall, Wakefield. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders to be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

Feb. 4. **WAKEFIELD.**—Execution of the follow-ing works for the West Riding Education Com-mittee:—Thornton-in-Craven, Earby New School (builder, joiner, slater, plasterer, plumber, painter). Plans may be seen and specifications with quanti-ties obtained on application to the Education Archi-tect, County Hall, Wakefield. £1 deposit must be sent by separate letter to the West Riding Trea-surer, County Hall, Wakefield. Tenders must be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

Feb. 5. **BEVERLEY, YORKS.**—Alterations to house and buildings at West End Farm, South Cave, for the East Riding of Yorkshire County Council. Specifications and forms of tender may be obtained from the Clerk of the County Council, County Hall, Beverley. Tenders are to be sent to John Bickersteth, Clerk of the said County Council, County Hall, Beverley. Plans may be seen at the West End Farm, South Cave, and also at the County Hall, Beverley.

Feb. 7. **MARGATE.**—Alterations to cottages at the Wingham pumping station, and the redecora-tion of the interiors. Plan and specification can be seen and all further particulars obtained on appli-cation to E. A. Borg, Borough Surveyor, 13, Gros-venor Place, Margate. Tenders should be sent to Edward Brooke, Town Clerk, Margate.

Feb. 7. **DONABATE (Ireland).**—Erection of a station building at Donabate; also a goods store at Annvale Siding, near Keady Station, for the Great Northern Railway Company (Ireland). Plans and specifications at the office of F. A. Campion, Chief Engineer, Amiens Street Terminus, Dublin, or copies at the office of the District Engineer, Bel-fast, and can obtain at the offices forms of tender on payment of 1s. each (not returnable). Tenders should be delivered to T. Morrison, Secretary, Secretary's Office, Amiens Street Terminus, Dublin.

Feb. 7. **PETTAUGH (near Stowmarket).**—Erection of a new school for about 60 children at Pettaugh, near Stowmarket, for the East Suffolk County Education Committee. Builders who desire to tender should send in their names, accompanied by a deposit of £1 1s. (cheques to be made payable to W. E. Watkins), by 8th inst., to W. E. Watkins, Secretary, Education Office, County Hall, Ipswich, to whom tenders are to be sent.

Feb. 7. **CARDIFF.**—Erection of proposed riding school and stabling, on the Barracks Field, Cardiff, for the Glamorgan County Territorial Force Association. Plans and specification to be inspected at the office of the Architect, W. H. Dashwood Caple, F.R.I.B.A., 2, Church Street, Cardiff. Copies of the bills of quantities may be obtained on deposit of £1 1s. Tenders to be delivered to Capt. C. J. Wilkie, Secretary, 20, Dumfries Place, Cardiff.

Feb. 7. **ENFIELD.**—Construction of pumping station buildings, together with chimney, stores, coal bays, cottage, broadway, drainage, and other contingent works, at Hadley Road, Enfield, for the Metropolitan Water Board. Drawings, conditions of contract, and specifications may be inspected at the offices of the Chief Engineer, Savoy Court, Strand, W.C. Contractors desirous of tendering may obtain forms of tender, conditions of contract, specifications, list of drawings, bills of quantities, etc., from the Chief Engineer, on the production of an official receipt for the sum of £10, which must be deposited with the Accountant at Savoy Court, Strand, W.C. Tenders must be delivered to Offices of the Board, Savoy Court, Strand, W.C.

Feb. 8. **CROSSKEYS, MON.**—Erection of a workmen's institute at Crosskeys, Mon. Plans and specifications may be seen at the office of R. L. Roberts, M.S.A., Abercarn. Quantities supplied on deposit of £2 2s. Sealed tenders, endorsed "Tender for Institute," to be delivered to John Woodward, Crosskeys.

Feb. 8. **LINCOLN.**—Construction of engine-house, boiler-house, economiser-house, coal store, workshop, and stores, forming the main building; and also of chimney, engineer's house, cottages, and subsidiary works, at Elkesley, Notts., 2¾ miles from Checkerhouse Station, and six miles from Retford, for the Corporation. Drawings may be seen, and specification, bill of quantities, and form of tender obtained at the office of the Engineer, Neil McK. Barton, Waterworks Engineer, Lincoln, upon production of a receipt from the City Accountant for £5 5s. deposit. Tenders, addressed to the Chairman of the Waterworks Committee, to be delivered at the office of W. T. Page, Deputy Town Clerk, Bank Street, Lincoln.

Feb. 9. **LLANFAIR, P.G.**—Erection of a new Council school at Llanfair, P.G., for the Anglesey Education Committee. Plans and specifications may be inspected with Jos. Owen, F.R.I.B.A., County Architect, Menai Bridge. Tenders to be sent in to R. H. Williams, Secretary of Education, Education Offices, Llangefni.

Feb. 10. **TORQUAY.**—Erection of a new Post-Office at Torquay, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions, and form of contract may be seen on application to the Postmaster, Torquay. Bills of quantities and forms of tender may be obtained at the undermentioned address, on deposit of £1 1s. Tenders must be delivered to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

Feb. 16. **HOMERTON, N.E.**—Erection of pavilion "C" at the Infirmary at Homerton, N.E., for the Hackney Union. Applications for bills of quantities and forms of tender should be made, accompanied by a deposit of £5, before Jan. 31, to Frank R. Coles, Clerk to the Guardians, to whom tenders are to be sent. The contractor will be required to give approved security. The form of bond and plans may be seen at the Guardians' Office, Sidney Road, Homerton, N.E.

Feb. 16. **NEWPORT (Mon.).**—Re-covering with zinc or copper part of the roof of the general markets, for the Corporation. The portion to be dealt with has an area of about 8,200 superficial feet. A sectional drawing of the roof, together with general specification, may be obtained from R. H. Haynes, Borough Engineer, on production of a receipt from the Borough Treasurer for £1 1s. Tenders to be forwarded to the Town Clerk, Town Hall, Newport. Fair wages clause.

No date. **EBRINGTON (GLOS.).**—Enlargement of the elementary school at Ebrington, Gloucestershire. Plans and specifications can be obtained of the Official Correspondent, M. A. Sands, Ebrington Hall, Campden.

No date. **EPPERSTONE.**—Persons desirous of tendering for alterations and additions to Woodborough Mill Farm Buildings, Epperstone, for Sir Francis Ley, Bart., may obtain quantities on deposit of £1 1s., from E. R. Ridgway, Architect, Long Eaton.

No date. **SHERBURN-IN-ELMET.**—Execution of the builder and plumber's work required in minor alterations at the Sherburn-in-Elmet provided school. Specification and quantities may be obtained on application to Robert J. Smith, Education Offices, Garforth, near Leeds.

No date. **KEIGHLEY.**—Contractors desirous of tendering for the various works in the erection of business premises and works, off Spring Street, Lawkholme Lane, Keighley, for the Rustless Iron Co., are requested to forward their names to David W. Weatherhead, Architect and Surveyor, Low Street, Keighley. Bills of quantities will be supplied when ready.

ENGINEERING.

Jan. 31. **CARDIFF.**—Construction and maintenance of an elliptical skew-arch bridge, 60ft. span, over the River Rumney, in lieu of the existing masonry bridge, which is to be removed, and execution of certain road works in connection therewith, for the C.C. Contract drawings and deed of contract may be inspected and form of tender, specification, and bill of quantities obtained at the City Engineer's Office, City Hall, Cardiff, upon deposit with the City Treasurer of £3. Tenders are to be delivered at the office of the Town Clerk, City Hall.

Feb. 1. **LONDON (for India).**—Supply of bridge-work for the Secretary of State for India. Conditions of contract may be obtained on application to the Director-General of Stores, India Office, Whitehall, S.W. Tenders are to be delivered at that office.

Feb. 2. **BRIDGEND.**—Supply, delivery and erection of (a) one new Lancashire boiler; (b) a central heating apparatus, for the Parc Gwyyt Asylum near Bridgend, Glamorgan, for the Committee. Specifications, with general conditions and forms of tender, may be obtained from the undersigned on deposit of £2 2s. for each specification. Drawings may be seen at the offices of the Consulting Engineer, Herbert T. Sully, Scottish Widows Buildings, Bristol, or at the Glamorgan County Offices, Cardiff. Tenders to be sent to W. E. R. Allen, Clerk to the Committee of Visitors, Glamorgan County Council Offices, Westgate Street, Cardiff.

Feb. 7. **NOTTINGHAM.**—Excavating and timbering pipe trenches between boreholes and receiving well; also constructing valve chambers at Burton Joyce pumping station, near Nottingham, for the Corporation. Drawings may be seen and copy of specification, and form of tender obtained on application to F. W. Davies, Water Engineer, St. Peter's Church-side, Nottingham, on deposit of £1 1s. Tenders to be sent to J. A. H. Green, Town Clerk, Guildhall, Nottingham.

Feb. 9. **ASHTON-UNDER-LYNE.**—Execution of the following works, for the Corporation:—Section A, one counter current jet condensing plant; section B, one natural draught cooling tower; section C, one exhaust turbine and 400-kw. direct current generator; section D, one electric balancer. Copies of the specification and form of tender can be obtained from the Borough Electrical Engineer, Wellington Road, Ashton-under-Lyne, on deposit of £1 1s. Tenders must be sent to John Neal, Borough Comptroller, Town Hall, Ashton-under-Lyne.

(Continued on next page.)

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SAFE.

Feb. 10. **BINGLEY.**—Construction of a service reservoir at Kettlewell Close, Bingley, for the U.D.C. Plans and specifications may be seen and schedule of quantities obtained, on deposit of £1 1s. Cheques to be made payable to the Bingley District Council. Tenders to be sent to the Chairman, Water Committee, Town Hall, Bingley.

Feb. 10. **BOLTON.**—Supplying one Lancashire boiler, complete with superheater, etc., for the Corporation. Specification and form of tender may be obtained on application to Arthur A. Day, A.M.I.C.E., M.I.E.E., Borough Electrical Engineer and Tramways' General Manager, Spa Road, Bolton. Tenders must be delivered to the Chairman of the Electricity Committee, Town Hall, Bolton.

Feb. 10. **ASPATRIA.**—Execution of excavating, concreting, and walling, in connection with diversion of River Ellen at Stockdale; drainage at Stockdale; drainage at Whitefield House, for the Aspatria, Silloth, and District Joint Water Board. The whole of the works to be carried out in accordance with plans and specification prepared by Joseph Graham, Civil Engineer, Castle Street, Carlisle. Contractors may obtain copies of the specification and bills of quantities, with form of tender, and inspect drawings at the office of the Engineer upon deposit of £1 (cheque only). Tenders to be delivered to F. Richardson, Clerk, Aspatria.

Feb. 15. **TORONTO, CANADA.**—Execution of the following work and supply of materials:—3, laying sewer outlet; 4, building sewage tanks; 5, supply of iron castings; 7, supply of structural steel; 7, supply of sludge valves, penstocks, and pedestals; 8, supply of cast-iron pipe; 9, supply of cranes; 10, supply of special tile. Plans may be seen and specifications obtained at the Office of the City Engineer, Toronto, and at the office of the Commercial Intelligence Branch of His Majesty's Board of Trade, 73, Basinghall Street, London, E.C. Specifications may also be seen at the office of Mr. Farnell, 11, Charing Cross Mansions, Glasgow. Tenders by registered post to be sent to Joseph Oliver (Mayor), Chairman, Board of Control, City Hall, Toronto.

Feb. 16. **SHEERNESS.**—Supplying and fitting heating arrangements, for the Sheppey Union. A committee will meet intending contractors at the workhouse by appointment. Letters to be sent to the Master, Sheppey Union, Minster, near Sheerness.

IRON AND STEEL.

Feb. 1. **LONDON (for India).**—Supply of 50,000 transverse steel sleepers, and 110,000 steel keys for same, for H.H. The Nizam's Guaranteed State Rlys. Co., Ltd. Specification to be obtained at the Company's Offices for 5s. (not returnable). Tenders to be addressed to H. Rendel, Secretary, Offices of the Company, 268, Winchester House, 50, Old Broad Street, London, E.C.

Feb. 1. **WAKEFIELD.**—Supply and laying of 1,250 yards of new 10in. water main, and the necessary valves and hydrants, in the following contracts, for the R.D.C.:—(a) cast-iron pipes; (b) valves and hydrants; and (c) the laying of the above pipes, in Doncaster Road, Belle Vue, mostly within the city of Wakefield. Forms of tender can be obtained at the office of Frank Massie, M.I.C.E., Tetley House, Kirkgate, Wakefield, on deposit of £1 1s. Tenders to be delivered to H. Beaumont, Clerk to the said Council, Tetley House, 47, Kirkgate, Wakefield.

PAINTING.

Feb. 1. **MANCHESTER.**—Painting at the undermentioned places, for the Lancashire and Yorkshire Railway:—1, Liverpool Exchange Station; 2, Mill Hill to Preston, Preston Junction to Lostock Hall, etc.; 3, Bolton to Euxton Junction, and Horwich Branch; 4, Bolton passenger and goods stations; 5, Pendleton to Crow Nest Junction, and Dobbs Brow Junction to Hindley and Blackrod Junction; 6, Manchester to Bolton, including ship canal and Kearsley branches; 7, Bolton to Castleton and Heap Bridge branch; 8, Oldham Road branch and goods station; 9, Clifton Junction to Accrington; 10, Halifax to Bradford; 11, Wakefield to Normanton. Specifications and separate forms of tender may be obtained on personal application at the Engineer's Office, Hunt's Bank, Manchester. Tenders to be sent to R. C. Irwin, Secretary, Hunt's Bank, Manchester.

Feb. 2. **LONDON, S.W.**—Cleaning, painting, repairs, and other work at the public baths, Manor Street, for the Council, in accordance with the specification which may be seen with T. Holland, Town Clerk, Town Hall, King's Road, Chelsea, S.W., to whom tenders are to be sent.

Feb. 2. **DARTFORD (Kent).**—Execution of (1) Cleaning and painting work, etc., at the Smallpox Hospitals, near Dartford, Kent; (2) removing and refixing corrugated iron roofing at the Orchard Smallpox hospital, in accordance with drawings, conditions of contract, and specifications prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., Engineer-in-Chief, for the Metropolitan Asylums Board. Drawings, conditions of contract, specifications, and forms of tender, may be inspected at the office of the Board, Embankment, E.C. and can be obtained upon deposit of £1 for each work. Tenders must be delivered at the office of the Board.

PLUMBING AND SANITARY.

Jan. 31. **DEVIZES.**—Erection of a sanitary convenience on the Green, Devizes, for the U.D.C. Plans and specifications may be seen at the Borough Surveyor's Office, Devizes. Tenders to be delivered to F. G. Billingham, Borough Surveyor, Town Hall, Devizes.

Jan. 31. **YEOVIL.**—Construction of certain sewers, drains, and other works, within the borough and in the parish of Yeovil Without, for the Corporation. Drawings may be inspected and specifications and forms of tender, with schedules and quantities, can be obtained on payment of £2 2s., on application at the office of the Borough Surveyor at Yeovil, or at the office of T. and C. Hawksley, Civil Engineers, Caxton House, Westminster, S.W., on and after Jan. 10. Tenders to be addressed to the Town Clerk at his office, Yeovil.

Feb. 1. **HIPPERHOLME.**—Construction of main pipe sewers in the Mytholme Valley district, together with the necessary manholes and other appurtenant work, divided into the following contracts, for the U.D.C.:—(a) Mytholme Valley from Badger Lane to Mytholme; (b) Dumb Mill Lane from Mytholme to Railway Bridge. Plans and specification may be seen, and forms of tender obtained at the office of Frank Massie, M.Inst.C.E., Tetley House, Kirkgate, Wakefield, on deposit of £2 2s. each. Tenders are to be delivered to E. H. Hill, Clerk to the Council, Council Offices, Hipperholme.

Feb. 7. **KINGSBRIDGE.**—Laying 900 lineal yds., or thereabouts, of 4in., and 1,100 lineal yds., or thereabouts, of 3in. water main, and other work in connection therewith, for the U.D.C. Plans and specification can be seen during office hours on application to William Beer, Solicitor, Clerk to the Council, Fore Street, Kingsbridge, to whom tenders are to be sent.

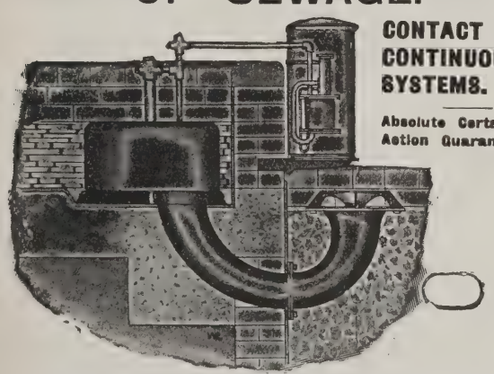
Feb. 10. **LONDON, S.E.**—Carrying out certain drainage and other works at the Infirmary, East Dulwich Grove, S.E., for the Southwark Union. Specification, plans, conditions of contract, and forms of tender may be obtained at the offices of the architect, A. W. Tribe, 120, Clapham Road, S.W., on deposit of £5. Tenders should be delivered to Sydney Wood, Clerk, Union Offices, Ufford Street, Blackfriars Road, S.E. Fair wages clause.

ROADS AND CARTAGE.

Jan. 31. **SANDGATE.**—Steam rolling and scarifying within the district, for the U.D.C. Particulars and forms of tender can be obtained on application at the Surveyor's Office, Sandgate. Tenders must be sent to J. Shera Atkinson, Clerk to the Council, Council Offices, Sandgate, Kent.

(Continued on next page.)

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Jan. 31. **BIRKENHEAD.**—Supply of granite and Rawtenstall kerbs and channels, Penmaenmawr breaking stone, and natural flags, for the Corporation, to be delivered free as required. Specifications, forms of tender, and all particulars may be obtained at the office of Charles Brownridge, M.I.C.E., Borough Engineer and Surveyor, Town Hall, Birkenhead. Tenders to be sent to James Fearnley, Town Clerk, Town Hall, Birkenhead. Fair wages clause.

Jan. 31. **STREATHAM.**—Making-up and paving of that part of Welham Road, Streatham, which lies between Rectory Lane and Crowborough Road, for the Wandsworth Corporation. Specifications and drawings may be seen, and forms of tender obtained, at the Borough Engineer's Office, New Streets Department, 56, East Hill, Wandsworth, S.W. Tenders must be delivered at the Council House, East Hill, Wandsworth, S.W., and may be placed by the person tendering in the box provided. Fair wages clause.

Jan. 31. **WHITLEY AND MONKSEATON.**—Laying out and constructing the following streets on the Grosvenor Estate, Whitley Bay, for the U.D.C.:—Portion of Grosvenor Drive, portion of Norham Road, and King's Drive. Plan and specification may be seen and bill of quantities and form of tender obtained on application at the office of A. J. Rousell, A.M., Inst., C.E., the Council Surveyor, Council Offices, Whitley Bay. Tenders to be sent into Augs. Whitehorn, Clerk to the Council, 60, Saville Street, North Shields.

Feb. 1. **HAMMERSMITH.**—Supply and delivery of 100 tons of Guernsey granite spalls to the Workhouse, Ducane Road, Wormwood Scrubs, W., for the Guardians. Tenders must be delivered to the Clerk to the Guardians, 206, Goldhawk Road, Shepherd's Bush.

Feb. 1. **LEIGH-ON-SEA.**—Making-up and completion of Grange Road, 330 yards (lineal) or thereabouts, for the U.D.C. Plans, sections, and specifications may be seen at the offices of the Surveyor to the Council, John W. Liversedge, Assoc.M.Inst.C.E., from whom a bill of quantities may be obtained on deposit of £2 2s. Tenders must be delivered to W. Carlyle Croasdell, Clerk to the Council, Council Offices, Leigh-on-Sea.

Feb. 2. **HATFIELD.**—Supply of the under-mentioned materials, cartage, etc., required for the main roads during year ending March 31, 1911, for the Hertfordshire C.C.:—Hand-picked surface flints, dug gravel, hoggin, shingle and sand, team labour. Also purchase and removal of road drift accruing from the main roads for the like period. Further particulars and forms of tender can be obtained of Urban A. Smith, County Surveyor, County Surveyor's Office, Hatfield, to whom tenders are to be sent.

Feb. 2. **HATFIELD.**—Supply of broken granite and slag required for the main roads during year ending March 31, 1910, for the Hertfordshire C.C. Forms of tender and conditions of contract may be obtained upon receipt of a stamped addressed foolscap envelope, by Urban A. Smith, M.I.C.E., County Surveyor, County Surveyor's Office, Hatfield, to whom tenders are to be sent.

Feb. 2. **DARTFORD (Kent).**—Execution of repairs to external roads at Joyce Green Smallpox Hospital, near Dartford, Kent, in accordance with drawing, conditions of contract, and specification prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., Engineer-in-Chief, for the Metropolitan Asylums Board. Drawing, conditions of contract, specification, and form of tender, may be inspected at the office of the Board, Embankment, E.C., and can be obtained upon deposit of £1. Tenders, addressed as noted on the form, must be delivered at the office of the Board.

Feb. 3. **NOTTINGHAM.**—Supply of 250,000 creosoted wood paving blocks, for the Corporation. Specification and form of tender may be obtained on applying to Arthur Brown, M.Inst.C.E., City Engineer, Guildhall, Nottingham, on deposit of 10s. Tenders to be delivered to J. A. H. Green, Town Clerk, Guildhall, Nottingham. Fair wages clause.

Feb. 3. **BIRMINGHAM.**—Improvement of Belchers Lane (from Bordesley Green to Yardley Road) and the improvement of Bordesley Green (from Marchmont Road to Belchers Lane), including macadam carriageway, concrete paving, kerbing, channelling, gullies, etc., for the Corporation. Drawings and specifications may be seen, and quantities and forms of tender obtained, at the office of Henry E. Stilgoe, M.Inst.C.E., City Engineer and Surveyor, The Council House, Birmingham, on deposit of £2. Tenders to be sent to the Chairman of the Public Works Committee. Fair wages clause.

Feb. 9. **CHELMSFORD.**—Re-topping and repairing footpaths in a number of streets, for the Corporation. Copies of the specification, particulars of the work to be executed, and forms of tender, may be obtained at the Borough Surveyor's Office, 16, London Road. Tenders must be delivered to W. Smith, Town Clerk, Municipal Offices, 16, London Road, Chelmsford.

Feb. 9. **BRADFORD.**—Supply of about 20,000 tons of road metal, required for the macadamised roads within the city, for the Corporation. Form of tender may be obtained on application at the office of W. H. S. Dawson, City Engineer and Surveyor, at the Town Hall. Tenders to be sent to Frederick Stevens, Town Clerk, Town Hall, Bradford. Fair wages clause.

Feb. 9. **ESCRICK.**—Supply of best whinstone, tar macadam, slag, and granite, all broken, to be delivered, carriage paid, at one or more of the following railway stations, for the R.D.C.:—Foss Islands, York; Naburn, Escrick, and Stamford Bridge; and at one or more of the following wharves, namely, Blue Bridge Landing, York; Water Fulford, Naburn, Stillingfleet, Cottingwith Ferry, Thorganby, Wheldrake, Elvington, Kexby, and Stamford Bridge. Forms of tender can be obtained of the undersigned. A sample of stone to be sent to the Surveyor of Highways, Escrick Rural District Council, 1, Museum Street, York. Tenders are to reach Fred. A. Camidge, Clerk to the Council, 3, Stonegate, York.

Feb. 9. **FORFAR.**—Quarrying or gathering, carting, and breaking materials for the repair of the highways in the Forfar district of Forfarshire, comprising the parishes of Airlie, Cortachy and Clova, Dunnichen, Eassie and Nevay, Forfar, Glamis, Glenisla, Inverarity, Kingoldrum, Kinnettles, Kirriemuir (excluding Burgh), Lintrathen, Newtyle, Rescobie, and Ruthven, for the year from Whitsunday, 1910, to Whitsunday, 1911. Schedules of quantities with copies of specifications and conditions, may be had from the Surveyor, Donald Ross, Brechin Road, Kirriemuir, who will be at his office there to see intending offerers on Saturday, Feb. 5. In each district the committee are prepared to receive separate offers for quarrying or gathering, for carting, and for breaking. Offers to be sent to John P. Anderson, District Clerk, Forfar.

Feb. 16. **GLOUCESTER.**—Supply of stone for use on main roads, for the year beginning April 1, 1910, and ending March 31, 1911, for the C.C. Forms of tender can be obtained from the County Surveyor on and after Jan. 22. Tenders must be sent to E. S. Sinnott, M.Inst.C.E., County Surveyor, Shire Hall, Gloucester.

Feb. 28. **LITTLE HULTON.**—Supply of broken granite, grit setts, granite and limestone chippings, grit kerbs, artificial flags, stoneware pipes, and gullies, cement, steam road rolling, and scarifying, disinfectants, pitch, and oil, for the U.D.C. Forms of tender and particulars can be obtained from the undersigned. Tenders are to be delivered to James H. H. Heyes, Clerk, Council Offices.

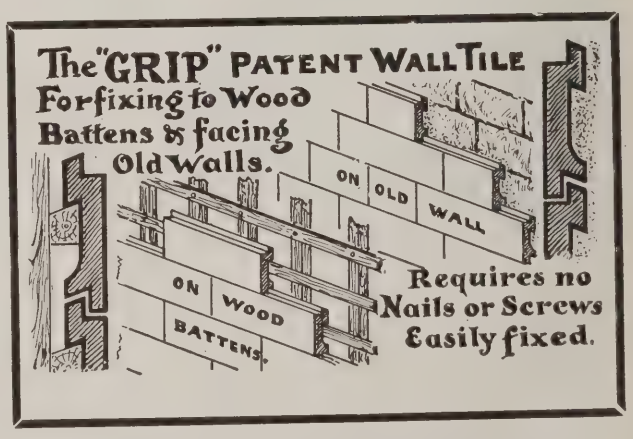
March 15. **BRISTOL.**—Construction of a new road, about 800 yards in length, in the parishes of Nempnett and Winford, for the Clutton R.D.C. Specification on application to the Council's Surveyor (T. Orchard, The Grange, Haliatrow, near Bristol), by deposit of £1 1s. Tenders must be sent to J. Sumner Dury, the Clerk to the Council, Temple Cloud, near Bristol. For further information apply to the Surveyor.

(*Continued on next page.*)

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MISCELLANEOUS.

Jan. 28—Feb. 7. **HALIFAX.**—Supply of the following stores and materials required in the undermentioned Departments of the Halifax Corporation during the twelve months ending March 31, 1911:—Highways and Tramways Departments: Portland cement, stoneware pipes, etc.; oils, paints, etc.; bass brooms cotton waste, filter cloths, caskin, gunpowder, iron castings, steel shovels, picks, etc.; ironmongery, team labour, artificial flags, manhole covers, ventilator covers, lamphole covers, gullies, timber, granite, limestone, lime, paving setts (sandstone), paving setts (granite), kerbstones, flags. Forms of tender, specifications, and further particulars, may be obtained on application to James Lord, M.I.C.E., Borough Engineer, Town Hall, Halifax. Tramways and Electricity Departments: 1, iron and steel; 2, timber; 3, bolts and nuts; 4, ironmongery, including washers, nails, screws, etc.; 5, glass; 6, lighting fittings; 7, electrical accessories; 8, vulcanised rubber cable, copper and phosphor bronze wires; 9, single conductor vulcanised-bitumen cable finished; 10, single conductor vulcanised-bitumen finished (braided); 11, low tension lead covered and armoured cable (taped); 12, anti-friction metal; 13, oils and grease; 14, paints and varnishes; 15, paint brushes; 16, cleaning materials; 17, castings (malleable iron, cast-iron, and brass); 18, tubes and fittings; 19, meters; 20, overhead material; 21, car accessories; 22, general stores. Samples may be seen on application at the Stores, Skircoat Depot, up to Jan. 28. Forms of tender and full information may be obtained at the General Manager's Office, Skircoat Road. Intending contractors must state the number of schedule required. Tenders must be sent to Herbert Ashling, Town Clerk.

Feb. 2. **LONDON (for India).**—Supply and delivery of:—1, picks, kodalies, phowrahs, and shovels; 3, steel palisade fencing, for the East Indian Railway Company. Specifications to be seen at the company's office. Tenders are to be sent to C. W. Young, Secretary, Nicholas Lane, London, E.C. £1 1s. (not returnable) will be charged for each specification.

Feb. 2. **HERNE BAY.**—Supply of following materials, etc., required during the year ending March 31, 1911, for the U.D.C.:—1, disinfectants; 3, stoneware pipes, etc.; 4, petroleum, lubricating and other oils; 5, lias lime and Portland cement; 6, steam rolling; 7, oilman's goods; 8, tools, implements, and general ironmongery; 9, smith's work and repairs; 10, flints, bank and fine red gravel; 11, heavy castings; 12, tar; 13, granite kerbing, channel, setts, siftings, chippings, etc. Forms of tender, conditions and full particulars may be had on application to F. W. J. Palmer, Surveyor to the Council, Town Hall, Herne Bay. Tenders must be delivered to Joseph Jubb, Clerk to the Council, Town Hall, Herne Bay.

Feb. 4. **ISLINGTON.**—Execution of the undermentioned contracts for one year from April 1, 1910, for the Corporation:—1, engine room stores; 2, arc lamp carbons and globes; 3, oils and lubricants; 4, transformers and accessories; 5, iron, tools, belting, cotton, rope, etc.; 6, earthenware pipes, troughs, bricks, firebricks, fireclay, etc.; 7, electricity supply meters and prepayment meters; 8, cables; 9, electrical sundries, lamps, brushes, arc lamp parts, etc.; 10, cable terminal, service, and network boxes, and tapes. Forms of tender, specification, and contract, may be obtained upon application at the Town Hall. Tenders must be delivered to Wm. F. Dewey, Town Clerk, Town Hall, Upper Street, N.

Feb. 5. **WALLASEY.**—Supply during the twelve months ending March 31, 1911, of the following materials for the U.D.C.: 1, limestone chippings; 2, granite chippings; 3, macadam; 6, pitch, refined tar, and creosote oil; 7, Portland cement; 8, curbs, channels, etc.; 9, timber; 10, stoneware street and passage gullies; 11, drain and sewer pipes; 12, granite concrete flags; 13, wrought and cast iron materials (manhole covers, name plates, etc.); 14, brushes, buckets, shovels, etc.; 17, paints, oils, white and red lead, etc.; 18, iron, steel, bolts, nuts, etc.; 19, lead and iron pipes, etc.; 20, lime; 21, drawing materials. Further particulars, specifications, and tender forms may be obtained on application at the office of W. H. Travers, A.M.I.C.E., District Engineer and Surveyor, Public Offices, Egremont, Cheshire. Tenders to be sent to H. W. Cook, Clerk and Solicitor, Public Offices, Egremont, Cheshire.

Feb. 7. **BURY.**—Supply and delivery of the following materials during the year ending March 31 1911, for the Corporation. Specifications prepared by Arthur W. Bradley, Assoc.M.Inst.C.E., Borough Engineer and Surveyor. 1, earthenware pipes; 2, Portland cement (English); 3, setts, curbs ("Haslingden," not granite), and flags ("Haslingden," not concrete); 4, limestone chippings (grey); 6, pitch and creosote oil; 6, press cloth; 7, lime (best and seconds); 8, seconds, plastic engineering bricks (red). Tenders to be delivered to the Town Clerk, Bury.

Feb. 7. **WESTON-SUPER-MARE.**—Supply and delivery, at either of the Council Depots, Weston-super-Mare, of the undermentioned goods for the year ending March 31, 1911, for the U.D.C.:—1, general stores (ironmongery, tools, castings, iron, steel, paints, brooms, brushes, etc.); 2, stable utensils; 3, disinfectants; 4, lime, cement, drain pipes, etc. Forms of tender and general conditions will be supplied upon application, and samples of the goods may be inspected at the Council Depot, Oxford Street, Weston-super-Mare. Tenders are to be sent to Harold A. Brown, Engineer and Surveyor, Town Hall, Weston-super-Mare.

Feb. 7. **NORTHWICH.**—Supply of all or any of the following materials, for the maintenance of the River Weaver, from April 1, 1910, to March 31, 1911:—1, leather belting, India-rubber, packing, and canvas goods; 2, building materials (except timber); 3, oils and grease, both for illuminating and lubricating purposes, candles, paints, varnishes, and accessories; 4, ironmongery, including waste, spades, steam piping, nails, brushes, and general stores; 5, iron and steel bars, angles, and plates (except special boiler plates); 6, cast steel, files, etc.; 7, bolts and nuts, bolt ends, washers, rivets, and stud iron; 8, ropes, twines, cork fenders, hemp packing, and oakum; 9, steam coal, house coal, and gas coke. Schedule of approximate quantities and specifications may be obtained, on deposit of £1 at the Engineer's Office, Northwich. Tenders and samples must be sent addressed to the Chairman of the Stores Committee, care of the Clerk, Weaver Navigation Office, Northwich.

Feb. 8. **GLASGOW.**—Supplying and erecting mahogany bookcases, for the Corporation. Plans can be seen and all information obtained at the office of the Architect, William B. Whitie, 219, St. Vincent Street, Glasgow. The Corporation also invite manufacturers of metal bookcases to submit designs and estimates for supplying and erecting said bookcases in metal. Plans and other necessary information will be obtained at the office of the architect. Specification and form of tender may be had at the Office of Public Works, 30, Cochrane Street, on deposit of £5 5s. Tenders must be lodged with A. W. Myles, Town Clerk, City Chambers, Glasgow.

Feb. 8. **HALIFAX.**—Supply of (1) cast-iron pipes, (2) oils, paints, etc.; (3) cleaning waste; (4) brushes; (5) irregular pipes and castings; (6) brass lamp fittings; (7) brass main cocks and unions; (8) oxide of iron; (9) lime; (10) sulphuric acid; (11) ironmongery; (12) steel goods; (13) fireclay goods; (14) iron valves and connections; (15) wet and dry meters (16) tarred gaskin; and for the purchase of spent oxide of iron, during the twelve months ending March 31, 1911, for the Corporation. Forms of tender and further information may be obtained on application to J. Wilkinson, F.C.S., Engineer, Gasworks, Halifax. Tenders must be sent to Herbert Ashling, Town Clerk. Fair wages clause.

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Re Albert Odell.—In Bankruptcy.
WEST DRAYTON, COWLEY, AND LANGLEY.
To Brickmakers, Gravel and Dust Contractors.

MESSRS. BUCKLAND AND SONS have received instructions from H. Wingfield, Esq., the Official Receiver, to SELL by AUCTION, at the DE BURGH ARMS, West Drayton, on THURSDAY, JANUARY 27, 1910,

About 3¼ acres of FREEHOLD BUILDING LAND at Horton Road, Yiewsley, FREEHOLD BRICKFIELD, with plant and large deposit of gravel in Trout Field, Cowley, about 6¾ acres.

FREEHOLD BALLAST PIT and SPOIL BANK near last, now made suitable for agricultural and market garden purposes, about 5½ acres.

About 16 acres FREEHOLD LAND opposite, on north side of canal, containing gravel and ballast, now being worked to a depth of about 20ft., with the plant for ballasting, etc.

The LEASE of the well-placed Brickfield adjacent to the G.W.R. station at Langley, and abutting on the Grand Junction Canal.

Particulars and conditions of sale of H. Wingfield, Esq., 67 and 69, Watling Street, E.C.; Messrs. Herbert Reeves and Co., Solicitors, 42, Old Broad Street, E.C.; and of the Auctioneers, 4, Bloomsbury Square, W.C., Slough, and Windsor.

Contracts Open.

WAR DEPARTMENT CONTRACT.

The Secretary of State for War hereby invites Tenders for the following work:—The erection of Nursing Staff Quarters and reconstruction of the Military Families Hospital at the Raglan Barracks, Devonport, in the Southern Command.

Plans, Specification and Conditions of Contract, may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., or at the Barrack Construction Office, Old Granby Barracks, Devonport, on Monday, Tuesday and Wednesday, January 24th, 25th and 26th.

Those desiring to tender and to receive a copy of the Bills of Quantities must apply to the Director of Barrack Construction not later than Friday, January 28th. The application must be accompanied by a deposit of ten shillings, which will be returned if a bona-fide tender is received from the applicant. Cheques or orders to be made payable to the Assistant Financial Secretary, and crossed "Bank of England for credit to Army Funds."

Tenders on the form supplied with the Bills of Quantities must be delivered in sealed envelopes marked "Tender for Nursing Staff Quarters and Reconstruction of Hospital, Devonport," not later than 12 noon on Monday, February 7th addressed to the Director of Army Contracts, War Office, Whitehall, London, S.W. The Bills of Quantities should accompany tender in a separate sealed envelope, similarly addressed and marked "Bills of Quantities, Nursing Staff Quarters and reconstruction of Hospital, Devonport," with the Contractor's name and address thereon.

The Secretary of State does not bind himself to accept the lowest or any tender.

(Signed) H. DE LA BERE,
Director of Army Contracts.

War Office,
Whitehall, London, S.W.
January, 1910. 5480

WAR DEPARTMENT CONTRACT.

The Secretary of State for War hereby invites Tenders for the following work:—In foundation work for Barrack Block, excavating and levelling site for new Cavalry Barracks, Redford, in the Scottish Command.

Plans, Specifications and Conditions of Contract, may be inspected at the Office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., or at the temporary Barrack Construction Office, Colinton, situated between North end of Patties Road and Mill, on Thursday, Friday and Saturday, January 27th, 28th and 29th.

Those desiring to tender and to receive a copy of the Bills of Quantities must apply to the Director of Barrack Construction not later than Tuesday, February 1st. The application must be accompanied by a deposit of ten shillings, which will be returned if a bona-fide tender is received from the applicant. Cheques or orders to be made payable to the Assistant Financial Secretary and crossed "Bank of England for Credit to Army Funds."

Tenders on the form supplied with the Bills of Quantities must be delivered in sealed envelopes marked "Tender for Foundations, and site work, Redford Cavalry Barracks," not later than 12 noon on Wednesday, February 9th, addressed to the Director of Army Contracts, War Office, Whitehall, London, S.W. The Bills of Quantities should accompany tender in a separate sealed envelope, similarly addressed and marked "Bills of Quantities, Foundations and site work, Redford Cavalry Barracks," with the Contractor's name and address thereon.

The Secretary of State does not bind himself to accept the lowest or any tender.

(Signed) H. DE LA BERE,
Director of Army Contracts.

War Office,
Whitehall, London, S.W.
January, 1910. 5479

February 2, 1910. Volume 31, No. 783.

THE BUILDERS' JOURNAL

AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Richmond Perturbed.

The Richmond (Surrey) Town Council are perturbed, and not without reason, at a proposal to build large blocks of flats at the top of Richmond Hill, next to the Park Gates. The site is at present occupied by Ancaster House, an old creeper-covered Georgian mansion of some size, which has been in the market for a considerable time. A private firm proposes to demolish this dwelling—which, needless to say, consorts well with its surroundings and the amenities of this part of the district—and utilise the site. The site faces the famous "Star and Garter" Hotel, and the length of the popularly frequented terrace, and it is inevitable that the erection of high blocks of red brick flats would have a detrimental effect on the show part of the town, and would unfavourably impress visitors who came to see the famous view The preservation of the old-world surroundings and the view is a constant and anxious task for the Richmond Corporation, which is ever mindful that the prosperity of the place depends largely on its attractiveness as a residential quarter and as "London's playground." The fine legacy which our Georgian forefathers bequeathed to us is not one, therefore, to be lightly dissipated; and progress in the shape of brand new red brick structures is not one that commends itself to the Councillors as desirable in this particular quarter. Within the last ten years, as Alderman Thompson, ex-Mayor of Richmond and a well-known figure in town-planning circles, has stated, some £70,000 has been expended in preserving the view and amenities of Richmond, or an average of about £7,000 a year, and it appears that this sum will have to be increased by the further sum of £10,000, which is required to purchase the site. As the matter stands, plans for the proposed flats have been submitted to the Council, but not passed, and there for the present the matter remains.

The National Federation.

The annual general meeting of the National Federation of Building Trades Employers, which was held at the Trocadero Restaurant, Piccadilly Circus, London, last week, brought together a notable assemblage of the leading members of Britain's "greatest synthetic industry." It is pleasant to note the steady growth of this organisation in effective power and influence. The Federation stands for much more than a mere counter-movement to trade unionism. In that respect it is a model organisation, never abusing its undoubted power, while firmly and temperately resisting aggression. It respects and encourages the best elements of trade unionism, and in return is respected by trade unionists of the more reasonable type. Its attitude towards the workmen during a time of deep depression has been characterised by forbearance and sympathy amounting to magnanimity; for while, in some few instances, modifications of working rules became, in the prevailing circumstances, absolutely unavoidable, and have been in that sense accepted with a good grace by the workmen, no attempt has been made to take advantage of the situation. That in more prosperous times the men will remember this, and will be duly grateful, is perhaps too much to hope for; but the Federation is well prepared for contingencies, and has, indeed, set an example to the industrial world in its method of dealing with disputes by substituting peaceful arbitration for internecine and devastating warfare. Its Conciliation Boards have effected a complete revolution in the relations between employer and employed, mainly by the simple process of enabling the opposing parties to meet face to face and understand each other better, with the remarkable result that the building industry, which beyond all others was formerly notorious for strikes and lock-outs, is now entirely free from them. Peace having been thus effectually secured within its own dominions, the Federation has found opportunities for asserting its rights in other directions. Acting in the same moderate and conciliatory spirit which has proved so successful in what may be called its domestic policy, it is taking corporate action in opposing, for instance, the unfair conditions of contract which, in the powerlessness of individual or isolated firms to resist them, had become ordinary and commonplace; and it will be surprising if it does not eventually succeed in at least mitigating the equally iniquitous and absolutely ruinous practice of withholding for an unconscionable period, sometimes extending over several years, the payments due for work completed. It is most potent, however, in dealing, as a corporation, with corporate bodies. Its representations have been signally influential with municipalities: it is recognised and respected in Parliament; and professional bodies like the R.I.B.A. lend it an attentive ear. This honourable standing could not have been attained by dint of mere numerical force. It has been gained less by numbers than by weight. The plain fact is that the Federation is splendidly officered. Not only has it been remarkably fortunate in its successive presidents, but its Councils and Committees are rich in the possession of level-headed and diplomatic-minded men of affairs, whose tone and spirit, experience and wisdom, would do credit to any deliberative assembly whatsoever. During the past year, the best traditions of his office and of the Federation were ably sustained and emphasized by Mr Ernest J. Brown, and his successor in the presidency, Mr. S. Smethurst, of Oldham, is a gentleman whose career and character inspire the utmost confidence as to the immediate future of the Federation.

A Centenarian of the Cement Age.

It is recorded in a paragraph that is going the round of the newspapers, that the inventor of Portland cement is still among us. He is Mr. Isaac Charles Johnson, and, although he has just entered upon his one-hundredth year—which fact is the occasion of the newspaper notices—he is still hale and hearty, and until two years ago he was accustomed to ride a bicycle. He has lived to witness one of the most tremendous industrial developments that the world has known. Until about the middle of the nineteenth century, builders and constructional engineers were dependent on the "Roman cement" which, as had been rediscovered towards the close of eighteenth century, could be made by calcining and crushing the septaria or calcareous nodules found plentifully in London clay. This quick-setting cement soon began to give way before the more satisfactory material which was produced by compounding chalk or limestone and clay, and was called Portland cement from its supposed resemblance when gauged and set to Portland stone. Since the first factory for its production on a commercial scale was started near Northfleet, about 1848, the demand has become universal, both as to application and area, and in order to meet it with economy in the production and perfection of the product, the geologist, the chemist, and the mechanician have brought to bear on problems that, seemingly simple, are in reality of extreme complexity, the utmost knowledge, science, and skill, with the result that they have placed at the command of the builder and the constructional engineer a material that, while it has already become all-pervasive and indispensable, seems nevertheless to be on the eve of still further extensions of utility.

The Attitude of the Architect.

Plastic and tractable, strong and durable, and, in the form of reinforced concrete, taking kindly to a marriage of affinity with metals, Portland

cement seems to deserve, with respect to its adaptability to decorative treatment, more sympathetic attention than architects in this country have as yet been disposed to devote to it. In America the architect does not disdain to recognise that the material may possess artistic possibilities, but in Britain there sems to be an ill-advised tendency to leave concrete construction too much in the hands of the engineer, and to despair of architectural treatment. What is needed is abandonment of the mistaken view that reinforced concrete, being an artificial product, is more or less of a sham. The men who make this objection are often enthusiastic in their praise of "good honest brickwork," and are apt to extol the tiled roof for its artistic superiority over the roof that is slated. But is not slate a natural product, and are not bricks and tiles artificial-manufactured goods? Squeamishness with respect to concrete is therefore inconsistent. We are among those who believe that frank architectural treatment of reinforced concrete is both legitimate and possible; and we hope that the centenarian inventor of Portland cement will yet live long enough to see the material generally accepted in this sense by architects.

Cupboard Love.

The lay Press continues, intermittently, to give evidences that the lay mind is interesting itself in architecture. The latest witness to this unnatural manifestation is the "Spectator," which, in its current issue, has a well-written article on house-planning. This shows so much knowledge of the subject, and especially of the client, that it must have been written by an architect, and one, moreover, who is a lover of his craft, or how otherwise could he have declared that "the actual business of planning the house itself, and the situation of the rooms and passages, the approach to the house from the road, and the arrangement of the outbuildings, cottages, and stabling, and so on, can be a most alluring occupation"? And there is a distinctly professional touch in the observation that "it is true that those who are ignorant of the first principles of architecture will plan for themselves, or demand from their architect perfectly impossible combinations: passages without light, fireplaces without chimneys, and so on." This he must have learnt in suffering. His experience, not to say his suffering, in domestic work is further attested in the remark that "you cannot have too many cupboards in a house." It is only after long years of strenuous activity and keen observation that the architect succeeds in grasping this elusive but fundamental idea. How is it that the lady of the house has never by any chance happened to mention this simple requirement? We could have wished that the writer in the 'Spectator" had not put the idea into her head. Now we shall certainly never hear the last of it. "You cannot have too many cupboards in a house" will be quoted at us with maddening persistency, to the swift and complete exhaustion of all patience and of the world's already vanishing timber supply. Henceforward, sleeping and waking, the domestic architect will be unintermittently harassed and haunted by the horrent apparition of the venerable Mrs. Hubbard. The increase of the client's interest in planning is all very well so long as it promotes business; but if it is to mean that henceforth every house is to be a congeries of cupboards, why, farewell art and happiness!

THE ROYAL GOLD MEDALLIST, 1910.

At a meeting of the Royal Institute of British Architects on Monday evening last, it was announced that the Council had decided to recommend Mr. Thomas Graham Jackson, R.A., to the King, as the recipient this year of the Royal Gold Medal, given annually by His Majesty.

CARPENTERS' HALL LECTURES.

The Carpenters' Craft.

The third of the series of lectures was given at the Carpenters' Hall on Wednesday last, by Mr. Banister F. Fletcher. The lecturer said that the carpenter comes to us as an almost heroic figure out of the dim and dark ages, and wood has at all times been the natural material most serviceable to man. It has been used for structures of all kinds, bridges, posts for timber houses, roofs over tithe barns and churches, etc., scooped out and used as water conduits, and wrought by the mediæval artist into cunning devices. No definite record exists of the beginning of joinery as a distinct craft, but Shakespeare in "A Midsummer Night's Dream" makes Snug the joiner, and Quince the carpenter as different as any trades union of our day could make them. The carpenter's craft was at the beginning the pioneer craft, from which in later times sprang the carpenter and joiner.

Mr. Fletcher showed a wooden hut, the posts being the prototype of the Doric order, and from which sprang those marvellous marble buildings of Greece. We will endeavour to keep, he remarked, almost exclusively to work in this country, divided into internal and external work, and furniture. An early half-timbered cottage was shown, and the construction noted. This consisted of bent trees set in the ground and meeting at the apex of the gable, strengthened by braces. In these early homes there was no upper storey, and the space between the timbers was filled with wattle and daub. Anne Hathaway's cottage was instanced as a famous example of the carpenter's craft. A more elaborate example is Ockwells Manor in Berkshire, framed up of oak posts and rails with brick filling laid herring-bone pattern. Passing on to Cheshire, the lecturer pointed out the introduction of curved braces, and the contrast between the plaster filling and the black timbers, tarred to act as a preservative. Moreton Hall was shown with its coves under the windows divided into squares and crosses, and the lecturer drew attention to the genuine timber expression was given by exposing the pins.

The old American Colonial architecture of the early 18th century and onwards as in the house at Charlestown, Massachusetts, brings us to the architecture of Queen Anne. In their porticoes and entrance porches the Colonials made use of wooden columns of slighter proportions than stone, and so return to early custom. Not only in the country, but in our towns, may beautiful examples of the carpenter's craft be found. The Rectory at Winchester was shown, also a 15th century house in Belgium entirely faced with timber, and some old houses at Lisieux, with overhanging storeys, built thus, it is supposed, to protect the passers-by underneath, from the garbage which was thrown from the windows. London possesses a beautiful example of the craft dating from about 1600, namely, Staple Inn, Holborn, and shows how well this example, escaping the devastating fire has survived for 300 years.

Several slides of excellent examples of timber buildings were shown, including the front of Sir Paul Pindar's house, now in the Victoria and Albert Museum, the Feathers Inn at Ludlow, Ford's Hospital at Coventry, with its charming internal courtyard, and upright timbers quaintly fronted with small buttresses. From the consideration of these timber houses as a whole we pass on to consider certain features. Guildford Town Hall has a fine octagonal turret, a type expressive of the Georgian era, the clock, which is also a fine example of the craft, projecting so as to be seen from up and down the street.

Passing on to porches, the entrance to Moreton Old Hall, reached from a bridge over the moat, was, he said, suitable for an entrance to a nobleman's mansion, and a doorhead from Uxbridge was shown of a different type, later in date, the head supported by brackets and cherubs' heads beautifully carved. Having dealt with the timber houses of our forefathers, the lecturer continued, we may now pass to other forms of their art. Two market crosses were illustrated That at Ledbury, Mr. Fletcher said, fulfils its purpose with that directness which is always to be found in old work. It is constructed of oak posts resting on a masonry foundation. The windmill at Haarlem, Holland, like many of those in the low-lying districts of Norfolk and Suffolk, gives a contrast to the flatness of the surrounding country. A charming example of a modern timber bridge at Great Tangley Manor, by Mr. Philip Webb, and a pergola and tea house at Easton Lodge, by Mr. Peto, completed the illustrations of external work. Internal work was next dealt with, and an interior of Ockwells Manor House, Berkshire, showed the ceiling joists exposed, and panelled walls. In the 16th century the architect became ashamed, and covered up his joists with plaster, and so an insanitary space for mice, etc., was formed. Henry VIII's apartment at Hever Castle, Kent, showed the ceiling joists exposed and moulded, while some interiors of a house at Potter's Bar, designed by the lecturer, exhibited a pleasing example of modern craftsmanship.

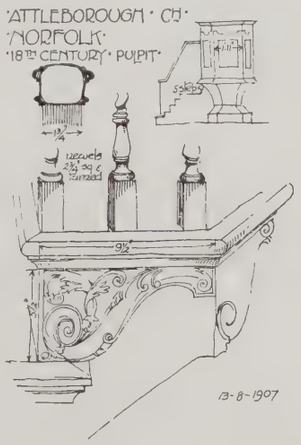
The carpenter's craft, he said, provided the readiest means for protecting the interiors of houses from the elements. The roof over S. Sabine, at Rome, one of the earliest examples, has king-post trusses, and from this type the English carpenter evolved those marvellous roofs which have not been surpassed anywhere in the world. Some of the Norfolk hammerbeam roofs were shown, and the roof from Eltham Palace, Kent, while that at Westminster Hall was instanced as the most remarkable hammer-beam roof in existence, and with one exception, the largest wooden roof in the world; and as an unrivalled example of the carpenter's craft, emphasises the nobility of wood as a builder's material. After showing some examples of furniture, including a fine old oak settle, which could be used as a table, and a Jacobean table, Mr. Fletcher continued: Although I have ranged over a wide field, I have by no means covered the field of the carpenter's domain, and, in conclusion, I hope that those of you who are active craftsmen, will take away with you some pleasant recollections of the past, while you who are otherwise engaged, will do your best to encourage good solid craftsmanship and avoid meretricious ornament.

THE "ENDELLINE PHRASE" COMPETITION.

The result of the "Endelline Phrase" Competition promoted by Messrs. Thos. Parsons and Sons, of 8, Endell Street, London, W.C., the proprietors of "Endelline" Enamel, is announced as follows:—First prize, £30, awarded to Mr. Chas. Walter Stupart, 112, The Avenue, Bruce Grove, Tottenham, N.; second prize, £15, awarded to Mr. Thos. Robinson, 79, Rosegrove Lane, Burnley; third prize, £5, awarded to Miss B. Thompson, 35, Grand Parade, Cork.

STAIRCASES

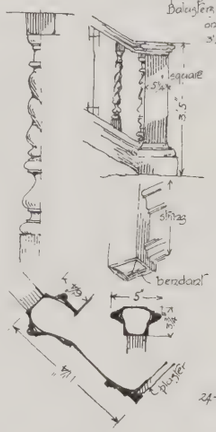
ATTLEBOROUGH · CH ·
NORFOLK ·
18TH CENTURY · PULPIT ·



13-8-1907

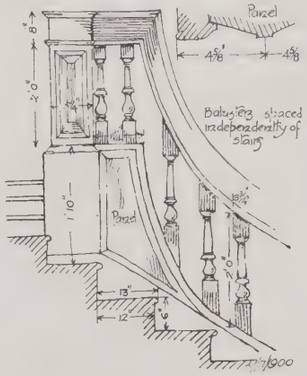
SOUTH · LITTLETON ·
WORCESTERSHIRE ·

Staircase 14'0" x 14'0"
Treads 4'2" long
Balusters 2'1" height on the level
3½" apart

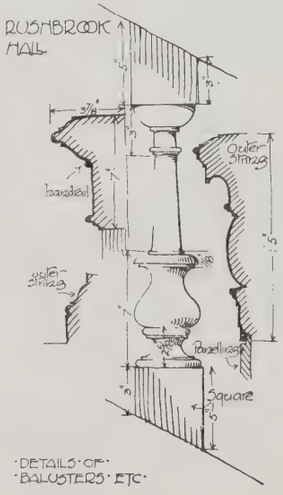


24-7-1903

RUSHBROOK · HALL ·
SUFFOLK ·



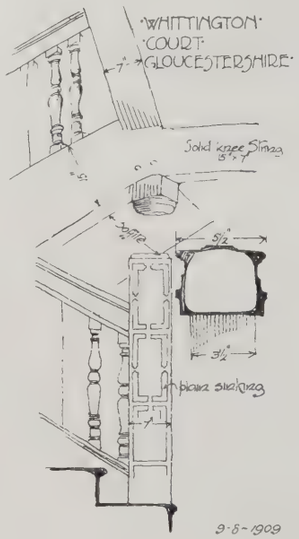
RUSHBROOK HALL



· DETAILS · OF ·
· BALUSTERS · ETC ·

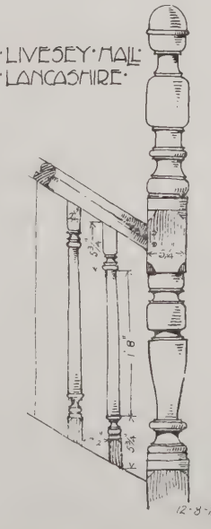
27-7-1900

WHITTINGTON ·
COURT ·
GLOUCESTERSHIRE ·



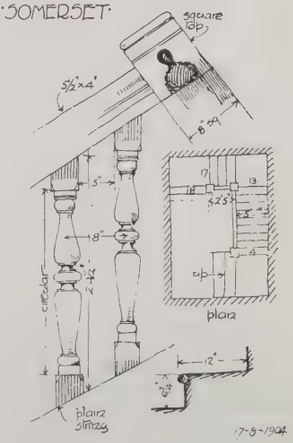
9-8-1909

LIVESEY · HALL ·
LANCASHIRE ·

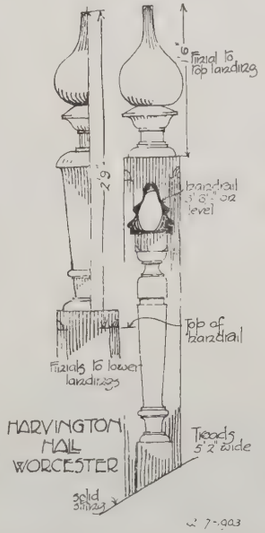


12-8-1907

CLIFTON · MAYBANK ·
SOMERSET ·

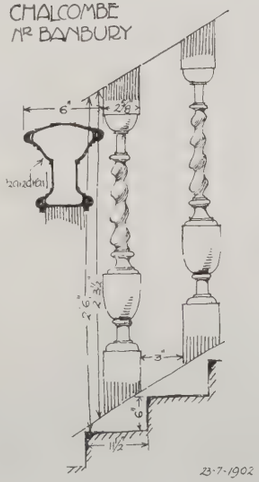


17-8-1904



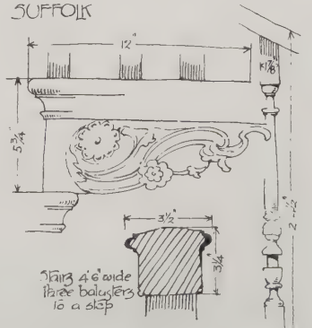
7-1903

CHALCOMBE
NR BANBURY

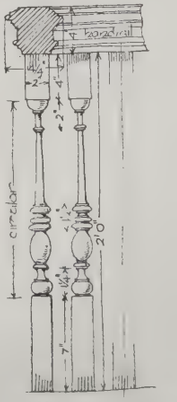


23-7-1902

MORTON HAUGH HALL
SUFFOLK

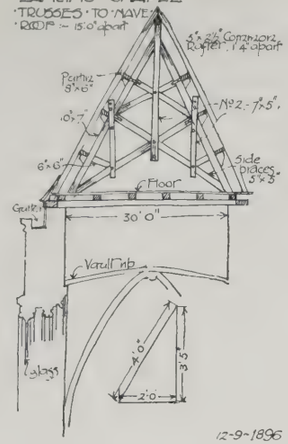


BURWASH
SUSSEX



ROOFS

"LANCING" CHAPEL"
"TRUSSES" TO "NAVE"
"ROOF" — 15'0" apart

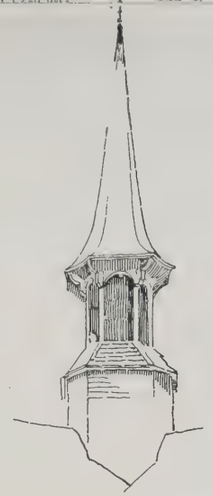


12-9-1896

"KIRBY" HALL"
"NORTHANTS"



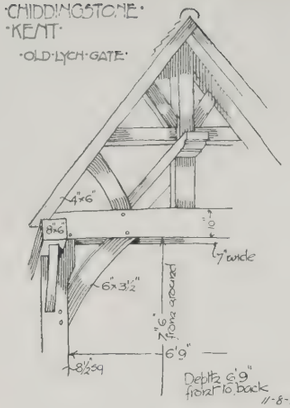
17-8-1906



14-8-1908

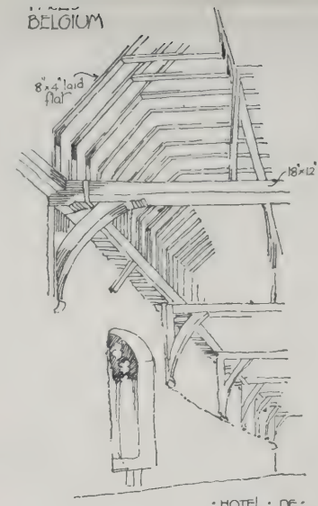
1:89

"CHIDDINGSTONE"
"KENT"
"OLD LYCH-GATE"



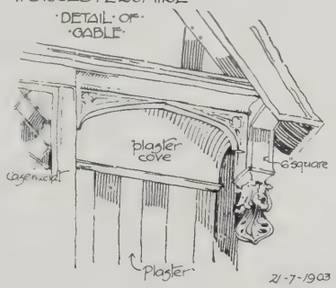
11-8-1896

BELGIUM



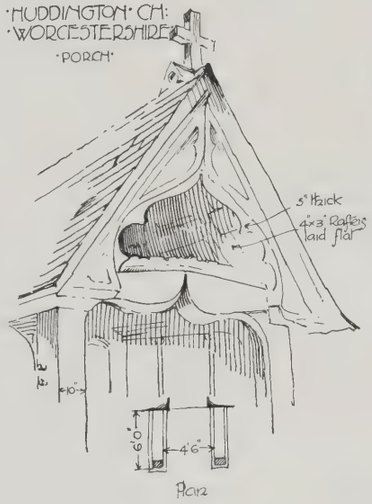
"HOTEL" DE"
"VILLE"
14-8-1908

"EASTINGTON" HALL"
"WORCESTERSHIRE"
"DETAIL OF "GABLE"



21-7-1903

"HUDDINGTON" CH:
"WORCESTERSHIRE"
"PORCH"



20-7-1903

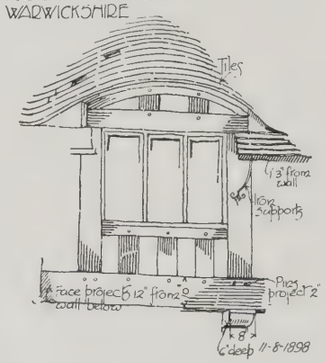


"LOUVAIN"
"BELGIUM"
LA BRASSERIE DE S. JACQUES



BEDE HOUSE
LYDDINGTON
16-8-1906

HAMPTON IN ARDEN
WARWICKSHIRE



11-8-1898

"LONG MELFORD" CH:
"SUFFOLK"



26-7-1900

"THE CRAFT OF THE CARPENTER"; SKETCHES BY BANISTER FLETCHER, F.R.I.B.A.,
ILLUSTRATING HIS LECTURE AT THE CARPENTERS' HALL LAST WEEK.

Proposed New Works.

ASHTON (LANCS.).—The District Council has approved the following plans:—J. and W. Rylance, Picture Palace, Bryn Street; James A. Baron, Theatre and lock-up shop, Heath Road; John Watson, ten houses, Princess Road; Greenall Whitley and Co., alterations, Queen's Head, Liverpool Road; Baptists' Trustees school, Bolton Road.

DANBURY (ESSEX).—A subscription list has been opened to provide funds for the erection of a village hall. About £206 has already been collected.

DERBY.—The Town Council are about to purchase from the Osmaston Estates Co. a site for a new elementary school. The site extends from Nightingale Road to Amber Street.

DUNFERMLINE.—The Town Council has agreed to feu 3½ acres of ground for the erection of dwelling-houses on the cottage system. The site is on land belonging to the Baigh, situated to the north-east of Townhill.

EXETER.—The L.G. Board has held an enquiry into the application of the City Council for a provisional order empowering the Council to put in force the Lands Clauses Act with reference to certain lands required for the improvement of Paul Street, Bartholomew Street (West), Well Street, and Blackboy Road.

HILL TOP.—The West Bromwich Education Committee are proposing to erect a new school here at a cost of £17,900. Messrs. Wood and Kendrick, architects, have prepared plans.

HORNSEY.—The following plans have been approved by the Borough Council:—Two dwelling-houses as maisonettes in Springfield Avenue, Muswell Hill, by Mr. Percy F. Crebbin, of No. 3, The Grove, Muswell Hill; six dwelling-houses in Lynmouth Road, Muswell Hill, by Mr. G. H. Paine, of Moorgate Street; fourteen dwelling-houses in Redston Road, Hornsey, by Mr. Harry East, of Redstone Road; alterations in and additions to "Denewood"; Broadlands Road, Highgate, by Mr. G. E. Nield, of 222, Strand; alterations in and additions at rear of high school for girls, Albany Road, Stroud Green; dwelling-house in Stormont Road, Highgate, by Messrs. Lander, Bedells, and Crompton, of John Street, W.C.; pavilion and skating rink in Stroud Green Road, Finsbury Park; three dwelling-houses on North Hill, Highgate, by Mr. H. E. Fedrick, of "South Lodge," North Hill; for conservatory and verandah at rear of No. 35, Cholmeley Park, Highgate, by Fedrick Brothers.

KNARESBOROUGH.—The U.D. Council have had plans approved by the L.G. Board for new offices, depot, etc. The scheme is to be put in hand at once.

LLANDRINDOD WELLS.—The Council have instructed the surveyor to proceed forthwith in making the necessary alterations to the premises recently purchased for municipal buildings.

LLANRWST (N. WALES).—The U.D. Council has approved plans for the erection of slaughter-house and stable for Mr. Richard Roberts. Mr. D. Henry Roberts, Llanrwst, is the architect.

MONAGHAN.—The L.G. Board has held an enquiry into application of the R.D. Council to borrow £6,888 10s. for the erection of labourers' cottages.

ST. IVES.—The Town Council have a municipal building scheme in hand. A motion to ballot the ratepayers upon the scheme has been lost.

WINCHESTER.—The subscribers to a memorial to the late Rev. the Hon. Canon Alan Brodrick, Master of St. Cross, Winchester, have decided to erect a tablet in the Church of St. Cross Hospital, to extend St. Faith's Schools by the erection of an Alan Broderick class-room, and to extend the parish hall by adding a recreation-room.

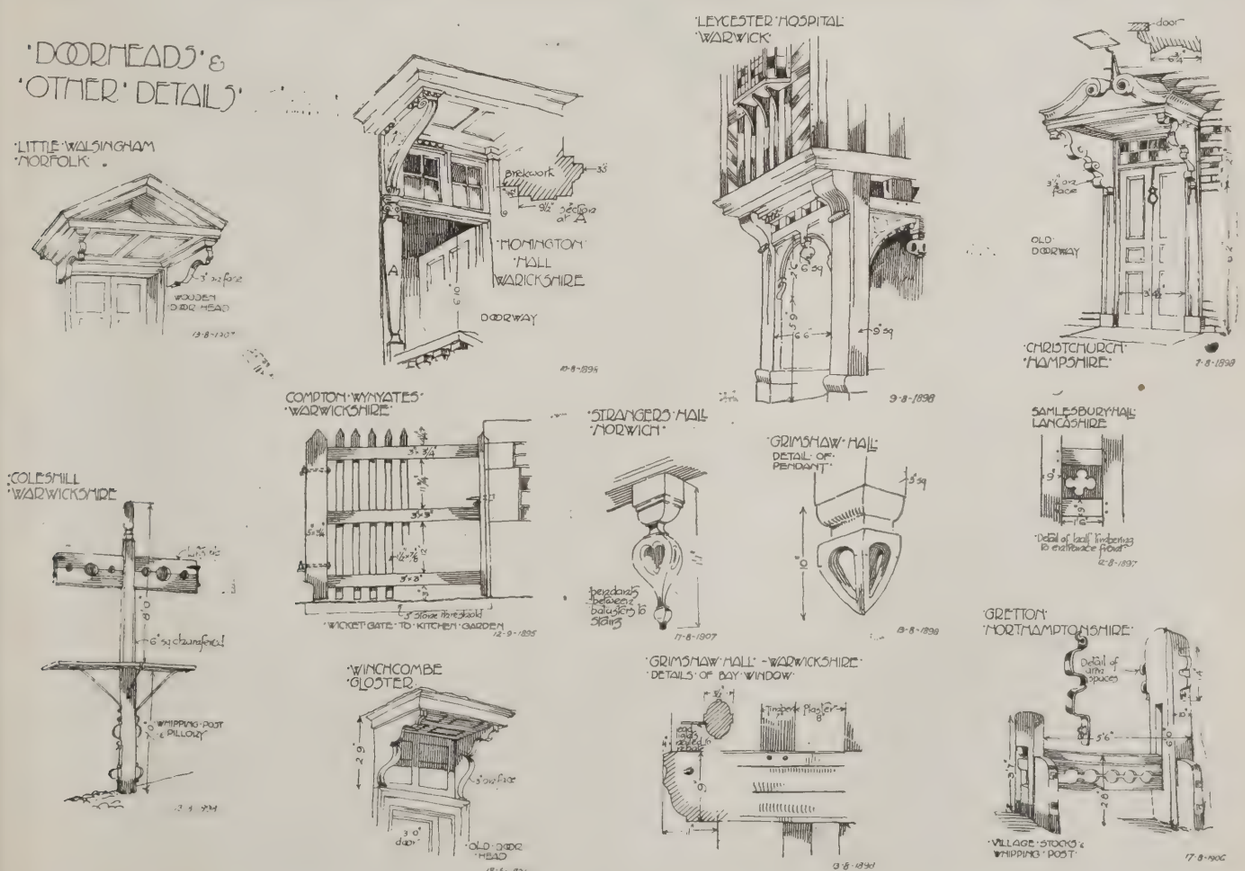
TOTTENHAM. The District Council has finally agreed to accept an offer from a firm of architects to purchase two and a-half acres of land forming part of an estate originally bought by the Council for workmen's dwellings. The land is required for a German woollen firm, who, it is stated, intend to erect a factory at which several hundred persons will be employed.

WAYLAND.—The Guardians have passed a resolution to appoint a Sites Committee to select a suitable site or sites for the erection of a new infirmary.

WELLINGTON (SHROPSHIRE).—The L.G. Board has held an enquiry into the application of the U.D. Council to borrow £2,500 for the erection of public baths. Plans have been prepared by Mr. G. Riley, the surveyor.

YORK.—Among the plans recently approved by the Corporation are the following:—Fulford Conservative Club, outbuilding, Fulford Road; York Central Mission, amended plan of Mission Hall, Swinegate; house, Norfolk Street; four houses, St. Olave's Road, approved; temporary additions, Clarence Street; alterations, Plumber's Arms, Skeldergate; motor garage, Haxby Road Works; twelve houses, Jamison Street, Albemarle Road; two houses, St. Clement's Grove. The Race Committee's plan for new stands was also approved, subject to the owners undertaking, at their own cost, to test one bay of the stands with a load of 2 cwts. per foot super.

The A.A. Play 1910 Committee are inviting designs for a poster illustrating this year's play. A prize of one guinea will be awarded to the author of the selected design.



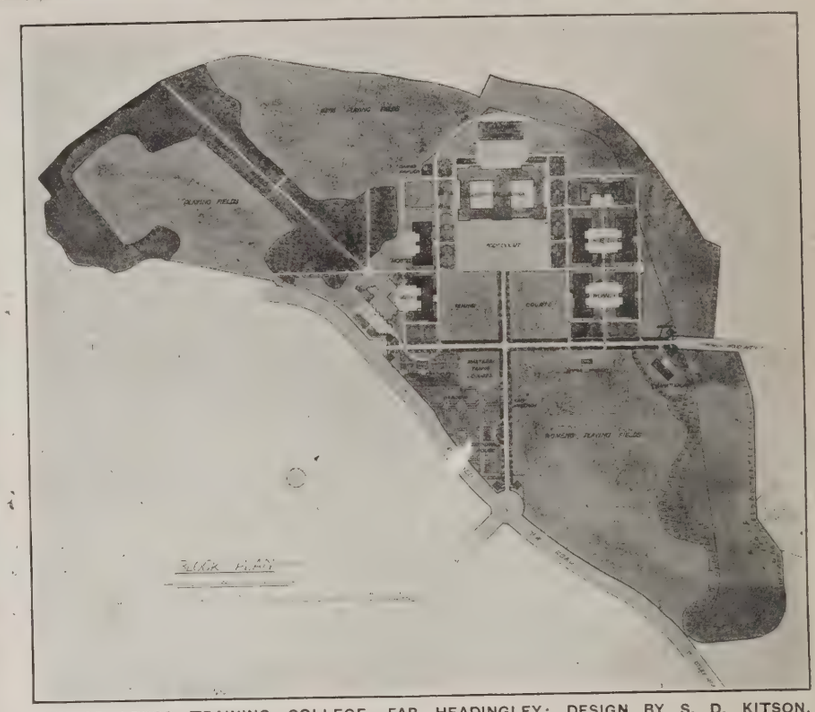
"THE CRAFT OF THE CARPENTER": SKETCHES BY BANISTER FLETCHER, F.R.I.B.A. ILLUSTRATING HIS LECTURE AT THE CARPENTER'S HALL.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Feb. 8	POSTER FOR THE A.A. PLAY, 1910. The Committee invite designs for a poster illustrating this year's play. A prize of one guinea will be given to the author of the selected design. Full particulars may be obtained from Mr. Percy Lovell, 23, Old Queen Street, Westminster, S.W., to whom designs must be sent in by first post on date named. A jury of three will assess.
Mar. 1.	GLAZED BRICKWORK DESIGNS AND ESSAYS. A committee of glazed brick manufacturers invite designs for works to be executed in glazed brickwork, also essays as to the advantages to be derived from the use of this material in accordance with conditions to be obtained from J. Johnston Green, 142, Liverpool Road South, Southport. Premiums of 100 guineas, 50 guineas and 25 guineas awarded to designs and essays jointly. Assessor Mr. Max Clarke, F.R.I.B.A., appointed by the President, R.I.B.A.
Mar. 31.	SHEFFIELD ENDCLIFFE PARK CHURCH. Plans desired for Church for 650, Institute for 150, Primary Department for 125, Junior Department for 95, and Caretaker's Apartments. Premium, not merged in commission, £35. Assessor, Chas. Hadfield, Esq., F.R.I.B.A. Questions until February 10. Delivery on March 31. On receipt of 5s. the Secretary, J. W. Nicholls, 64, Everton Road, Brocco Bank, Sheffield, will furnish conditions and instructions, with plan of site, showing existing buildings, levels and drainage—these not returnable. Deposit returned only to those who send plans.
May 31.	MUNICIPAL OFFICES, KARACHI. The Municipality offer a premium of 7,500 rupees (£500) for the best design, detailed plans and estimates for new Municipal Offices. Cost not to exceed 500,000 rupees, and the style of architecture is left open to the designers. Ferrotype plans of the site and a general arrangement of the floors of the building showing the accommodation to be provided, together with a copy of instructions to architects, will be supplied to intending competitors on application to the Chief Officer and Chief Engineer, Karachi Municipality. A charge of Rs. 5 will be made therefor, which will not be refunded. Each set of drawings must be sent in anonymously, but accompanied by a sealed envelope containing the author's name and address. Each set of drawings and all the documents required, including the sealed envelope, must be securely packed in a wooden box addressed as follows:—The Chief Officer and Chief Engineer, Karachi Municipality, Karachi, India, and forwarded, at the competitor's own risk and charges, in time to reach the Chief Officer on or before the 31st day of May, 1910. It is proposed to apply to Government for permission for one of the chief architects to act as assessor to decide on the design to which the prize shall be awarded. The decision of the assessor will be final and not be open to dispute. The decision of the Municipality will be made within three months of the latest date for submission of designs, and payment of one-half of the premium will be made thereafter to the author of the selected design, the balance to be paid when the further details specified in the instructions to architects have been supplied. On payment of the premium the Municipality will have all rights in the design, with power to erect the building under its own agency, either according to the design selected or with such additions or alterations as it may deem necessary.
No Date.	SECONDARY SCHOOL AT PETERBOROUGH for Soke of Peterborough Education Authority to accommodate 250 scholars, but allowing for enlargement so as to accommodate 300 scholars. Particulars of the general instructions and conditions, together with a plan of the site, may be obtained on application to Walter J. Deacon, Clerk to the Authority, Cross Street, Pte



CITY OF LEEDS TRAINING COLLEGE, FAR HEADINGLEY: DESIGN BY S. D. KITSON, M.A., ARCHITECT.

Societies' Reports.

R.I.B.A.

A list of the prize and studentship awards was given on January 19th. The following announcements are additional:—

TRAVELLING STUDENTS' WORK.

Godwin Bursary 1908.

The Council have approved the report of Mr. Arthur Halcrow Verstage, who was awarded the Godwin Bursary in 1908, and who reported on the "Galerie des Machines" of the Paris Exhibition of 1889.

Owen Jones Student 1908.

The Council have approved the work of Mr. A. E. Martin, who was awarded the Studentship in 1908, and travelled in France and Italy.

Soane Medallist 1908.

The Council have approved the drawings executed by Mr. George Drysdale, who was awarded the Medallion in 1908, and travelled in France and Italy.

Tite Prizeman 1908.

The Council have approved the work of Mr. George Drysdale, who was awarded the Tite Prize in 1908, and who travelled in Italy.

Pugin Student 1909.

The Council have approved the drawings executed by Mr. Sydney H. Miller, who was awarded the Studentship in 1909, and travelled in Lincoln, Cambridgeshire, and South West Scotland.

Saxon Snell Prizeman 1908.

The Council have approved the report submitted by Mr. William Milburn, jun., who was awarded the Saxon Snell Prize in 1908, and who reported on the Hospitals in Germany.

Birmingham Clerks of Works and Builders' Foremen's Association.

The second lecture of the present sessional series was delivered to the members of the above association by Mr. Holland W. Hobbis, A.R.I.B.A., who took for his subject, "Design and Craft in Building."

By means of a number of lantern slides, he pointed out how buildings erected in earlier ages show that the designers were also the craftsmen, and that though there may have been a master mind who arranged the original plan, the details were evidently the work of various craftsmen, all of whom were thorough masters of their craft, understanding the characteristics and limitations of their materials, and working with the desire to produce the greatest amount of strength and durability in their buildings, and at the same time to make them beautiful.

The lecturer showed how, though there still remained a good constructional foundation in the building trade of the present day, yet the application of building material was often at fault, the technique which is so evident and so much admired in old examples being absent.

The lecturer expressed a hope that by educating our artizans in the principles of art, and training them to understand and appreciate what is beautiful in form, colour, and design, we may obtain a race of craftsmen whose work will be as worthy of admiration and study as those of a previous age.

THE DEMOLITION OF OLD PROPERTY.

A rather important decision of some interest to architects has been given recently in the North. A five storey city warehouse with basement was sold for demolition by auction to a firm of house breakers, who at the completion, it was stated, left behind them three or four hundred loads of rubbish in the basement. The architect commissioned to carry out the new building, but who was no party to the above transaction, received instructions to allow in his quantities for excavating from the level of the existing basement floor.

The proprietors now sought to recover the amount it cost them to take out and remove the debris. The general conditions of sale issued by the auctioneer covered the selling of the building in lots floor by floor, or in toto, which latter was actually done, and a clause in the conditions of sale stated that the purchasers must clear away the rubbish from the floors of each storey as they worked down to them. Each floor, including the basement floor, was detailed in the catalogue as a lot. It appeared from the evidence that the general interpretation of this clause was, in the case of separate purchasers, to make arrangements with each other to form holes through each floor and

shoot the rubbish into the basement, "or any other convenient place on the site."

The judge held that it was only necessary to remove the rubbish from the floors, and that it was not obligatory to remove the rubbish from the site to comply with the conditions of sale. The fact that the basement was sold as a floor seems to have been entirely overlooked, otherwise one wonders by what subtle process did the man who bought this floor escape from the obligation binding him to have it cleared as he worked down to it. Can it be held that he can remove everything of value from this floor first and then allow the dumping to commence from above? Obviously the decision lends itself to this interpretation. Further, in the absence of a basement, or on a restricted area of building surrounded by streets, where would the convenient place be for tipping rubbish?

This action has served to disclose the unsatisafctory views which seem to be too commonly held on this subject, and the judge's decision has only gone to confirm them.

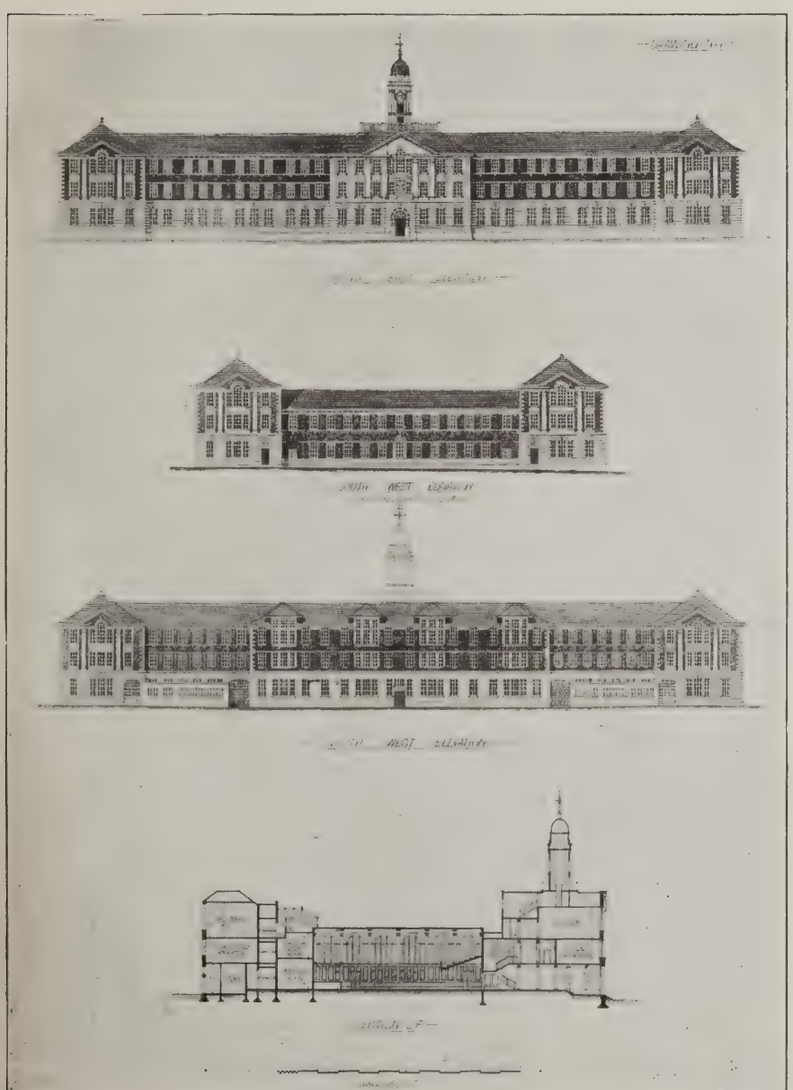
Evidence was given that the rubbish could have been removed during the process of demolition for a mere fractional amount of what it cost the proprietors later. It therefore seems clear that in these transactions the client would be well advised to consider whether some more advantageous arrangement could not be made, so that the cost of removing the rubbish shall not be disproportionate to the amount obtained from the sale of the building.

The conditions may or may not have been badly worded in so far as the rubbish was not stated to be removed actually from the site, but one thing is certain, the rubbish was never intended by the proprietors or the auctioneers to be left. No one requiring buildings demolished expects everything of value to be removed and the rubbish left on his hands—perhaps the only thing which is removed at a loss. It is certainly a very convenient interpretation for house breakers, but it is surprising that such a custom should have become established.

Therefore, to all whom it may concern we would suggest they would be well advised in the future to see that the nature and extent of the house breakers' work is stated clearly, and in words which admit of no ambiguity.

Apart altogether from any question of litigation, such as the subject of these remarks, it is very doubtful whether it is in the proprietor's interest to sell old property by auction. The auctioneer is not the most likely person to take into consideration what is, after all, the object in view—the clearing of the ground for a new structure. There is a very limited market for old buildings, and very often the contract changes hands several times at much larger prices than that at which it was knocked down to the original purchaser. The process of demolition is also very slow, as everything of value is carefully sorted out and stacked until a suitable purchaser comes along. As the old buildings are demolished, it is often necessary to shore up adjacent dangerous buildings until such time as the new structure is built up to relieve the danger. As far as possible the shoring ought to be arranged so as to interfere as little as possible with the internal arrangements of the building. Therefore the builder with his plans before him is certainly the proper person to be entrusted with this work. On supposition and by inference one can see very grave issues and complications which might easily arise where the work is not entrusted to the builder. Should an accident happen through faulty shoring, the builder naturally accepts no responsibility, while the other party, not being directly responsible, might be able to escape liability.

We would suggest, when buildings have to be demolished, it is far better that they should be included in the builder's contract for the new structure. The question of cost is one on which opinions may differ, but all things taken into consideration the client stands to gain in the end, and he has the full knowledge that responsibility is reduced to a minimum.



CITY OF LEEDS TRAINING COLLEGE, FAR HEADINGLEY. DESIGN BY S. D. KITSON, M.A., ARCHITECT.

Correspondence.

[*The Editor declines responsibility for the statements made or opinions expressed by correspondents.*]

A Remedy for the Financial Loss to Architects Caused by Competitions.

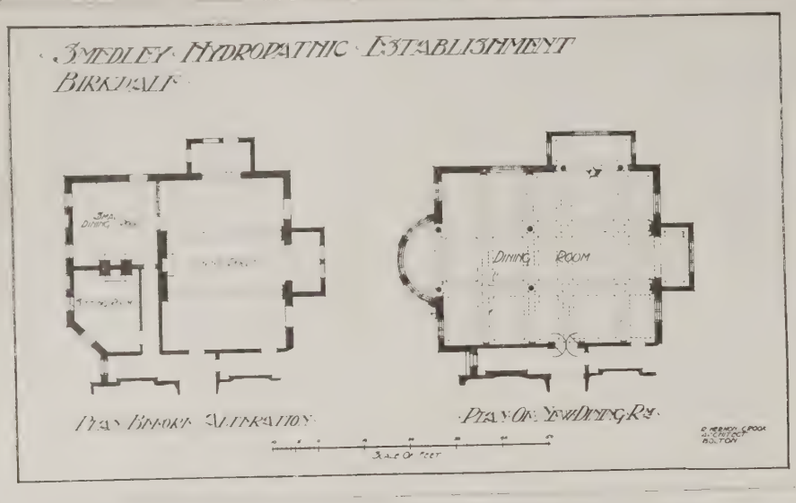
To the Editor of THE BUILDERS' JOURNAL.

SIR,—It has recently occurred to me that the profession does not realise the enormous waste of time and money which is due to competitions, and as the "Regulations for Architectural Competitions" are now under consideration by the Institute, I take the opportunity to draw attention to the financial loss, with the hope that some means may be found to minimise it.

Take a typical case of £10,000 competition for a limited number of ten, the average out-of-pocket expenses would be at least £20 each, or a total of £200, the average value of the designs, say, £100 each, or a total of £1,000. That is, the competitors pay £200 in expenses or give £1,000 value of designs for one of them to receive instructions to carry out the work with a commission of £500. If the competitors be 25 in number, then they pay as much in expenses, £500, as is the commission.

Take a £10,000 unlimited competition, the number of competitors is almost certain to be 50, when the expenses at £20 each would be £1,000, and the competitors pay twice as much in out-of-pocket expenses as is received by the successful architect, and prepare designs worth £5,000, or half the value of the building to be erected. If there be 100 competitors, which is not unusual, then they pay in expenses £2,000, one fifth of the value of the building, and prepare designs worth £10,000, the full value of it.

The competition for the London County Hall was a most severe tax on the profession. The design which I prepared cost £320 in out-of-pocket expenses, allowing nothing for my own services and much time given to it. I am told that other designs cost double that sum. But take the £320 as an average, then the 199 competitors paid £63,680, which is £20,180 more than the 5 per cent. commission on the £850,000 proposed expenditure on the building. If each competitor had put £320



into a sweepstake, Mr. Ralph Knott might have drawn a prize of £63,680 instead of a commission of £43,500, and would have had no further work and responsibility; and the other 198 competitors would have saved all their time and thought in the preparation of useless designs, the value of which cannot be put at less than £1,000 each, or £198,000.

I notice considerable difference in the comparative affluence of members of other professions, and of architects, and incidentally in their social position, and I attribute this to the unproductive labour and expenses of competitions. I doubt if there is any other profession or trade which does so much without remuneration, except perhaps the medical profession, and they have the satisfaction of doing good to their fellow men, and are not called upon to pay the hospital expenses. We brighten our wits and give the younger men a chance by competitions, but the promoters are the supposed gainers; so long as we offer so much for so little, they naturally accept it. I think, however, that we should have the sympathy and help of promoters in any proposals to minimise the loss to the profession, if the regulations were reasonable ones, issued with the authority of the Institute, and as loyally supported by the profession, as is the recognised scale of commission.

The remedy I have to suggest is that a scale of the approximate value of payments for out-of-pocket expenses should be adopted by the Institute (ranging from, say, £1 per cent. for a £1,000 building to one shilling per cent. for a £850,000 building), payable by promoters of all competitions, and made part of the contract between promoters and competitors, and that members of the Institute should be required not to compete unless such contract were entered into by the promoters.

I would apply this scale to the three classes of competitions named under Clause 5 of the "Regulations for Architectural Competitions" as follows:—

(a) By advertisement and unlimited, half the scale to each competitor sending in bona-fide design and complete drawings.

(b) By advertisement and limited by selection, the full scale.

(c) By personal invitation and limited, the full scale plus a specified sum for the design.

The sums payable by the promoters would be very small in proportion to the value of the designs obtained by them. For a £1,000 building there could be obtained five designs for 5 per cent. extra to the usual commission; for a £10,000 building, say, at four shillings per cent., there could be obtained 25 designs for an extra 5 per cent., or ten designs for an extra 2 per cent; and the London County Council could have had their 199 designs for £42,188, practically an extra 5 per cent., a large sum for them to pay, but over £20,000 less than what the competitors probably did actually pay for out-of-pocket expenses.

The obligation to pay on such a scale would no doubt deter the promoters from indulging so frequently, readily, and often unnecessarily in the luxury of a competition; it would also tend to limit and to reduce the number of competitors.

The payments made by the promoters of each competition would be little, and due by them, but the aggregate increased annual income to the profession would be very substantial and due to them.

Incidentally the limitation would cause more careful selection of competitors and improve the chances of those selected.

It has been suggested to me that these proposals might not commend themselves to promoters. But if supported by a regulation of the Institute, many promoters would accept the scale as a matter of course, and if any did not do so, members of the Institute could then without offence decline to compete. At present I find I cannot decline without liability to give offence to some good friend or other who has brought my name to the notice of the promoters, and consequently sometimes I do compete under conditions which I feel to be humiliating. The Institute, by improving its regulations, is at the least helping us to help ourselves.

I am taking the unusual course of writing a similar letter to the editors of each of the professional papers, and have to ask for your indulgence for doing so, as I wish the whole profession to have the opportunity of considering my suggestions before the meeting of the Institute on the 7th of February, when the "Regulations for Architectural Competitions" are to be considered.

Yours faithfully,

EDWARD M. GIBBS.

Sheffield.



NEW DINING ROOM AT SMEDLEY HYDRO, BIRKDALE. R. HERMON CROOK, ARCHITECT.

This room has recently been completed, having been made out of several smaller rooms on the ground floor of a four-storey building, as will be seen from the plan. The scheme of decoration is ivory white throughout, with light oak furniture and rose crimson carpet, the electric fittings being in brass. The general contractor was Mr. W. H. Foster of Southport. The fibrous plaster work was carried out by Mr. J. W. Hindshaw of Manchester, from which city Messrs. Edward Wood supplied and erected the steelwork. Electric and gas fittings were supplied by Messrs. Spital and Clark of Birmingham. Messrs. George Wragge supplied the glazing, and Messrs. Warings the carpet. The architect was Mr. R. Hermon Crook of Bolton.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible. The querist's name and address must always be given, not necessarily for publication.

The Editor is willing to answer enquiries from readers who require information on architectural, constructional, or legal matters. Such information must be regarded as the gratuitous advice or information of a friend, and not as the professional opinion of one who holds himself out as possessing expert knowledge on the subject in question. The Editor will, however, avail himself of the assistance of a large staff of experts in the matters above mentioned, but enquiries sent must be on the express understanding that he is not to be held responsible for any delays, mistakes, inaccuracies, or negligences which may occur.

Enquirers whose questions involve possible legal proceedings are strongly urged to consult their solicitors before taking definite steps in regard thereto.

Answers by post will be sent if the enquiry is accompanied by a postal order for 1s. made payable to Technical Journals, Ltd., and crossed, and a stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

This fee of 1s. required for answers by post is in no case to be regarded as payment for the answer given, but merely as a registration fee to meet the extra clerical and other expenses incurred in dealing with these special replies.

The Editor also reserves the right of refusing to reply to any question that he may deem to be unreasonable or unsuitable; and it must be understood that both question and reply will, as a rule, be published in these columns

Surveyors Under the Finance Act.

H. P. J. (ANGLESEY) writes: "(1) To whom should one apply for the post of surveyor and valuer of land, which will be necessary under this new Budget, should same come into force? (2) Are there any list of the duties required published?"

—Your letter contains two questions which we find it difficult to answer in a satisfactory manner. Were we desirous of obtaining this information we should apply to the Surveyors' Institution, and possibly to H.M. Office of Works, and H.M. Civil Service Commissioners (Burlington Gardens, W.)—the former institution (12, Great George Street, S.W.) would be in a position to obtain the information, and if you are a member would, we have no doubt, take steps to find out for you. We think that application to the last-mentioned should bring the information required, however.

B. AND B.

Articles of Apprenticeship.

W. W. B. (BOLTON) writes: "In the case of a pupil who has served by arrangement in an architect's office for a period of five years, but for whom no articles were drawn up at the time, what is the usual procedure for putting same in order? Is there any recognised legal form? and will you please inform me what is usual in above circumstances to put the matter in order? I may say the principal is willing for any arrangement, and that the date of commencement of services was April, 1904."

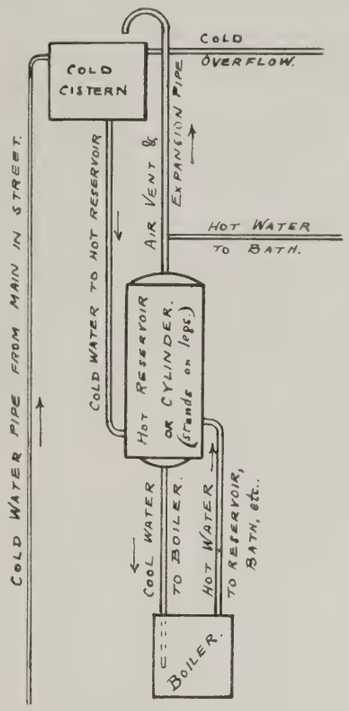
—What we understand from your letter is that, having now served for five years, you wish to have something in the nature of "retrospective" articles drawn up as between you and your employer. We have not heard of any similar case, nor do we quite see why it should be necessary to do so. There is as far as we know no legal necessity for articles at all in the case of the architectural profession, though there is in the case of those professions where registration is in force. The R.I.B.A. do not appear to attach so great significance to the matter of articles as to that of education in some recognised school, or the passing of their examinations. We should say that all that is necessary is that the employer should give a certificate of the period of pupilage and a testimonial to the effect that this period has been passed by the pupil entirely to his satisfaction.

B. AND B.

Domestic Hot-water Apparatus.

H. C. (MUSWELL HILL) writes:—"After drawing all hot water possible from the tap in the bathroom, there appears to be still about one-quarter (at the top) of the hot-water tank, still containing hot water which cannot be drawn off. A plumber informs me that the flow pipe from the boiler in the kitchener must not be taken higher than two-thirds of the way up the tank. Is this so, and must this hot water still in the top of the tank remain and thus be wasted?"

—If the hot-water pipe from the boiler be connected to the top of the hot tank, this is no reservoir of hot water, which simply skims across the top every time a hot tap is opened. This sketch shows the best relative



Illustrating reply to H. C. (Muswell Hill).

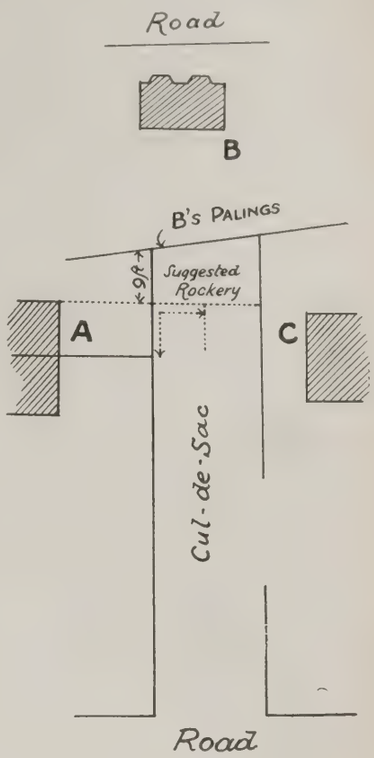
position of the four pipes needed by each hot-water reservoir. All the space above the inlet of hot water from the boiler is then reservoir of hot-water; and if a hot tap be left running, all the hot water will be drawn off, and its place taken by cold or tepid water, for no kitchen range boiler is an instantaneous water-heater. I have not been able to lay out the run of pipes from your description of the results of their working, and incline to think that a choked pipe allows hot water to gradually accumulate, and makes too much resistance towards the tap to allow it to run out as long as the tap can draw water from elsewhere.

INGENIOR.

Liability for Road Paving.

"BRICKS AND MORTAR" (ASHTON-ON-MERSEY) writes:—A is the owner of house marked A on enclosed sketch plan, and has received notice from the local authority that they intend to take over the road under the Private Streets Act, 1892. 1st. Is there any need for A to make the road beyond the line of his gable, as shown by dotted line? 2nd. If the road is taken past A's house-top to the boundary fence belonging to B, will B be charged as a frontager for the full width of the road? The surveyor says yes; is this so? In that case, of course, B would have a way out which, as a back door, might be objectionable at A's front. 3rd. If to prevent the latter A and C. plant a plantation and rockery at the end of the road, is the district surveyor justified in charging A not only the frontage of his house but also an added frontage equal to half way across the road (and, of course, C likewise)?"

—The liability of an owner under the Private Street Works Act, 1892, depends *prima facie* on his frontage; but by virtue of S.10, the urban authority may, if they think just, resolve that in settling the apportionment regard shall be had to (a) the greater or less degree of benefit to be derived by any premises from such works; and (b) the amount and value of any work already done by the owners or occupiers of any such premises. They may also include premises which do not "adjoin" or "abut" on the

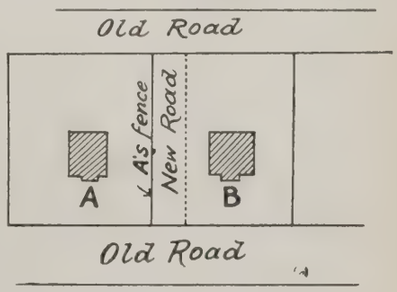


Illustrating first reply to "Bricks & Mortar" (Ashton-on-Mersey).

street, if access to such premises can be obtained from the street, and it will be benefitted thereby. Having regard to this section, A's liability will, of course, be limited to his frontage, whatever that is. It will be the frontage of his property, not of his house. With regard to the question whether he is to be liable is to be settled by the highway authority, it is clear that if a rockery is planted, this would extend A's frontage and make him liable for the repair of the rest of the road.

B.

"BRICKS AND MORTAR" (ASHTON-ON-MERSEY) writes: "Since writing you over road liability another question has arisen on another matter. A. and B each owned houses as indicated on sketch plan enclosed. B pulled his house down and sold, and he cut a road through the land as shown by dotted line right up to the fence, which I believe belongs to A. B has since sold the land to builders, and they have built property facing same. When the Council take over the road will A be charged as a frontager to have to pay half



Illustrating second reply to "Bricks & Mortar" (Ashton-on-Mersey).

the cost? This seems unfair, as the road and property is really detrimental to him."

—This is a purely hypothetical question, and not very easy to answer. It seems, however, that if the local authority take over the street as suggested, there will be nothing to prevent their making an apportionment on A. All his rights under the Act will be open to him. It is unlikely that the authority will take over the road unless it is put into good order by the owner of the building estate.

B.

Hot Air Heater.

H. N. E. (HIGHGATE) writes: "Could you tell me of a good hot-air heater for a room, and if that is a good mode of heating? The idea is to put a hot-air boiler at level of fire and run a fresh air inlet to an outlet from it to the room and back of fire, and so heat same. Is it possible, and would it cost much?"

—All methods of heating heat the air, from which you may conclude it is a good mode of heating. The essential point is that the heating surface be so arranged and placed that it can be easily cleaned. The air pipe from outside should be straight; but if a bend be unavoidable, a manhole or some inspection opening should be made at the bend, so that the air-pipe can be easily cleaned thoroughly in all parts. This cleaning may be needed on the hot-pipe in the chimney once a week or once a quarter, and on the cold-pipe once a month or once a season, according to the smokiness of the district and the dustiness of the place from which the air is drawn. A 4in. cast-iron hot-water pipe may be large enough for your room. To heat the air properly a certain length of journey over the heating surface is needed by the air. A wind of 1½ miles an hour allows the air it blows for a 5ft. plumb journey over fireclay 4ins. thick and sheet iron at the back of a good fire to become 30 degrees C. warmer than when it went in; an 8-mile wind only allows the air to become 10 degrees C. warmer at the most. If cast-iron be used next the coals, "burnt air" will be made, but cast iron in the chimney, where no flame can play on it, will give satisfactory results for a long time. With iron ¼in. or 5-16ths in. thick on pipes 3in. or 4in. bore, one 3in. pipe in a 3in. by 3in. flue, with a 6ft. journey, will warm up to 1,600 cubic ft. of space, and 2 pipes 3in. bore or one 4in. bore in a 3in. by 14in. flue, with an 8ft. journey, will warm up to 2,500 cubic ft. of room. These proportions are more or less, according to the windows, aspect, and other conditions of the room and house.

INGENIOR.

Colouring Concrete Floor.

A. P. (HECKMONDWIKE) writes: "Do you know of any stain that would colour a concrete floor brick-red? The floor has been laid four months. It was mixed with vermilion colour, but this has gradually faded away."

—We do not know of any stain which would permanently colour a concrete floor. Such floors are mostly impervious to water, and any application of colour would not penetrate deeply. The floor could only be coloured on the surface, and if it is desired to secure a permanent colour this could only be effected by hacking off the surface of the old concrete, washing it and thoroughly wetting it, and then applying a new surface coat of cement mortar coloured with red oxide of iron. If pure vermilion was used we could well understand the colour fading, but even with permanent red oxide of iron used with concrete the colour often fades, though perhaps not to any considerable extent. If a very deep colour is required it will be necessary to mix practically pure cement and colour together, namely, one of red oxide of iron, and one of Portland cement.

Calculations in Column Design.

STRUCTURAL (STREATHAM) writes:—"I should be obliged if you would give the calculations necessary in designing a column and bracket to support a crane girder. This subject does not appear to be treated in many text books."

—The column can be calculated for as follows:—

First find the central load, which is equivalent to the eccentric load of 12 tons.

This is given by the formula $W_1 = W\left(1+\frac{x d}{k^2}\right)$

Where x = eccentricity of load in inches,
d^c = distance from centre to extreme edge of section in inches,
k = radius of gyration of section in inches about the axis at right angles to the plane of the paper.

As a trial let us take a 10″ × 6″ × 42lb I beam with one 12″ × ½″ plate riveted at each end.

From the Dorman Long Handbook we see that for this section, Area = 24·35 sq. in. k = 4·72″, d^c = 5·5. Least k = 2·62. Then x = 9 + 5·5 = 14·5.

∴ Equivalent central load $= 12\left(1+\frac{14\cdot5\times5\cdot5}{4\cdot72^2}\right)$

= 57·08 tons.

∴ Total central load = 5 + 57·08 tons = 62·08 tons.

There is some difference of opinion as to how to consider the fixing of the ends in this case; we will take the stanchions as 14ft. long and fixed at one end and free at the other. This may err a little on the safe side.

The buckling factor $= c = \frac{2\times14\times12}{2\cdot62} = 128\cdot5$

∴ Adopting Rankine's formula in the form

$$f_p = \frac{6}{1+\frac{c^2}{6000}}$$ we have

$$f_p = \frac{6}{1+\frac{128\cdot5^2}{6000}} = \frac{6}{3\cdot75} = 1\cdot6$$ tons per sq. in.

∴ Safe central load = 1·6 × 24·35 = 39 tons about.

This section is not quite strong enough.

Next try a section composed of a 10″ × 6″ × 42lb I beam with two 12″ × ½″ plates riveted at each end.

For this section, A = 36·35 sq. in. d = 6″. k = 508″. Least k = 2·92″. ∴ x = 15″.

∴ Equivalent central load $= 12\left(1+\frac{6\times15}{5\cdot08^2}\right)$

= 53·88 tons.

∴ Total central load = 58·88 tons.

$c = \frac{2\times14\times12}{2\cdot92} = 115.$ ∴ $f_{p1} = \frac{6}{1+\frac{115^2}{6000}}$

= 1·87 tons per sq. in.

∴ Safe load = 36·35 × 1·87 = 67·9 tons. This section will do well. The question of the buckling of the web of the bracket is one on which we have practically no simple formula to go upon, and we do not know of any experimental results.

Fig. 1.

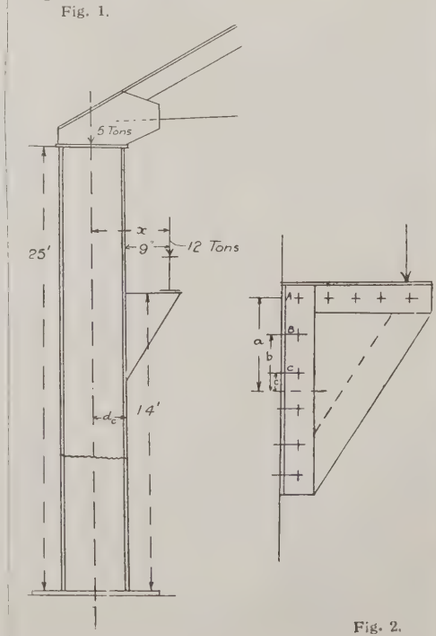


Fig. 2.

Illustrating reply to "Structural" (Streatham).

One rough method which should certainly err on the safe side is to take a length from the end of the bracket equal to ⅛ to ¼ of its length, and to assume the bracket to be an open one, the resolved part of the weight being taken as acting down the inclined portion (shown dotted in Fig. 2), considered as a strut.

Some further information on this point is required.

The tensile stress in the rivets A, B, C (Fig. 2), could be found as follows:—Let a, b, c be their distances from the centre, and A, B, C the loads on the rivets.

Then $C = \frac{Ac}{a}$, $B = \frac{Ab}{a}$ (because stresses are proportional to distance from neutral axis).

Further Aa + Bb + Cc = Moment of Tension component of Moment of Resistance.

= ½ Bending Moment $= \frac{12\times9}{2} = 54$ in. tons in our case.

As an example, take a = 7·5″, b = 4·5″, c = 1·5″.

∴ $C = \frac{A}{5}$, $B = \frac{3A}{5}$.

∴ $A\times7\cdot5 + \frac{3A}{5}\cdot4\cdot5 + \frac{A}{5}1\cdot5 = 54$

∴ 10·5A = 54 ∴ $A = \frac{54}{10\cdot5} = 5\cdot14$ tons.

This is, of course, divided over two rivets, one for each angle.

A.

Exterminating Beetles—Further Answer to "Reader," Hull.

In answer to your querist, if he will freely sprinkle some powdered borax about the crevices from which the beetles are known to come, they will in a very short time disappear from his premises. This is my own experience and that of others who have used the recipe, which, although it is so simple, like the washing in Jordan despised by friend Naaman, your correspondent would find it, as he did, "an absolute cure." Ants and earwigs may also be got rid of by the same treatment.

E.P.M.

Does Hot Water Damage Cement?

J. W. (NOTTINGHAM), writes: "A few years ago I put in a warehouse a large cement wash-up place, formed of 6ins. of good cement concrete and coated on the top with 1½ins. of cement and granite chippings in equal proportions. The work was well done, but has been a constant source of trouble through frequent leakages. My own impression is that the trouble arises from the fact that during the day there is a large glue boiling apparatus and tea boiler with considerable heat and frequent flows of hot water, while at night the whole naturally cools down, thus giving rise to slight contraction and expansion."

—As regards the leakage of concrete due to changes of temperature, in the circumstances cited we think that the fact of the temperature of the concrete and subsequently cooling being raised by a considerable amount, accounts for the leakage. Cracks will develop with only ordinary changes of temperature in concrete surfaces, and very much more considerable trouble has resulted in situations where the concrete is raised by artificial means to high temperature on one side, while the other side is cool, and the conditions cited by our correspondent in which the floor cools down at night no doubt would aggravate the evil. Concrete seems to be about the best material to use in the circumstances, but it must be reinforced against temperature stresses, and the reinforcement would have to be considerable in amount. The best form in which to introduce it would be in a meshwork of rods, wires, or one of the sheet metal reinforcements on the market. In order to ascertain the amount of the reinforcement it would be necessary to know the variations in temperature. It appears as though 1 per cent. of reinforcement would have to be introduced both longitudinally and transversely in the slab.

CONCRETE AND STEEL SECTION
(MONTHLY.)

On Cement Manufacture. At a meeting of the Junior Institution of Engineers on December 15th, 1909, a paper was read by Mr. Harry Horsburgh on "The Design and Running of Modern Cement Works." This was an interesting paper, but it dealt with the manufacture in detail, a subject which has often been referred to in our columns. In the discussion, however, some interesting points were raised, particularly by Mr. D. B. Butler, who referred to the fact that until recently foreign firms seemed to have a monopoly in respect to the manufacture of cement machinery, and the design of cement manufacturing plant, but he held out some hope that the reproach that British firms could not compete in this field was likely to be removed, as a British firm of good repute had at last taken up this most important branch. It is, indeed, remarkable how many industries have been advanced abroad when the pioneer inventions were made in this country. Portland cement is but one instance of a chemical process invented in this country, the manufacture of which has been perfected abroad. The development in cement works construction seems to be advancing on two lines. The Schneider Kiln, which was introduced some years ago to cheapen the cost of production, had a severe setback when the rotatory process of cement making achieved success. But now improvements have been introduced whereby the Schneider kiln can be operated continuously, so that as the chemical action is exactly the same, by proper attention to the burning, as good a cement can be produced by the one process as by the other. There is considerable difference of opinion at the present time among advocates of these two kilns as to which are the cheapest to operate, it being claimed upon the one hand that the rotatory kiln produces the more uniform quality of clinker, and is more economical in operation, while the advocates of the continuously operated Schneider kiln think that the cost of upkeep and repairs is much less than in the other process, while the quality of the clinker is simply a question of care in the burning, and it is claimed that rotatory kilns are not so profitable unless a mill contains several of them, so as to allow for some being stopped by break-downs and for repairs. The consumer, however, is not so much interested in the matter at present, but buys his cement in the cheapest market, and at the present time cement is very cheap, so much so that it seems difficult for firms to make a substantial profit. The cost of fitting up a complete cement factory is large, and the return on the capital outlay is small.

Mr. William Gilbert, M.I.C.E., in the discussion at the Junior Institution of Engineers, also referred to another important matter, the type of store for cement. He pointed out that formerly brick walls were mostly used, but that the lateral pressure of the cement induced a bending moment in the walls, which brickwork was not well adapted to withstand unless heavily reinforced by tie-rods. Consequently, a type of store had been introduced in which a kind of culvert was formed in the ground leading to a passage discharging automatically into a passageway below, like as a hopper. In this case a considerable portion of the cement was against the ground, which resisted the pressure. Now, however, with the advent of reinforced concrete, silos are being built to serve as cement stores. Mr. Butler referred to some which were circular and 40ft. in diameter, and held 1,500 tons of cement each. These silos had conical hopper bottoms, so that they would empty themselves completely, thus doing away with all manual labour, and he cited that a saving of 3d. per ton was effected in this way. Reinforced concrete is a material particularly adapted to the construction of silos for containing materials of all kinds, and cement is not at all a difficult material to deal with. In the United States reinforced concrete stores are built for grain, seed, ore, and cement, while the many water-tanks that are being constructed of the material, are, in a practical sense, silos for the holding of water. As regards the economy effected by automatic hoppers for cement, however, there seems to be more than a little doubt, because both the author of the paper and Mr. G. B. Maxted, in the discussion, thought that perhaps the best store, from all points of view, was simply a shed to protect the cement against the weather. It is much cheaper in first cost, and it was thought that the return on the capital outlay involved in the building of stores and in the automatic packing and loading appliances was not justified by the result of the saving in operating. The cost of shovelling the cement by a gang of men was hard to beat for economy.

Water Tanks. The design of elevated water tanks is by no means so simple as it appears. A number of tanks that have been constructed of the material have shown signs of leakage, and, in a few cases, the leakage has been very considerable, so as to render the tank partly useless or extremely wasteful. In a square tank the pressure of the water induces bending moments, and this causes deflection. At the same time the floor and cover of the tank are deflecting in another direction, and these deflections are also increased possibly by temperature changes, and the net result is that series of complicated internal stresses are set up which results more often than not in cracks, which may or may not be serious. The most approved form of tank seems to be the circular one, in which the pressure of the water, being the same in all directions, and pressing uniformly on all sides, only induces tension in the sustaining members and does not put anw direct bending moment into the construction. There are, however, other difficulties which complicate the problem, because we find that the walls being stressed, must expand, whereas the stresses on the cover and bottom of the tank tend to cause them to contract. This necessitates various precautions being taken in the design, and provision must be made for temperature stresses. These latter, to a great extent, have been ignored by designers in the past, but their great importance has been realised, though in most water-tanks they are not perhaps of so great moment as in some other structures. The cracks in water tanks that are sometimes described to this cause are more often due to complicated internal stresses produced by the deflections inducting contraction and expansion at various parts, tending, as it were, to tear one part from the other. However, success has been obtained in the building of reinforced water towers, and it only requires a close analysis of the problem to obtain equally good results in the future. The problem, as we have said, is not so easy as it may appear at first sight, and the design of such structures should be given into the hands of those who are specialists in such matters, and are prepared to guarantee the efficiency of their constructions.

Responsibility for Public Buildings. Fire-risks at the Royal Albert Hall were under discussion at a recent meeting of the London County Council, when Mr. Stuart Sankey asked the chairman of the Theatres and Music Halls Committee what was being done in the matter of the Albert Hall. It had been referred to that Committee some time ago to report upon the steps taken for the protection of the public from fire when entertainments were being held in that building. In reply, Mr. H. J. Greenwood, the chairman of the Committee, said that the Chief Officer of the Fire Brigade had been instructed to report upon the arrangements, but the secretary of the Albert Hall had declined to afford facilities, on the ground that the hall did not come within the Council's jurisdiction. The Committee was endeavouring to ascertain whether the premises were used for the perforamance of stage plays, and whether action could be taken on that ground. That the enquiry should have been necessary, and that the answer to it should have been so unsatisfactory, is surely a curious reflection on the casual methods of public bodies. The London County Council does not seem to know its position in the matter; and if that is the case with respect to the Albert Hall, the uncertainty may very possibly apply to other buildings that, while certainly within the Council's area, are very doubtfully within its jurisdiction. The sooner these recondite mysteries are cleared up, the sooner will the public feel assured that all necessary steps have been taken to ensure the utmost immunity from fire dangers. Who is responsible for the safeguarding of the Albert Hall? This surely ought not to remain a moot point, and the London County Council should take prompt steps to ascertain quite definitely its responsibilities with respect to this and any other buildings about which there is the least doubt.

Reinforced Concrete Chimneys. On Thursday, January 20th, that young and enterprising society, the Concrete Institute, discussed in lively fashion the question of "Reinforced Concrete Chimney Construction." The paper was read by Mr. E. R. Mathews, and the discussion was carried on by various members who had had very varied experience in the building and in the use of such chimneys. According to the experience of some, no cracks appear on the outside of the shaft, but serious ones develope on the inside. According to others, hair-cracks only can be found on the inside, but those on the outside are 1-16th in. and more wide. The antagonism between the champions of "wet" and "dry" mixing is sturdily maintained. The beliefs concerning the effects of heat are not so decidedly and sharply contrary, because they appear to be all vague and hesitating. The appreciation of the mathematics of reinforced concrete stresses is on the wane, but there still exist those who have faith in, and apply, some portions of these mathematics.

Taking these items in the reverse order, let us in the first place express emphatically our horror of the scrambulous screeds of half-yard-long algebraic formulas, which cover so many pages of the books and pamphlets issued upon reinforced concrete work. May our readers rest assured in the peaceful conviction that these amazing dialectics have no other use than that of frightening customers into the mistaken belief that they cannot use reinforced concrete successfully without them. Such formulæ have no relation with reason, and still less with experience. It should be understood that it is improper to apply mathematics to any branch of engineering before that stage is reached in which we have a fair knowledge of the physical facts. This stage has hardly been reached in the use of reinforced concrete, especially as exposed to high temperatures. The more complex the physical stresses, so long as we have no full experimental knowledge of them, the more simple ought to be the mathematics applied to their

practical calculation, and the more freely should the roughly approximate character of the calculations be acknowledged. From the point of view of rational expression of real physical knowledge, nothing could exceed in extravagant absurdity the long and complicated formulas, which are at present put forward.

Next, as regard the effects of heat. Throughout the above interesting discussion, attention seemed to be wholly concentrated on expansions and contractions following variations of temperature, and on differences of temperature-expansion co-efficients of steel and concrete. We would suggest that the effects of heat are two-fold; firstly, those of drying and baking, and, secondly, those of temporary change of dimensions. The former is evidently the more important, and the accompanying contractions and distortions continue over very prolonged periods. Open air drying at atmospheric temperature is quite as much a heat effect as a baking at high temperatures; and the considerable accumulation of experience over many years of such low-temperature setting, ought to be the guide in newer investigations of the behaviour of the material when exposed to flue and furnace heats. The condition of good setting under low temperature is well known to be quietude, that is, absence of violent alternating changes of condition, whether of heat or of other kinds. Any frequent alteration of extreme conditions cannot but lead to disintegration. If the process of baking to a condition suitable to resist deleterious effects of furnace and chimney temperatures be required to be hurried up, it appears to be essential to exercise extreme and unremitting care to avoid any rapid change of temperature or other external condition during the process.

As to the stresses arising under load, which stresses the reinforced concrete expert heroically perists in calling "strains" (although the use of the word strain in this sense has been banished entirely many ages ago from all scientific engineering phraseology) one of the eccentricities of the normal calculations is the violently impossible "supposition" that all the tensions are taken by the steel while no tension comes on the concrete. When the writer once pointed out the physical impossibility of this, so long as the steel and concrete were well bonded together, the reply of the expert was to the effect that the hair-cracks in the concrete prevented it transmitting any pull. Thus it appears that in order to obey the behests of the experts the concrete must crack itself in innumerable sections! It might be within the limits of reason to "suppose" that the pulls exerted by the concrete are negligible in amount so far as regards their effectiveness in withstanding external loads, although this is not the actual fact within the easily attainable limits of accuracy in calculation; but as regards the safety of the concrete itself against fracture, nothing is more certain than that, if the two be efficiently bonded, the steel and concrete are stretched in the same geometrical ratio and that therefore they are stressed in proportion to their respective moduli of tensive elasticity. The steel must not be stressed more than corresponds to a strains in both, which involves in the concrete a stress safe for that material. Otherwise the concrete will be fractured. If it be fractured, of what use is it? Why not do without it altogether? It is such silly theory as this that is embodied (with frequent algebraic mistakes) in terrifying, if not imposing, pages of theory in the text-books, etc. It ought to be a matter of British pride that all this claptrap is an importation from abroad.

It having been experimentally demonstrated that alternations of temperature reaching as high as 800 degrees or 900 degrees F. act destructively by a disintegrating process upon reinforced concrete, the theorists console themselves by "supposing" that chimney temperatures do not exceed 500 degrees or 600 degrees F. Why not "suppose" the actual act that they seldom fall below this limit, and frequently very greatly exceed it; and, basing upon this reasonable supposition, apply themselves to discovering a quality of reinforced concrete that will not be harmed by exposure to alternations of temperature between 60 degrees and 120 degrees F.?

We will conclude with a suggestion deduced from observation of the history of the use of combinations of steel and concrete in the building of houses. It appears probable that the only satisfactory solution of the chimney problem is to build a properly braced and riveted skeleton chimney in steel bars, and then to fill this in with concrete of such dimensions and of such quality as will ensure that the concrete will in its straining yield to and be governed by the steel framing. If such a structure be possible under the heat conditions, and if it be well designed for its specific duties, it will have many advantages, among which will be less area of surface exposure to wind pressures, superior elasticity in the inevitable swaying under wind pressure, less weight to impose upon its foundation, facility in designing for weight stability (which will depend chiefly upon the amount of concrete), independently of strength (which will depend chiefly upon the steel frame), and great facility in spreading the base (without material increase of wind pressure moment), so as to suit any specified character of the available foundation.

LEGISLATIVE BUILDINGS, SASKATCHEWAN, CANADA.

The Office of Works for the Province of Saskatchewan are busily engaged in completing the details involved in the construction of a new block of Parliament Buildings, at a cost of about £300,000 and some particulars in connection therewith may be of interest. The building, as will be seen from the photograph, is four stories in height, 700ft. long by 70ft. wide, and one of its features is a dome 185ft. in height by 50ft. in diameter. It is of skeleton type, and is constructed throughout in reinforced concrete, Kahn reinforcement being used: the facades are faced with ornamental stone panels. The value of the reinforced concrete work was £60,000, and the contractors, Messrs. P. Lyall and Sons, were congratulated upon the speed of construction. Their work was started in April, 1909, and completed by November, 1909. The American method of construction was followed, and the following illustration shows the towers and elevators lifting the concrete in tubs, which in turn were emptied into two wheeled barrows holding a third of a yard cube. A test was made last month upon one of the beams, having a span of 27ft. and with a load of 40 tons, the deflection was only ⅛ of 1in., which finally went back to 1-16th of 1in. after the test load was removed. The designs were prepared by the Trussed Concrete Steel Co., and the construction supervised by Mr. A. Wilson.

RAPID AND EASY DIAGRAM OF MAXIMUM STRESSES: FAILURE BY SHEAR, PLASTIC AND ELASTIC.

By Professor Robert H. Smith.

(Concluded.)

Again, the commonest notion of perfect elasticity is the maintenance of constant linear proportion between stress and strain, the modulus or ratio being called E. But every one who has made engineering tests of material knows that if a bar is pulled out a little beyond the yield point and then relieved of the pull, its recoil will be represented by a straight line on the diagram, as in Fig. 5, and that, if load be again applied, it will go up again along this same straight

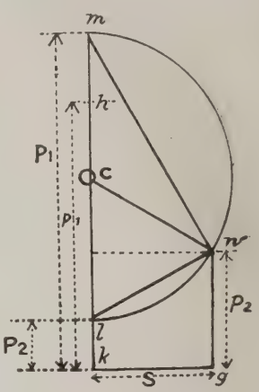


Fig. 4.—Professor Smith has detected a slight error in this figure as given in our issue for January 5th: the diagram, amended, is here repeated.

line. It has been strained beyond the elastic limit, and yet it is still "perfectly elastic." It has attained to a new "perfect elasticity," which is, indeed, more "perfect" than the last, because the new yield point is now considerably higher than the old one. Moreover, it has very commonly now a higher modulus, E, the new straight line being steeper than the previous one. Surely these results are anomalous according to the orthodox theory of elasticity. With most of our materials this process can be repeated many times, each repetition raising the yield point, and often raising the modulus E. We are all familiar with many other ways of raising both E and the yield point, all depending upon some mode of "overstraining."

Thermal Elastic Conditions.

Again, compare this "solid" modulus E with those we invariably use for gases. The one is for linear strain and the other is for bulk strain, but this is not the contrast to



LEGISLATIVE BUILDINGS, SASKATCHEWAN, CANADA: VIEW OF ONE OF THE FLOORS.



General view.



Detail view of centre portion, showing towers for elevating material.

LEGISLATIVE BUILDINGS, SASKATCHEWAN, CANADA.

be now referred to: there is a "Bulk Modulus B" for elastic solids which can easily be calculated in terms of E and η. But the gas elastic modulus entirely depends upon the thermal conditions of expansion: there are an "isothermal," and an "adiabatic," and an "isodynamic" modulus, and, in fact, as many moduli as there may be different expansion curves determined by the infinitely variable surrounding thermal conditions. Yet in the elastic theory of solids no account whatever is taken of the thermal conditions regulating heating or cooling during the process of straining. Everyone knows that if a piece of metal is much strained quickly it becomes heated, while if the straining is so slow as to give opportunity for the dissipation of the heat, it may remain uniformly at atmospheric temperature. Is it not irrational to expect to find the same solid modulus E under such different conditions? The heat generated by the straining of solids has never been measured in any set of published experiments. Not even any proposal to measure it has been publicly made.

It may be instructive to compare solids with fluids in this respect. Heat is developed in both solids and gases during compression, and during expansion from the compressed condition heat is lost by both. In both mechanical work is done by external bodies upon the body being compressed, and during release from compression the body does work upon external bodies. In a gas, so long as it remains gas, and is not frozen to the solid state, no tension is possible; but in solids heat is generated by extension, and given out again during recovery from the extension. Whether solid or liquid or gas, heat is generated by forcible departure from the unstrained condition, i.e., when external mechanical work is done on the strained material. There is here no contrast between the thermodynamic laws of solids and fluids. Thus the contrast in their behaviour arises solely from the absence of rigidity, that is, absence of possibility of shear stress in the one case, and its presence in the other. It might be objected that in fluids we have necessarily three *equal* principal stresses, while in solids these principal stresses may be unequal. But this means exactly the same thing as above: there is no shear stress because the principal stresses are equal. When the principal stresses are unequal there is necessarily shear stress.

Viscosity and Plasticity.

Intermediate between gases and solids we have viscous liquids. Here we have viscous resistance to *differences of velocity of flow*, and the co-efficient of viscosity corresponds in certain respects to the modulus G of shear elasticity. The contrast between the two is that the viscous modulus refers to differences of *velocity*; while G refers to differences of *position*. In other words, the former takes into account the *time* element, while the latter does not. All theoretical and practical calculations about viscous flow are based upon *time-rates*. In ordinary elastic theory time-rates count for nothing.

Now there exists no sharp line of demarcation between viscous fluids and plastic solids. Clay and mud belong to the one or the other class, according to the percentage of water in them. The theoretical demarcation between the two lies in the definition of a viscous fluid as one in which a shear stress of however small amount will produce fluid flow. But there are some clays and muds and soft metals which quite certainly belong to this class of viscous liquids, but which would require twenty years of careful watching and exact measurement to enable us to detect the flow. Therefore, it is probably correct to say that there is actually no practical distinction except one of degree between viscous fluids and plastic solids.

Again, nearly all our engineering materials, except glass and hard cast iron, have various small and large degrees of plasticity under sufficient stress.



Detail view of floor test. Load 40 tons.

LEGISLATIVE BUILDINGS, SASKATCHEWAN, CANADA.

Limit Constituting Failure.

Now the important debate that is attracting just now the serious attention of scientific engineers is as to *failure* under shear and other stresses. The limit constituting failure is variously defined. Sometimes the "yield point" is taken, sometimes the "elastic limit," sometimes total fracture, to determine failure. Those who insist most strongly on distinction between yield point and elastic limit are also most careful to avoid explaining what they mean by elastic limit; and we have shown above that the yield point of each specimen may be low or high, according to the past history of the treatment of the piece. In every case it is quite clear that the "failure" dealt with occurs in a condition in which the plastic qualities of the material have already begun to play an important part, and in which its elastic qualities no longer govern the result.

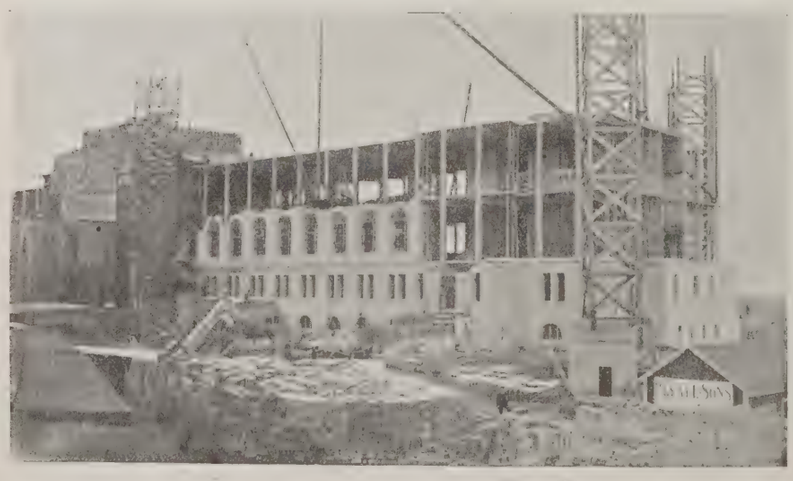
The Time Element Essential.

This being so, the present writer maintains that no really scientific solution of this problem is possible without taking into account the *time-element*, and also the thermal conditions. Unfortunately the thermodynamics of solids have been completely neglected by the writers of thermodynamic treatises. No completely satisfactory theory of the failure and safety of ordinary constructional engineering materials can ever be framed without basing it on the rational thermodynamics of semi-elastic, semi-plastic substance. It is no part of our proposal to attempt this task in this article. It would need a long and learned treatise to do so successfully, and before this could be written much further experimental work is required. Our object is limited to the demonstration that this subject cannot be fully understood without applying to it the consideration of *time rates*.

'Past History" of Materials.

There is no practical man who has had much to do with the skilled use of metals, who will not freely admit that the quality of any piece of metal depends largely upon its "*past history*." What is history? It is the succession in *time* of past events.

The ordinary patterns of testing machine, and the ordinary methods of test, are altogether unsuited to render visible the time-effects of stress. Since extensive specification-tests have become the fashion, it has been commercially necessary to reduce to the lowest limit the cost of testing each sample.



View showing building of masonry walls.

LEGISLATIVE BUILDINGS, SASKATCHEWAN, CANADA.

Since the testing machine used is expensive, and the personnel of the testing-room must be high-class, it becomes necessary to spend the minimum of time over each test. Even in the college-laboratory there are so many students who have the right to the opportunity of making tests that each test must not occupy much time.

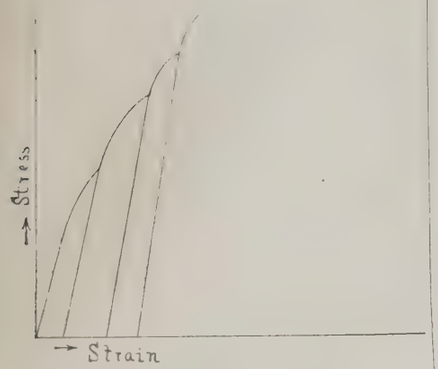


Fig. 5.

The Time Rate in Tests.

The "rule" which governs the "time-rate" in the ordinary test is to "set the pump going, and to keep the lever floating." This produces an entirely artificial time-rate of increase of strain, and increase of load which depends mostly upon the speed and capacity of the pump, the "give" of its connections with the ram and its barrel, and the leakage at the various joints, and to a less but still quite arbitrary, extent upon the section and quality of the test specimen.

The present writer was for several years in charge of a small, slow-working testing-machine in which the straining was operated by a screw and worm gearing, the speed being under control, and in which the load was measured by a set of powerful springs, there being no need to keep any lever floating in order to obtain a continuous true reading of the load. The tests were necessarily tedious, but they gave a surprising amount of generally unknown information upon the time-effects. For extremely small stresses, no doubt there is a definite constant ratio between stress and strain, and on total removal of the stress there is a total disappearance of the strain. But if the straining be very slow the limit beyond which the strain does not wholly disappear when the specimen is relieved of load, is very low; and moreover, this strain disappears quite slowly. Again, under any considerable stress, but far below the "yield point" as revealed by the ordinary testing machines, the ratio of stress to strain depends upon the time-rate of straining; if this ratio be called E, then E is less with slower straining. Moreover, the full strain develops slowly. The stress-strain curve starts up a straight line, and soon deviates from this in the direction of greater proportion of strain to stress; but *the initial straight line is steeper the greater the speed of straining*, and the curving away from the straight line is gradual, and does not indicate any sudden definite yield point, such as is indicated by the sudden break in the diagram taken from any ordinary lever-testing machine worked at the ordinary high speed.

An Instructive Experiment.

One instructive form of experiment which shows the time-effect very clearly, is to run up to a considerable stress, and then leave the test-piece under load for a long time. In a rough way this experiment is often made with a lever machine; in a very short time the lever falls on its lower stop, and, unless the weight is rolled back on the lever, so as to reduce the load and keep the lever floating, no further record is obtainable. With the above-mentioned machine, the apparatus could be left alone for 24 hours, or for several days (in some cases it was left over a whole

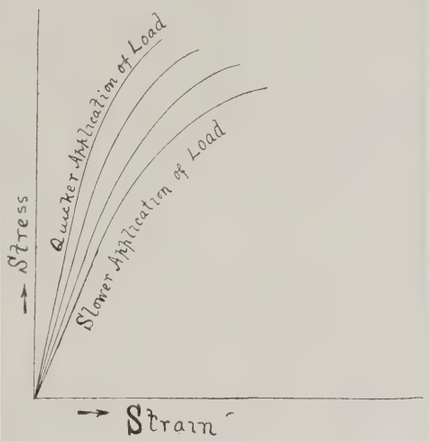


Fig. 6.

week, in order to complete the observation) with the loading automatically maintained—not at the first sustained load, but at a gradually decreasing load as the stretching progressed in time.

The character of these results is shown in Figs. 6 and 7. In these the strain differences between the curves is exaggerated, in order to make them easily visible on small scale diagrams.

The Outcome of these Observations

is to show very clearly that in all forms of rolled iron and steel, and probably in all metals used in engineering, except hard cast iron and glass, the total strain under any but extremely light loads is the sum of two parts; one which develops very quickly in linear proportion to the increasing load, and a second which takes considerable time to develop its full amount.

A fact that few would expect beforehand is that most timbers exhibit the same kinds of time-effects as do these metals. No testing machine, and no process of actual construction or building, ever puts the full load on *instantaneously*. We can, therefore, never have the opportunity of finding out whether the first part of the strain follows *instantaneously* the increase of the load. If it does, it would probably be fully entitled to the description of a "perfectly elastic" strain. The present writer cannot conceive of any experimental method by which this question could be definitely settled. Heavy loads can be applied with great suddenness both by impact, and by explosion in enclosed vessels; and it is easily conceivable that with sufficient refinement of strain-measuring apparatus the momentary strains accompanying such sudden application of load could be ascertained without very large error. But all such applications of load are inevitably accompanied by *dynamic effects*, which completely alter the distribution of stress and strain from that postulated in the theory of *static* elasticity.

Time Stretching.

In the experiments indicated in Fig. 7, the continued time-stretching of the specimens involved shortening of the springs whereby the load was applied and, therefore, time-decrease of load.

In each case represented, the curve stops short at a definite point, showing a final equilibrium between the lessening load and the increasing strain, an equilibrium not disturbed by any prolongation, however great, of the application of the load.

But if the first load be above a certain limit this equilibrium is never reached. The plastic strain increases at first very slowly; then still more slowly; then, after the time has reached a certain limit, at an increasing time-rate, which eventually becomes rapid and leads to total failure, either by fracture, or by excessive permanent elongation. The higher the first load, the sooner will be reached the turning point from slow primitive stretching to rapid final stretching.

Fig. 8 exhibits, essentially the same phenomenon under another form of experimental procedure. Here the series of curves correspond to successively higher loads applied so that there is no drop in the load before the end of the curve is reached. In these diagrams the vertical ordinate is strain, and the horizontal *time*. Prof. Perry has suggested that these curves have mathematically a logarithmic form, and has compared them to the leakage curves through an electric insulator. In each curve the load is increased at a moderate rate, until plastic strain is evidenced, after

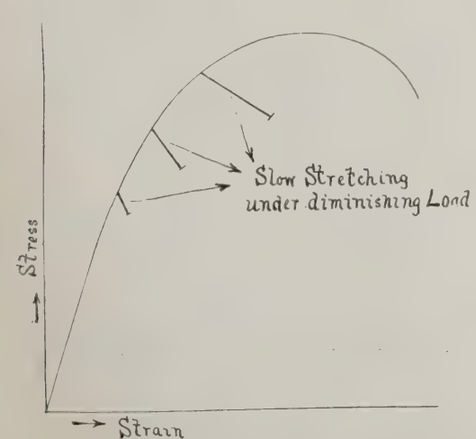


Fig. 7.

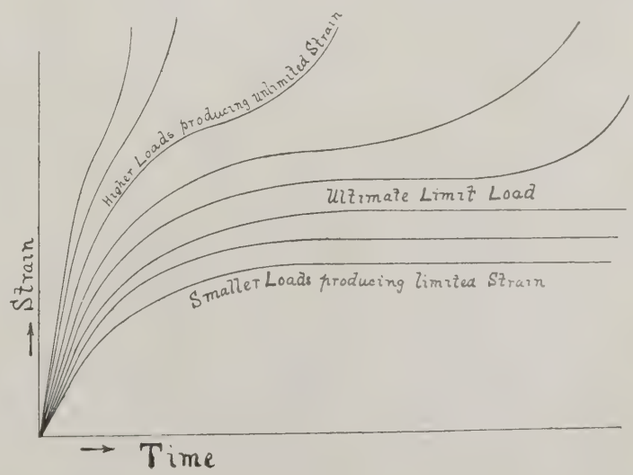


Fig. 8.

which the load is kept constant (wherein the conditions differ from those of Fig. 6). Under this constant load the strain increases at a time-rate which gradually slows down until it reaches zero, beyond which the remainder of the curve is a horizontal straight line, no further increase of strain occurring. This horizontal line lies higher for each greater load. The reason of this slowing down of the progress of plastic straining and its eventual stoppage is that the *time-effect* of the long-continued stress (possibly really the re-arrangement of molecular structure under plastic straining) is the gradual *hardening* of the material: its further plasticity is eliminated. But at a certain limit of load, after continuing along the horizontal line for some considerable time, *which may be several weeks or even months*, the diagram again begins to move upwards in a curve that becomes steeper and steeper as time elapses, until it eventually ends in complete failure by fracture. With still higher load the diagram has a shorter length of horizontal line (shorter time); it turns up at an earlier date. But no load which shows at any period this upturning, fails to lead to ultimate failure if the material be homogeneous. The writer has observed a few cases in which there has occurred a second stoppage of increase of strain; but he has always thought that this indicates want of homogeneity. This occurs frequently in tests of timber. With still higher loads the horizontal part disappears entirely, leaving a curious S-shaped curve. As the load applied is made higher and higher, this S-shaped curve becomes flatter, until eventually it straightens out into an approximately straight line, the line becoming steeper with further increase of load.

The limit between the load which gives the highest horizontal line which *never* turns up and the lowest load which eventually results in such up-turning, is clearly a limit of immense physical importance as regards this class of material. It is to be desired that numerous experiments should be made to discover this limit for various qualities of our different structural materials. Below that limit the material is of practical use, although it may be unsuitable (so loaded) for very many purposes. Above it the material can be of no structural use.

Elastic-Plastic Solids and Viscous Fluid.

The phenomenon of this limit is also of great physical interest as showing the difference between an elastic-plastic solid and a viscous fluid. With a viscous fluid there is no such limiting strain, however small the load. For viscous fluids, according to the common belief of physicists, the time-strain diagram is always a straight line without limit, the slope of the line being proportional to the load or stress, which is here a simple shear stress. The greatest load for a solid which yields a horizontal straight line that never turns up, may be taken as a measure of the distance in point of quality from the condition of fluidity; that is, a measure of the solidity as contrasted with fluidity. In the viscous fluid no shear stress can ever exist which is not determined by a *time-rate*: in a solid there still remains static and permanent shear stress independent of time, after all its plasticity has been exhausted and eliminated.

The initial part of this limiting diagram for a solid is evidently largely influenced by the elastic quality. The latter part is chiefly determined by the plastic quality of the test-piece; that is by the break down of its *Rigidity*. The Rigidity, as is well known, depends upon shear stress and strain; in fact, the modulus of shear elasticity G is generally called by scientists the Modulus of Rigidity.

The flow of a viscous fluid does not necessarily result in rupture of any part of the fluid; it does so only when the cross-sectional variation of velocity is so great as to produce eddies or spraying. A close examination of the physical reasons why it does not so, and comparison with those why excessive shear strain in solids does result in rupture, may lead to an understanding of the conditions under which solids fail by shear and those under which they fail by tension or compression. The writer's idea is that under certain limits of ratio of normal strain to shear strain the failure is by shear, and that beyond these limits the failure is by normal stress; and that this limiting ratio depends in some way upon the *degree of solidity* defined as above suggested. But so far this opinion is speculation unconfirmed by direct experimental evidence. Very probably also there is no abrupt passage from the one to the other condition.

Finally, it is instructive to note that normal stresses such as produce no shear do not change the molecular arrangement or pattern of the material; they change only the linear scale of this pattern, enlarging or contracting it. Change of molecular pattern is produced solely by shear strain.

Note.—This article will be followed at an early date by one giving the application of the new shear-failure theory to the Design of Beams; and giving also the the 3-dimensional or solid diagram for calculation of principal stresses and maximum shears.

ADJUSTABLE CENTERING.

We have before called attention in these columns to the great expense there is in centering work in the building trade, particularly in connection with reinforced concrete, and we have suggested that inventors should turn their attention to this subject, feeling sure that there are many improvements that might be made upon existing methods. We are therefore pleased to welcome an invention in connection with centering generally that holds out great promise. Though it may not be of universal application, it can be used for most purposes, and undoubtedly overcomes the considerable difficulties in connection with arched centers. This invention is the patent of Mr. H. E. Harwood, of Hay Green, Stourbridge.

We all know that the construction of centers is an important item in every-day building construction, chiefly indeed, for stone and brick. They are also required constantly in connection with reinforced concrete and plain concrete construction, such as in sewers, culverts, bridges, etc. Some attempts have been made to devise centers for such purposes, in which steel sheets could be bent so as to alter their curvature, but, such means did not provide sufficient latitude, nor did it give a true curvature. This invention of Mr. Harwood, however, seems to provide theoretically true centers with practical efficiency. His center consists briefly of a series of bars that can be bolted together to give roughly the outline desired, together with a number of lagging pieces that can be adjusted within the bars to take the exact curvature desired, and can be fixed roughly in position by being clamped by the before-mentioned bars by means of bolts passing through same. The lagging pieces are indeed pushed in or out of these clamping irons; that, in short, is the secret of the construction, and it is obvious that it possesses the advantages of wide adaptability and gives the exact curvature required. To increase the span is simply a matter of adding sections of the bars and laggings. In centers of wide span tie-bars are necessary to strengthen the centering against spreading.



Fig. 1.

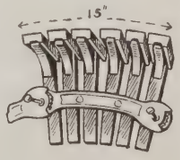


Fig. 2.

We may now proceed to a more detailed description of the centering. The binding bars or plates can be attached at the ends to foot pieces, these latter being shown in Fig. 1. These bars have toothed clutch joints at their ends, which hold them in position. Within the bars or plates are inserted the laggings, which have heads measuring 3½ ins. or 7 ins. The shape of the lagging is a T. The 3½ in. lagging is suitable for 4½ in. and 9 in. brickwork, and a 7 in. lagging is suitable for 9 in. and 14 in. brickwork. If a greater width of soffit is required, two or more centers may be connected side by side with bolts and distance pieces.

The means of giving the centering its exact contour is to set out the outline of the intended arch upon a boarded floor, and mark another line 5 ins. inside the arch line. The plates or bars (Fig. 2) are then arranged roughly round the inner line, and the laggings pushed down below the line of the intended arch. A special flexible strip of steel with pins on it, as shown in Fig. 3, is then stuck in the boarded floor to the exact curve of the arch. This provides a stop to which the laggings are pushed with the hand. When they are all exactly touching the nuts on the 2 in. bolts inserted in the joints of the bars are then screwed down tightly. If there is a key-stone in the arch just one or two laggings where these occur are pushed down to allow for it. The centering is now ready for use, but if it is of rather a wide span, then a tie is added, as shown in Figs. 4 and 5. Arches in reveal will require two centers with laggings corresponding to the soffits.

It will be obvious that such a centering cannot be so cheap to construct as ordinary centers, but, though it is more expensive in first cost, amounting to perhaps five or seven times as much as an ordinary center for any particular span, these centers of Mr. Harwood can be coupled up to make any span and any curve, and can be thus used over and over again; indeed, it is computed by their inventor that their life would be about 10 years of frequent use, that is to say, they could be used over a thousand times, and that such service could well be expected in an ordinary builder's practice. It is clearly to be seen that the initial outlay could easily be saved on a single contract. Such centers might always be kept in stock by all builders, as they should effect considerable economy in the execution of work.

Among the advantages of this form of centering we may mention that these centers take up very little room. For instance, a 10 ft. semicircular center when it leaves the works is packed in a case measuring 3 ft. 7in. long by 2ft. 4in. wide by 1ft. 4in. high, these being the outside dimensions of the case.

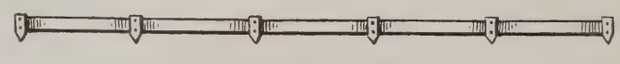


Fig. 3.



Fig. 4.

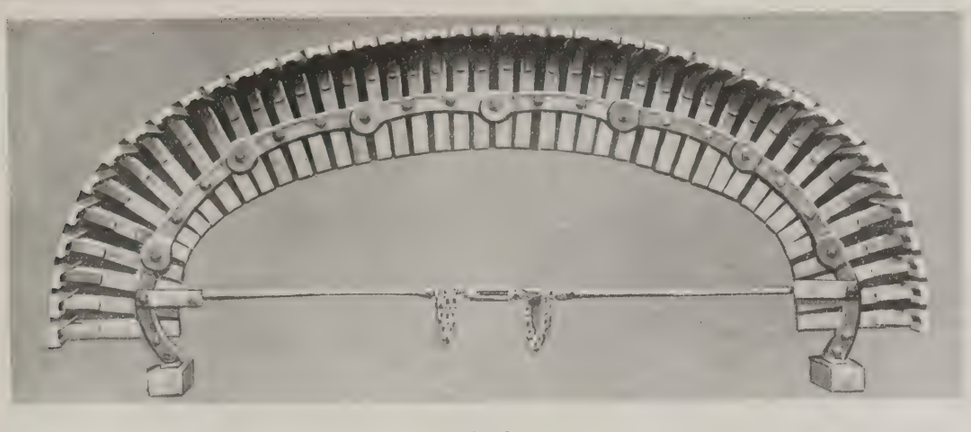


Fig. 5.

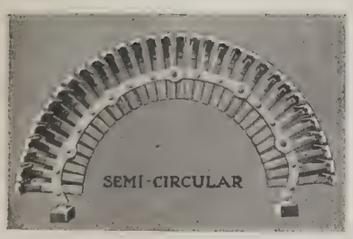


Fig. 6.

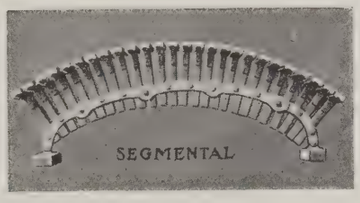


Fig. 7.



Fig. 8.

Figures 6 to 9 show how Mr. Harwood's centering may be adapted to arches of any form, either semicircular, segmental, elliptical, Gothic, or other curvature. The manner in which these are applied to the construction of fire-proof flooring with brick arches between arched steel joists is shown in Fig. 10. In this case some special hangers are used of the form shown. When used in conjunction with the hangers the height of the centering from the underside of the foot to the springing should be arranged so that no packing is necessary. In order to collapse such a centering it is only necessary to take out the bolt that secures the foot, and to withdraw the foot-piece. The centers in such a situation can be spaced about 5 ft. apart, and boards, as shown, are placed to the span between. In such a case the laggings, with 3½in. heads are as suitable as those of a larger size.

The before-mentioned illustration shows these same hangers being used for flat concrete floors. There is nothing very special about this arrangement, but it just shows that they can be used for other purposes than merely sustaining the arch centers, so that it is not necessary to have two stocks of hangers for these two purposes. These hangers are made of steel, and fit any flange of joist that may be used in practice. To draw these hangers when the concrete is properly set, it is only necessary to cut away just a little of the concrete, so as to allow one-half of the hanger to slide out. This would be facilitated considerably by placing a small piece of paper over the part of the hanger that is embedded in the concrete, or the hanger may be greased, either of which methods would prevent the concrete adhering to the steel. In the case of a brick arch, the removal of the hanger is simple, as the brick has only to be cut at the bearing on the flange of the joist over the hanger. It will be seen that Mr. Harwood's centering can easily be adapted to the construction of sewers, culverts, arches in reinforced concrete. The laggings are adjusted to the curve, and boards placed on them, as shown in Fig. 10, to retain the concrete.

The centering has been adapted to forming casings for concrete columns, also for the use of fibrous plaster manufacturers.



Fig. 9.

At the annual meeting of the British Uralite Company the chairman announced that the sales of the company's materials had increased by 21 per cent. during the period July 1st to December 31st, 1909.

* * *

Mr. R. A. Briggs, F.R.I.B.A., has taken into partnership Mr. Harry Le C. Browning, a former pupil. The style of the firm is "R. A. Briggs and Browning," and the practice will be carried on as heretofore at Amberley House, 12, Norfolk Street, Strand, W.C. Telephone, 813 Central. Telegrams, "Ambling, London."

* * *

The additions to the Commercial Travellers' Schools, Pinner, are being warmed and ventilated by means of Shorland's patent Manchester stoves, and Manchester grates, supplied by Messrs. E. H. Shorland and Brother, of Failsworth, Manchester.

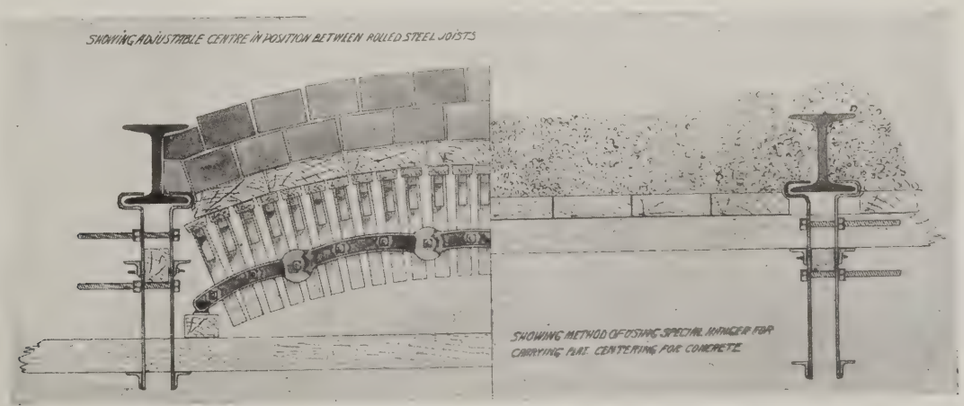


Fig. 10.

THE GUILD OF ARCHITECTS' ASSISTANTS.

A year ago an informal meeting of architects' assistants was held in London to discuss the possibility of forming a guild of assistant architects for the purpose of promoting and maintaining the interests of assistants. A provisional committee was appointed to draw up a scheme and report on the matter. This was done, and a meeting was held on Tuesday evening, January 25th, at the Bedford Hotel, Tottenham Court Road, London, to receive that report, and to form a central body of the guild, etc. Mr. R. Weir Schultz occupied the chair, and among others present were: Messrs. A. J. Penty, Herbert Cox, W. Fullerton, E. J. Dixon (hon. secretary), H. C. Bishop, A.R.I.B.A., F. F. Monro Wilson, M.S.A., Gerald Large, P.A.S.I., T. H. B. Scott, and others.

The Chairman having opened the meeting.

The Hon. Secretary read letters of regret at absence from Mr Smith, Mr Max Clarke, etc. Continuing, he stated that on February 25th of last year the provisional committee was appointed to consider certain proposals in relation to the Guild. They had made their report which he would read to the meeting. A branch of the Guild had been formed at Cardiff with some 45 members, and had proved most successful. A number of leaflets had been issued setting out the objects of the Guild, and some criticisms had been received on the grounds that the principles of the organisation were somewhat too closely allied to those of trade unionism, also objections had been taken to the amount of the subscriptions, etc. As to the subscription, remarked Mr. Dixon, the committee had seen the necessity of reducing it to 5s., which they believed was the absolute minimum. The committee had made considerable inquiry into the question of unemployment insurance, and it was hoped that every assistant would fill up the forms which had been issued by the Guild with a view of getting definite information as to the risk of unemployment, and securing the formation of a practical scheme of insurance against that risk. (Hear, hear.) He then proceeded to read the report of the Provisional Committee, which outlined the objects of the Guild as an organisation to unite all sections of the profession for mutual aid and for consideration of all questions dealing with the relationship of assistant and principal; to assist members in the matter of improvement in their professional education, and in maintaining and improving their professional status. Lastly, to organise and maintain a system of insurance. Dealing with the constitution of the Guild, the report recommended that it should consist of a central body in London and branches, governed by an Executive Council in London and branch committees. The Council was to appoint finance, legal and general committees, and a special committee was to be elected by full members to manage the insurance scheme. Further it recommended that members should be divided into two classes, ordinary members with no insurance benefits, and full members with insurance benefits. Any assistant who had held his present position, or who had been in employment continuously for 12 months previous to entry, under 40 years of age, and could produce a certificate of good health from a medical officer appointed by the Guild, and could show good testimonials as to his professional ability should be eligible for insurance benefits. The employment bureau to be managed by the secretary, who will keep lists of members (their description and qualifications) requiring employment (registered and guaranteed by local or central committee), and of employers), salary, hours, and office conditions) requiring assistants, also to reply to any local advertisements or enquiries for assistants and to obtain all necessary information concerning unemployment and situations vacant through members of the Guild or by technical journals. Fares to be advanced in special cases to established members if finance will allow. To maintain a scheme of unemployed insurance and payment of lump sums. Assistance in special cases to members approved by branch and Executive Council through a contingent fund. Employment bureaux to be open to all assistants, members and non-members, providing the latter pay a fee of 5s. if successful in obtaining an appointment. To receive all complaints relating to professional grievances, addressed either orally at a general meeting, or by letter to the secretary, and to deal with such cases either legally or otherwise. To keep the Press well informed as to the conditions of architectural practice and employment. To found scholarships or prize-money or payment of nomination fees for deserving students showing themselves capable. Among other things the scheme recommended that monthly meetings should be held, when lectures should be given on all phases of architectural practice and education. Further, it was suggested that the Guild should find scholarships or prize-money, or payment of nomination fees for deserving students showing themselves capable.

Mr. H. Cox proposed that the Provisional Committee's report should be adopted, and that the central body of the Guild of Architects' Assistants be formed, an Executive Council elected, subscriptions for the ensuing year taken, and subscriptions already made be credited. In moving the resolution, he emphasised the somewhat precarious nature of their profession, and the tendency to place architectural work in the hands of a certain commercial class of people, which did not tend to an improvement in the position of the architects' assistant. Both these things eloquently pointed to the necessity of the formation of a Guild such as was now suggested. He tabooed the idea put forward that any organisation run on trade union ideas would be derogatory to their profession and also a further criticism that the Guild would be supported by capable assistants for the benefit of incapable assistants. That event, he said, was an impossibility, and would prove a financial fiasco in a very short time. (Hear, hear.)

Mr. Penty formally seconded the motion, which was unanimously carried.

Nominations for the Executive Council were next received, and the Council was elected with the following membership: Mr. Alwyn Lloyd, Mr. H. L. Pridmore, Mr. J. V. Hibbert, F.S.I., Mr. A. J. Penty, Mr. H. C. Bishop, A.R.I.B.A., Mr. Herbert Cox, Mr. Monro Wilson, M.S.A., Mr. Barry Parker, Mr. and T. H. B. Scott. Power was reserved to co-operate others as might be deemed necessary. Mr. Gerald Large was appointed hon. treasurer, and Mr. E. J. Dixon's appointment as hon. secretary was confirmed.

The Chairman, in addressing the meeting, said that, having constituted their society, they must leave matters in the hands of the Executive Council to arrange what were the best steps to be taken next. Their programme was a very extensive one, and if it were to be realised, they must secure the support of practically the great bulk of architects' assistants. He was glad to see that the scheme had met with generous support in the provinces, especially in Cardiff, but there was still much to be done in the direction of increasing the membership. There were the architects' department of the L.C.C., of the Office of Works, and of other large public bodies. He did not know whether they had got any statistics of the numbers of assistant architects engaged in connection with these bodies, but it was important that the Guild should secure the support of these men. From the report submitted, a very comprehensive scheme was aimed at, but he should advise them to be careful to ascertain that a great deal of the work they proposed to do was not already being carried out in different ways by other existing societies. It was quite obvious that the architects' assistants as a body had not got any organisation representing their aims and aspirations, and there was much to be said in favour of the new society they were forming. He agreed there was little in the trade union objection, but with regard to the subscription, whilst on one hand it was necessary, having regard to the remuneration of members, that the subscription should be as low as possible, yet on the other hand they must bear in mind that considerable funds were necessary if they were going to carry the objects of Guild through successfully. (Hear, hear). Especially was the scheme of unemployed insurance a big one, which would require funds and would need to be run on thoroughly business lines. The very best help and suggestions they could get on that scheme were from the trade unions, who had been extraordinarily successful in this direction, and he only wished to goodness that the Government would conduct its business on equally good lines. (Laughter.) In conclusion, he urged the necessity of greater opportunities being afforded assistant architects to see and study the practical results of their work, by watching progress of buildings in construction from the architect's plans. This was a matter which might well engage the attention of the Guild. He wished the organisation every success.

Mr. Penty, in the course of a few remarks, expressed the opinion that the question of unemployment insurance would prove the whole basis upon which the society would be organised. All its activities must ultimately range round that scheme. (Hear, hear.)

Mr. Dixon said he felt sure that when the objects of the Guild became generally known, it would prove a success.

The Chairman suggested that at the beginning the Executive Council should simplify their aims as much as possible. If they showed too ambitious a programme, it might make many fight rather shy of it.

A vote of thanks to the Chairman, proposed by the Hon. Secretary, and seconded by Mr. Bishop, concluded the proceedings.

REINFORCED CONCRETE WALLS CONSTRUCTED WITHOUT CENTERING.

Reinforced concrete walls have been constructed for numerous purposes, but up to the present their chief application seems to have been in engineering structures where they are called upon to sustain considerable stresses. They would have been used to much greater extent in building construction generally if they had to sustain the same severe influences as are at work in other structures. As a general rule, walls in buildings are not subjected to much side thrust, they have perhaps to stand a small amount of wind pressure, but their chief function is to keep out the weather, and brickwork is quite suitable for the purpose. Where the walls are called upon to sustain any loads, of course, they may have to be made fairly thick. In such circumstances reinforced concrete columns can be employed to take the loads, and the wall reduced in thickness, this method resulting in panel construction, but it does not follow that these panels would be constructed of reinforced concrete with advantage; indeed, they are not, as a rule, for it has been found that the mere cost of centering or shuttering the two sides of a wall off-sets the economy of materials comprised in the reinforced concrete wall. The latter may, indeed, be built as thin as three or four inches, and be as serviceable as a nine inch brick wall, and, indeed, stronger, especially against side thrust, but it cannot compete in ordinary circumstances in England, with the nine-inch brick wall, and this, as we have said, is all that is required in most situations to keep out the weather. If, however, it is not considered quite satisfactory, we now have the opportunity of building a double wall, of, say, two, three-inch thicknesses, or 4½ inch thicknesses, namely,

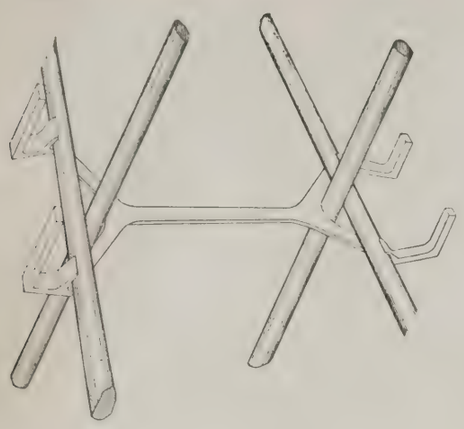


Fig. 1.



"APT" CONCRETE WALLS.

Fig. 2.

double brick-on-edge, or half-brick walls, and such construction works out as cheap, and often cheaper, than the thin reinforced concrete walls.

Concrete blocks do not offer much advantage, neither, in some situations, although they are more economical than a reinforced concrete wall built *in situ*, and are sometimes cheaper for walls than brickwork. Concrete blocks, it is true, have been moulded in various ways so as to give the appearance of stone-work, and colours have also been introduced into the facing. However, their appearance is not always favoured by architects, and, indeed, it will be readily admitted that they are not suitable in all situations. A greater variety of texture may be desired than can be obtained in concrete, unless we go to great pains and trouble with the material, which only increases its cost to a point perhaps at which we can obtain as good results, or better, in another way.

The monolithic solid reinforced concrete wall does, however, possess much strength, and could be employed far more extensively if it were not for the cost of shuttering and its appearance. Now, a new invention has recently been put forward which meets the difficulties before mentioned, and enables us to build at a low cost a monolithic reinforced concrete wall that has a good appearance. This is the "Apt" system, in which slabs or tiles are employed as a permanent centering. They are placed on both sides of the walls, and are bonded together with special ties, as shown in Fig. 1. The slabs may be of terra cotta, glazed or unglazed, or may be moulded concrete, and either material may be made with the most delicate and elaborate detail. These slabs or tiles are inter-locking, and provided with undercut ribs at the back, and they are bedded one upon the other. The metal bonders, shown in Fig. 1 are attached to rigid reinforcing members so that the whole structure forms a fixed mould into which the concrete may be tamped without disturbance. These slabs or tiles can be made in any desired texture, and any colour, and can be treated with the best decorative effect. The bonders or ties reinforce the walls also in a transverse direction, serving to make the walls monolithic, and adding to its strength against lateral pressure, and also, though perhaps not so noticeable, to its strength for sustaining vertically applied loads. The filling-in of the concrete is done in full view as the work proceeds, and the main vertical and horizontal members being locked by the bonders cannot be displaced, so that one knows that the steel is placed exactly as designed. The filling-in is done much in the same way as would be the case with timber centering, by raising the wall a short distance horizontally at a time, the slabs being fixed as the work proceeds. This system might not only be employed with advantage for walls of buildings and decorative and architectural work generally, but it offers suggestions of advantages to be obtained by its use for quays, harbour defence work, and military requirements. Bonders or ties can, of course, be made of any length or size, so as to be applicable to walls of any thickness. Its possibilities appear, however, to be chiefly in the direction of architectural work, and it affords one solution to the difficulty met with by architects in knowing how to treat surfaces of reinforced concrete walls. The address of the "Apt" Syndicate, is Bentley House, St. Mary's Road, Highbury, London, N.

THE CONCRETE INSTITUTE.

The seventh general meeting was held at the Royal United Service Institution on January 20th, when a paper on "Reinforced Concrete Chimney Construction" was read by Mr. Ernest R. Matthews, A.M.Inst.C.E. (borough engineer of Bridlington), of which the following is a summary.

Introduction.

That reinforced concrete was considered by American engineers and architects to be suitable for the construction of chimneys, the author suggested, might be gathered from the fact that during the past seven years one firm alone had erected nearly a thousand such chimneys in America, under the direction of some of the most able engineers and architects in that continent.

The subject-matter of this paper he divided into— (*a*) the advantages of using reinforced concrete for the construction of chimneys, (*b*) the erection of reinforced concrete chimneys in Great Britain, (*c*) a tabulated statement giving particulars of a number of these chimneys constructed in the United States, (*d*) the methods of calculating the stresses and strains in such chimneys, and reason for the recent failure of a shaft in the United States, (*e*) the effect of excessive heat upon concrete and reinforcement, (*f*) general notes with respect to reinforced concrete chimneys.

Economy in Cost.—It had been found in America that reinforced concrete chimneys could be built by a well-organised firm at less than one-half the cost of a brick shaft, and that the larger the shaft the greater the saving, since a large brick chimney of considerable height must have brickwork of great thickness at its base to prevent overturning.

It was also usually found that in districts where brickwork was expensive concrete was also costly, so that there was no difference in the ratio of their respective cost. It would appear, therefore, that on the ground of economy reinforced concrete had much to recommend it as a material for the construction of chimneys.

Saving of space was often a great consideration. In a shaft 300ft. in height, for example, the brickwork at the base, according to the building regulations of our English cities and boroughs, would be about 4ft. 10ins., whereas the thickness of the walls at the base of a reinforced concrete chimney would probably be as follows: outer wall 9ins., inner wall 5ins., with a space of 4ins. between the two walls. Therefore considerable economy of space was attainable by the employment of reinforced concrete for chimney construction.

Less Weight Than Brick Shaft.—This naturally arose out of the foregoing, and was a matter of the greatest importance where a treacherous soil had to be built upon.

Stability.—Reinforced concrete chimneys had been erected in the United States for some years past, and the author knew of only one failure. Reinforced concrete lent itself admirably to chimney construction, a recommendation which could not be so confidently asserted with regard to brickwork. The author considered that a reinforced concrete chimney, if properly designed, was of greater stability than one built of brick, since the former had no joints, whereas in a brick shaft failure might occur at any of the joints.

Freedom from Repairs.—Once erected, reinforced concrete chimney shafts required practically no repairs, while steel-plate chimneys required painting about every four years, and brick chimneys occasionally required repairing.

Rapidity of Execution of Work.—This was well known; a reinforced concrete chimney could be erected in half the time that it took to build a brick shaft.

These were some of the advantages which the author claimed for the use of this material in chimney construction.

Typical Examples of Reinforced Concrete Chimneys in Great Britain.

The author then referred very briefly, before giving American examples to one or two of the reinforced concrete chimneys which had been erected during the past few years in this country. Several of such chimneys might be referred to, but the object of the paper was to deal chiefly with those erected in the United States, so that only a few were mentioned.

Chimney at Messrs. Lyle and Sons' Works, London, E.—The shaft erected a short time ago at the works of Messrs. Abraham Lyle and Sons, Ltd., of London, E., was a good example of what could be done in reinforced concrete. This chimney was 261ft. in height, and 20ft in diameter. The walls, for the upper two-thirds, were 8ins. in thickness, double walls being built in the lower third. The reinforcement consisted of vertical bars consisting of 1¼ins. × 1¼ins. × $\frac{3}{16}$ ins. T's and horizontal rings of $\frac{5}{8}$in. steel rods spaced at 18-in. centres, vertical bars extending into the concrete foundations.

Chimneys at Briton Ferry, Glamorgan, and at Belfast The chimneys recently

erected for the Cape Copper Co., Briton Ferry, Glamorgan, and for Messrs. J. and S. M. Greeves, Ltd., of Belfast, were also good examples. The dimensions were as follows: heights, 150ft. and 200ft.; diameters of outer shells, 13ft. and 8ft. 6ins. respectively.

Large Chimney at Northfleet.—This had recently been erected; it was 8ft. 6ins. inside diameter, and 247ft. in height above bottom of foundations, and was a fine example of reinforced concrete construction. The foundations, the bottom of which was 35ft. below ground-level, were remarkably shallow, being only 2ft. tapering to 4ft. in thickness, and 18ft. × 18ft. in area. A 6-in. baffle wall was constructed across the lower portion of the shaft, and the thickness of the shell up to 62ft. above the ground-level was as follows: outer shell, 12ins.; cavity, 4ins.; inner shell, 4ins. Above this the chimney consisted of a single shell 9ins. in thickness. The reinforcement in the foundations consisted of 1¼ins. × 1¼ins. × $\frac{3}{16}$ins. T's, and in the shell of horizontal rings of steel ⅝in. diameter, spaced 18ins. apart, and vertical bars formed of 1¼ins. × 1¼ins. × $\frac{3}{16}$ in T's.

Smaller Chimney at Northfleet.—Although a smaller chimney, 130ft. high, the one recently erected at the "Bevan's Works," Northfleet, was of much interest. The shallow depth of the foundation was rather remarkable. While this was 15ft. 6ins. square in area, the depth was only 3ft. tapering to 2ft. The inside diameter of the chimney was 5ft. The bottom of the foundation was 16ft. below ground-level, and this was reinforced by 1¼ins. × 1¼ins. × $\frac{3}{16}$ in. bars. For a height of 41ft. above ground-level the outer shell was 6ins., the inner 4ins. in thickness with a 4-in. cavity between; 9-in. diameter air inlets occurred at intervals; above this the chimney consisted of a single shell only 5ins. in thickness. The shell was reinforced by means of vertical bars and horizontal rings, the former being deflected around smoke flues. The vertical bars consisted of 1¼ins. × 1¼ins. × $\frac{3}{16}$ in. T's, the rings being ⅝in. diameter steel rods placed 18ins. apart. At the bottom of the offset flat rings 3ins. × ½in. were inserted.

The two foregoing shafts had been erected for the Associated Portland Cement Manufacturers, Ltd., at their works at Northfleet.

Methods of Calculating Stresses in Reinforced Concrete Chimneys.

An excellent article, entitled "The Design of Ferro-Concrete Chimneys," appeared in "Engineering" for March 31st, 1908. In this the authors—Messrs. Taylor, Glenday, and Faber—describe in detail the methods of calculating the stresses in chimneys of this material. There was not sufficient space in the paper in which to deal with this part of the subject, and the author therefore referred members to the before-mentioned article.

With regard to the recent failure of a chimney in the United States the conclusions arrived at by the authors before named were interesting and instructive. They said:—

"It would appear, therefore, that while the thickness of concrete was ample, there was not nearly enough steel to ensure safety, and, of course, this deficiency in steel greatly increased the pressure on the concrete by throwing the line of zero stress away from the centre of the chimney, and thus leaving a very small proportion of the section in compression. . . . The failure of this chimney cannot be said to cast any reflection upon the use of properly designed reinforced concrete for such structures."

Effect of High Temperatures.

In order to obtain some reliable data regarding this important matter the author determined to carry out series of tests, and he gave detailed particulars.

The author determined to obtain some information regarding the condition of the concrete and reinforcement in an existing reinforced concrete chimney, and he acknowledged his indebtedness to Mr. H. K. G. Bamber, F.I.C., of the Associated Portland Cement Manufacturers, Ltd., who kindly supplied him with some most useful information on this subject.

Mr. Bamber informed the author that in order to ascertain if concrete deteriorated through the effects of heat, he inspected on several occasions the face of the concrete shell inside the reinforced-concrete chimney at the works of his firm at Northfleet, and he failed to observe any signs of deterioration. Not contenting himself with this, he subjected the ash in this chimney, on various dates, to an analysis, and compared this with an analysis of the ash taken from the base of a brick Custodis shaft, also at his firm's works at Northfleet. The comparison was most interesting; there was very little difference in the percentage of insoluble residue present, which residue would, of course, include any portions of sand that might, from deterioration, be coming away from the inside of the inner shell of the concrete chimney.

Mr. Bamber kindly had a small hole cut out for the author in the base of the inner and outer shells of the reinforced-concrete chimney at Northfleet for the purpose of exposing a portion of the reinforcement. These were made just over the flue opening where the heat would be most likely to affect the concrete. The result was most satisfactory, the steel being in as good condition as when first inserted in the concrete.

The author's experiments led him to the following conclusions:—

(1) That neat cement behaved better under great heat than out of it. The average compressive strength of 2¾-in. cubes placed in flue for 28 days, after having remained in air for 14 days, was 52.6 tons on the cube compared with 33.6 tons when placed in water for a similar period; the tensile strength per sq. in. of the briquettes being 1,008 lbs., compared with 850 lbs. in the water test.

(2) That concrete (3 parts standard sand to 1 part Portland cement) if not well set behaved very badly under heat. The average tensile strength of briquettes 1-in. section (3 to 1) placed in flue for 28 days, after being in air for 14 days, was 105 lbs., compared with 310 lbs. at 7 days, and 460 lbs. at 28 days in water.

(3) That if the concrete had had at least a two-months' set before heat was applied a temperature of 900 degs. Fahr. would not affect it in the least. This might be taken as the safe temperature in reinforced-concrete chimneys.

(4) That the 3 to 1 specimens in these tests giving such poor results pointed to the necessity of having no voids whatever in any concrete work, it being well known that 3 to 1 briquettes made of standard sand contained a considerable quanitity of air spaces.

(5) That only allowing the specimens 14 days before subjecting them to the heat was far too short a period in actual work. The greatest advantage was obtained by letting the heat get at the concrete after the longest time had been given for the cement to set.

(6) Concrete mixed with 10 per cent. of water (which should be the maximum in work of this class) would contain only about 1 per cent. of free water after a two-months' set. Heat should not be applied to concrete until the latter had had a two-months' set, a longer set than, say, three months would be preferable.

Notes in General.

Reinforced-concrete chimneys had been objected to on the following grounds: (1) because occasionally during the hardening of the concrete hair cracks have been noticed on the concrete surface, and it had been thought that these might affect the temperature in the chimney and consequently the draught; (2) because chimneys constructed of this material were, in the opinion of some, unsightly.

With regard to the first objection, the author admitted that hair cracks did frequently occur when a large concrete surface was setting, but these were only skin deep, and in the case of a chimney could not possibly affect the internal temperature. As to the second objection, there was no reason why a reinforced-concrete chimney should be unsightly; it could be made ornamental if required so, and at no great extra cost.

The aggregate in the concrete in the case of chimneys was fine, but coarser material was used in the foundations. All concrete was well tamped. The factor of safety used by well-known chimney builders in America was between 4 and 5, and provision was frequently made for stresses which would be set up by a maximum wind velocity of 100 miles an hour, a velocity which was practically unknown.

In this country it is not at all likely that a chimney would ever be subjected to such a test, but in America there was a likelihood that it might be. During the Galveston (Tex.) tornado, for example, which occurred in September, 1900, the force of the wind was registered at 50 lbs. per sq. ft. on a surface at right angles to the direction of the wind. It had been the custom both in Great Britain and America to take the maximum wind pressure at 50 lbs. per sq. ft. on a square shaft, and half this on a circular shaft.

No tensile stresses on the concrete were allowed for. The chimneys were well anchored by continuing the vertical steel bars into the foundation and then bending them through 90 degrees. The large number of vertical bars in the outer shell was divided into two portions, one-half of which were bent to reinforce the upper part of the foundation slab, and the other half, which alternated around the chimney, were bent at the bottom of the slab. All of the vertical bars in the inner or expansion shell were carried down into the foundations and bent over. Continuity in the steel was provided by overlapping the ends of the bars at least 30 diameters. All wind stresses were provided for by the vertical steel reinforcement, and temperature stresses by the horizontal rings of plain round rods (as already described) bent to a true circle. These latter were spaced not more than 18ins. apart vertically, and, as in the case of joints in the vertical steel, the breaks in the bars were staggered so as to occur unevenly and form no plane of cleavage. Additional ring steel was placed at any bends in the vertical steel, as at the offset and foundation. In designing a chimney the stresses were computed at several sections

The foundations were frequently reinforced by two meshes of steel bars as already explained, the top mesh running at right angles to the side of the foundation for its full width, the bottom mesh consisting of bars laid diagonally in each direction at an angle of 45 degrees from the side of the foundation. Additional vertical bars should be placed on the sides of the smoke opening to take the place of those omitted in that opening, and additional bars placed above and below the smoke opening to furnish lintel and sill reinforcement.

The forms used in the construction of reinforced chimneys were necessarily somewhat complicated and intricate.

(To be concluded).

Mr. Eustace L. Haynes, architect and surveyor, has removed his offices to more commodious premises at 120, Newgate Street. Telephone Number as before: Holborn, 2390.

* * *

Mr. Goode, "Our Man" of the "Evening News," whose recent doings have created such widespread interest, devoted Tuesday, January 18th, to visiting the works of the British Uralite Co., at Higham, where he was much impressed by a test demonstrating the remarkable fire-proof qualities of uralite. Various chemicals affected at temperatures from 100 degs. to 170 degs. Fahr. were placed together with sundry papers in a wooden box lined inside and outside with uralite. The box was then placed in a furnace, the maximum temperature recorded by pyrometer being 1,750 degs. Fahr. After being subjected to this fierce heat for an hour, the box was withdrawn uninjured, and its contents were found unaffected.

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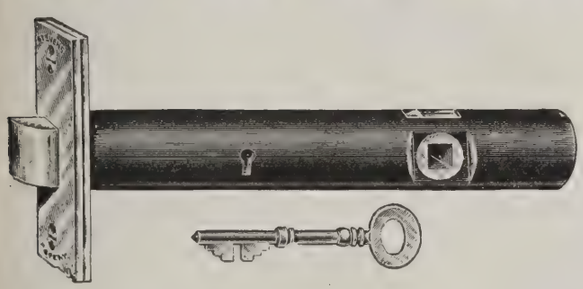
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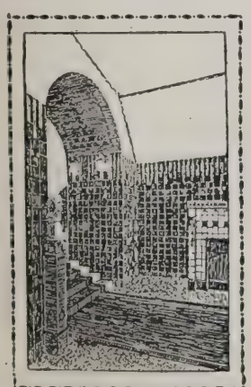
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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, *Caxton House, Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Abertillery (Mon.).—For extension of the Blaentillery mixed school, for the Urban District Council. Mr. W. H. Hiley, Architect, Chapel Street, Abertillery.

R. Tudor	£3,376 10 0
D. Davies and Sons	3,585 0 0
J. Jones,* Abertillery	3,250 0 0

*Accepted

Basingstoke (Hants).—For alterations and additions to The Shrubbery, Clidesden Road, Basingstoke, for Mr. T. N. Burberry. Mr. W. Roland Howell, architect, Reading, and 18, Percy Street, W.

J. H. Margetts and Son	£2,365
Collier and Catley	2,299
H. J. Goodall and Son	2,260
Mussellwhite and Sapp	2,259
G. S. Lewis and Bros.	2,240
J. Harris,* Basingstoke	2,227

*Accepted.

Bournemouth.—For erection of Winton Council schools. Mr. F. W. Lacey, borough engineer, M.I.C.E., F.R.I.B.A.

J. McWilliam and Son	£16,254
J. and H. Hayward	16,211
F. Hoare and Sons	16,085
Bowman and Sons	15,994
Jenkins and Sons, Ltd.	15,947
Jones and Seward	15,936
Wakeham Bros.	15,641
Goddard and Sons	15,559
F. J. Privett	15,227
W. Nicholson and Son, Ltd.	14,130
J. and M. Patrick,* Point Pleasant, Wandsworth, S.W.	13,930

*Accepted.

Bournemouth.—For erection of science, art and technical schools. Mr. F. W. Lacey, M.I.C.E., F.R.I.B.A., borough engineer.

Stephens, Bastow and Co., Ltd.	£22,376 0 0
McWilliam and Sons	22,478 10 0
F. Hoare and Sons	21,969 0 0
Goddard and Sons	21,590 0 0
Bowman and Sons	20,945 0 0
Smith and Sons, Ltd.	20,550 0 0
E. and A. Springings	20,400 0 0
W. Nicholson and Sons (Leeds), Ltd.	20,341 0 0
F. J. Privett	20,212 0 0
W. Johnson and Co., Ltd.	19,957 0 0
W. Pattinson and Sons, Ltd.	19,714 0 0
Jenkins and Sons	19,523 0 0
Wakeham Bros.	19,288 0 0
Jones and Seward	19,270 0 0
J. and M. Patrick,* Point Pleasant, Wandsworth, S.W.	19,055 0 0

*Accepted.

Cheltenham.—For alterations and decorations to pair of houses, Cleeve Hill, Cheltenham. Messrs. Dicks and Waldron, architects, Evesham.

G. Loveday, Cheltenham	£343 10 0
C. Malvern and Son, Cheltenham	338 10 0
A. C. and S. Billings, Cheltenham	329 10 0
P. Collins and Son,* Cheltenham	271 0 0

* Accepted.

Cork.—For erection of shops and cycle factory at 5, King Street, for Mr. W. H. Mulligan. Mr. Hugh W. Flanagin, architect, 2, South-mall, Cork.

A. Gaul	£1,415 0 0
W. O'Connell and Co.	1,354 0 0
J. Kearns and Son	1,243 0 0
Meagher and Hayes,* Traver's Street	1,192 12 8

*Accepted.

Evesham.—For new club-room and bar, etc., at the Gardener's Arms, Charlton, for Messrs. Rowlands, brewers. Messrs. Dicks and Waldron, architects, Journal Buildings, Evesham.

Epsley and Co., Ltd.	£270
A. Cliff and Co.	229
E. Simkins, Charlton	220
Gorton and Shapcott, Gloucester	215
J. E. White*	210

*Accepted.

Hinckley.—For erection of additions to Messrs. S. Davis and Sons' Factory, Hinckley. Messrs. Heaton and Walker, architects, 3, The Borough Hinckley.

J. E. Johnson and Son, Leicester	£1,550 0 0
J. Hall and Son	1,489 0 0
A. E. Mould, Leicester	1,459 19 1
T. G. Rowley	1,450 0 0
W. M. Sharp, Leicester	1,434 5 0
Cole and Sons, Leicester	1,428 0 0
W. H. Littler and Son	1,420 0 0
T. Hickman, Market Harboro'	1,399 0 0
G. Greaves	1,383 6 6
W. Potter, Blaby	1,379 10 0
Bentley and Co., Leicester	1,379 0 0
G. S. Clarke	1,378 0 0
O. Flavell	1,362 8 0
Southam and Son, South Wigston	1,358 9 0
S. Chaplin, Stoke Golding	1,355 0 0
A. Jeffcote	1,345 10 0
T. Goodman and Son* Rest of Hinckley.	1,328 0 0

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Haileybury (Hertford).—For new house on the Haileybury College Estate, for Mr. N. Roy D. Tennant. Messrs. John W. Simpson and Maxwell Aryton, joint architects, 3, Verulam Buildings, Gray's Inn, London, W.C.

Killby and Gayford	£2,890
J. A. Hunt	2,836
Kerridge and Shaw	2,696
Ekins and Co.	2,686
W. Downs	2,677
J. K. Cooper and Sons	2,537
T. Lowe and Sons	2,492
J. Parnell and Son	2,409
A. Fairhead and Son,* Enfield	2,357

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London, E.—For the extension of the existing West Silvertown School and erection of a new boys' department, for the West Ham Education Committee.

A. Webb, Stratford	£12,859 0 0
E. Lawrance and Sons, Ltd., City Road, N.	12,353 0 0
W. Lawrence and Son, Finsbury Circus	11,500 0 0
R. Woollaston and Co., Limehouse	11,455 0 0
R. J. Coxhead, Leytonstone	11,400 0 0
T. W. Moss, Southend	11,241 10 0
A. E. Symes, Stratford	10,997 0 0
J. W. Jerram, East Ham	10,876 0 0
W. J. Maddison, Canning Town	10,550 0 0
H. C. Horswill,* Forest Gate	10,097 0 0

*Accepted.

Nottingham.—Accepted for erection of house, Victoria Embankment, Nottingham. Messrs. A. R. Calvert and William R. Gleave, A.R.I.B.A., architects, Nottingham:—

Gilbert and Hall, £1,371.

Northwich.—Accepted for erection of new school to accommodate 350 children at Northwich Darwin Street:—

W. Wood, Hartford, Northwich, £5,700.

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In this list are included, as a rule, only those contracts for which tenders are returnable about **five days** or longer after the date of this issue.
Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders.
The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Jan. 28—Feb. 7. **DEVONPORT.**—Erection of nursing staff quarters and reconstruction of the military families hospital, at the Raglan Barracks, Devonport, in the Southern Command, for the Secretary of State for War. Plans, specification, and conditions of contract may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., or at the Barrack Construction Office, Old Granby Barracks, Devonport, up to Jan. 26. Those desiring to tender and to receive a copy of the bills of quantities must apply to the Director of Barrack Construction not later than Jan. 28. The application must be accompanied by a deposit of 10s. Cheques or orders to be made payable to the Assistant Financial Secretary and crossed "Bank of England for credit to Army Funds." Tenders must be delivered to H. De la Bere, Director of Army Contracts, War Office, Whitehall, London, S.W.

Jan. 28—Feb. 7. **DUBLIN.**—Erection of mortuary and disinfecting establishment, Arbor Hill Hospital, Dublin, in the Irish Command, for the Secretary of State for War. Plans, specification, and conditions of contract may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., or at the Barrack Construction Office, Arbor Hill Hospital, Dublin, on Jan. 24, 25, and 26. Those desiring to tender and to receive a copy of the bills of quantities must apply to the Director of Barrack Construction not later than Jan. 28. The application must be accompanied by a deposit of 10s. Cheques or orders to be made payable to the Assistant Financial Secretary and crossed "Bank of England for credit to Army Funds." Tenders must be delivered to H. De la Bere, Director of Army Contracts, War Office, Whitehall, London, S.W. The bills of quantities should accompany tender in a separate sealed envelope, similarly addressed.

Jan. 28—Feb. 7. **ABERDEEN.**—Execution of mason, carpenter, slater, and plaster works of the following buildings:—Tarves:—1, James Lewis, Oldmill of Schivas, dwelling house; 2, John Bruce, Hunkerhill, dwelling house; 3, Mrs. Scorgie, Courtstone, additions to dwelling house; 4, W. G. Smith, Upper Kirton, dwelling house. Methlick:—5, John Beaton, Brownhill, dwelling house; 6, George Gibb, Newton, dwelling house; 7, James Coutts, Cairnorrie, dwelling house; 8, George Simpson, Belnagoak, dwelling house. Fyvie:—9, John P. Sleigh, St. John's Well, cottage; 10, Alexr. Chalmers, Swanford, dwelling house; 11, George Young, Little Gight, dwelling house; 12, James Taylor, Blackhillock, dwelling house; 13, Peter Castle, Clovery, dwelling house; 14, John Forsyth, Blackpool, dwelling house. New Deer:—15, James Ironside, Myre of Bedlam, additions to house. Contractors for Swanford should meet the architect there on 28th inst., at 1 p.m. Plans and specifications may be seen with the tenants and at the estate office. Sealed tenders to be lodged with Charles G. Smith, Factor, Haddo House.

Jan. 29—Feb. 9. **REDFORD.**—Execution of the following work, for the Secretary of State for War:—Foundation work for barrack block, excavating and levelling site for new cavalry barracks, Redford, in the Scottish Command. Plans, specification, and conditions of contract may be inspected at the Office of the Director of Barrack Construction, 80, Pall Mall, London, S.W.; or at the Temporary Barrack Construction Office, Colinton, on Jan. 27. Those desiring to tender and to receive a copy of the bills of quantities must apply to the Director of Barrack Construction not later than Feb. 1, accompanied by a deposit of 10s. Cheques or orders to be made payable to the Assistant Financial Secretary, and crossed "Bank of England for credit to Army funds." Tenders must be delivered, addressed to the Director of Army Contracts, War Office, Whitehall, London, S.W.

Jan. 31—Feb. 19. **PAULTON (near Bristol).**—Erection of church house, for the Committee. Builders desirous of tendering should, before the 31st inst., send their names to the Rev. S. Herbert, The Vicarage, Paulton. Plans and specifications may be seen at the Rev. S. Herbert's, or Melhuish and Sons, on and after Feb. 4. Bills of quantities may be obtained on deposit of £1 1s. Tenders are to be delivered to the Rev. S. Herbert.

Feb. 2—9. **MITCHAM (Surrey).**—Erection of additions to the schools at Mitcham, Surrey, for the Holborn Union. Specification, form of tender, and a copy of the drawings, up to Feb. 2, upon application to the Guardians' Architect, A. Saxon Snell, F.R.I.B.A., 22, Southampton Buildings, Chancery Lane, W.C., and depositing with him a £5 Bank of England note. Tenders to be delivered to J. Allan Battersby, Clerk to the Guardians, Guardians' Offices, 53, Clerkenwell Road, E.C.

Feb. 3. **HARTSHILL.**—Builders desirous of tendering for alterations and additions to the laundry block at the N.S. Infirmary, Hartshill, should send their names to R. Scrivener and Sons, Architects, Hanley, by above date.

Feb. 3—15. **ERDINGTON.**—Erection of a house for the Master of the Workhouse at Erdington, for Aston Union. Persons desirous to tender are invited to send their names and addresses by 3rd instant to John North, Clerk to the Guardians, Union Offices, Vauxhall Road, Birmingham, to whom tenders are to be sent. Drawings and specification can be inspected at the office of Whitwell and Son, Architects, 3, Newhall Street, Birmingham. Copies of quantities and forms of tender will be sent to applicants on deposit of £5 with the Architects. Fair wages clause.

Feb. 4—7. **ASHBY (Lincs.).**—Erection of an elementary school at Ashby, near Scunthorpe, Lincoln, for the Lindsey County Council Education Committee. Bills of quantities and form of tender may be had on application to Scorer and Gamble, Architects, Bank Street Chambers, Lincoln, on or before Feb. 4, and on deposit of £2 2s. Drawings and conditions of contract may be inspected at the offices of the Architects. Tenders must be delivered to S. Maudson Grant, Secretary, 286, High Street, Lincoln.

Feb. 4—25. **BELLSHILL (Lanark).**—Erection of buildings to contain refuse destructor; also steel chimney stack; provision of water supply and drainage, and formation of access road and other relative works at Boggs Brae, near Bellshill, for the C.C. Plans may be seen, and copies of specification and schedule of measurement obtained at the office of W. L. Douglass, C.E., District Engineer, District Offices, Hamilton, on deposit of £1. An assistant engineer will meet intending contractors at Bothwell Bridge at 10.20 a.m., on Feb. 4. Tenders must be lodged with the Clerk to the Local Sub-Committee, James Forsyth, the Cross, Bellshill.

Feb. 7. **MARGATE.**—Alterations to cottages at the Wingham pumping station, and the redecoration of the interiors. Plan and specification can be seen and all further particulars obtained on application to E. A. Borg, Borough Surveyor, 13, Grosvenor Place, Margate. Tenders should be sent to Edward Brooke, Town Clerk, Margate.

Feb. 7. **HALIFAX.**—Masons', joiners', plumbers', and glaziers' work required in the conversion of old engine house into workshops at Woodside Mills, Haley Hill. Plans and specifications may be seen and bills of quantities obtained from Joseph F. Walsh, F.S.I., Graham Nicholas, F.R.I.B.A., Architects and Surveyors, Museum Chambers, Halifax.

Feb. 7. **PETTAUGH (near Stowmarket).**—Erection of a new school for about 60 children at Pettaugh, near Stowmarket, for the East Suffolk County Education Committee. Builders who desire to tender should send in their names, accompanied by a deposit of £1 1s. (cheques to be made payable to W. E. Watkins), by 8th inst., to W. E. Watkins, Secretary, Education Office, County Hall, Ipswich, to whom tenders are to be sent.

Feb. 7. **CARDIFF.**—Erection of proposed riding school and stabling, on the Barracks Field, Cardiff, for the Glamorgan County Territorial Force Association. Plans and specification to be inspected at the office of the Architect, W. H. Dashwood Caple, F.R.I.B.A., 2, Church Street, Cardiff. Copies of the bills of quantities may be obtained on deposit of £1 1s. Tenders to be delivered to Capt. C. J. Wilkie, Secretary, 20, Dumfries Place, Cardiff.

Feb. 7. **CARDIFF.**—Partial reconstruction, restoration, and renovation of the following blocks of houses:—1, six houses, Beresford Road, southwest side; 2, three houses, Beresford Road, northeast side; 3, two houses, Moorland Road, for the Corporation. Plan, specification, and form of tender, may be obtained at the office of Wm. Harpur, M.I.C.E., City Engineer, City Hall, upon deposit with the City Treasurer of £1 in respect of each block of houses. Tenders to be sent in to the Town Clerk of Cardiff, at the City Hall.

Feb. 7. **DONABATE (Ireland).**—Erection of a station building at Donabate; also a goods store at Annvale Siding, near Keady Station, for the Great Northern Railway Company (Ireland). Plans and specifications at the office of F. A. Campion, Chief Engineer, Amiens Street Terminus, Dublin, or copies at the office of the District Engineer, Belfast, and can obtain at the offices forms of tender on payment of 1s. each (not returnable). Tenders should be delivered to T. Morrison, Secretary, Secretary's Office, Amiens Street Terminus, Dublin.

Feb. 7. **ENFIELD.**—Construction of pumping station buildings, together with chimney, stores, coal bays, cottage, broadway, drainage, and other contingent works, at Hadley Road, Enfield, for the Metropolitan Water Board. Drawings, conditions of contract, and specifications may be inspected at the offices of the Chief Engineer, Savoy Court, Strand, W.C. Contractors desirous of tendering may obtain forms of tender, conditions of contract, specifications, list of drawings, bills of quantities, etc., from the Chief Engineer, on the production of an official receipt for the sum of £10, which must be deposited with the Accountant at Savoy Court, Strand, W.C. Tenders must be delivered to Offices of the Board, Savoy Court, Strand, W.C.

Feb. 8. **CROSSKEYS, MON.**—Erection of a workmen's institute at Crosskeys, Mon. Plans and specifications may be seen at the office of R. L. Roberts, M.S.A., Abercarn. Quantities supplied on deposit of £2 2s. Sealed tenders, endorsed "Tender for Institute," to be delivered to John Woodward, Crosskeys.

Feb. 8. **LINCOLN.**—Construction of engine-house, boiler-house, economiser-house, coal store, workshop, and stores, forming the main building; and also of chimney, engineer's house, cottages, and subsidiary works, at Elkesley, Notts., 2¾ miles from Checkerhouse Station, and six miles from Retford, for the Corporation. Drawings may be seen, and specification, bill of quantities, and form of tender obtained at the office of the Engineer, Neil McK. Barton, Waterworks Engineer, Lincoln, upon production of a receipt from the City Accountant for £5 5s. deposit. Tenders, addressed to the Chairman of the Waterworks Committee, to be delivered at the office of W. T. Page, Deputy Town Clerk, Bank Street, Lincoln.

Feb. 9. **SKELMANTHORPE.**—Various works required in rebuilding the Skelmanthorpe National Schools. Plans may be seen, and bills of quantities obtained of J. Berry, Architect and Surveyor, 3, Market Place, Huddersfield, to whom tenders are to be sent.

Feb. 9. **NORTH SHIELDS.**—Execution of certain alterations at the workhouse. Names and addresses, together with a deposit of £1 1s., to be sent to Henry Gibson, architect, 55, Camden Street, North Shields. Tenders must be delivered to Septimus Scott, Union Clerk, Guardians' Hall, North Shields.

Feb. 9. **LLANFAIR, P.G.**—Erection of a new Council school at Llanfair, P.G., for the Anglesey Education Committee. Plans and specifications may be inspected with Jos. Owen, F.R.I.B.A., County Architect, Menai Bridge. Tenders to be sent in to R. H. Williams, Secretary of Education, Education Offices, Llangefni.

Feb. 10. **MILNSBRIDGE.**—Various works in the erection of dining-room, lavatory, etc., at Chemical Works, Milnsbridge. Plans may be seen and quantities obtained of Lunn and Kaye, Architects and Surveyors, Milnsbridge and Huddersfield, to whom tenders are to be sent.

Feb. 10. **PORT TALBOT.**—Erection of 31 houses at Port Talbot for the Port Talbot Building Club. Plans and specifications may be seen with Evans and Jones, Architects and Surveyors, 5, Station Road, Port Talbot. Tenders, endorsed "Building Club," to be sent to the Secretary, Evan Dummer, 6, Maes-y-Court Terrace, Port Talbot.

Feb. 10. **TORQUAY.**—Erection of a new Post-Office at Torquay, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions, and form of contract may be seen on application to the Postmaster, Torquay. Bills of quantities and forms of tender may be obtained at the undermentioned address, on deposit of £1 1s. Tenders must be delivered to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

Feb. 10. **LONDON.**—Erection of new melting houses, etc., at the Royal Mint, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to H. N. Hawks, I.S.O., H.M. Office of Works, etc., Storey's Gate, S.W. Bills of quantities and forms of tender may be obtained on deposit of £1 1s., from the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W., to whom tenders are to be sent.

Feb. 14. **HALIFAX.**—Excavator, mason and bricklayer, carpenter and joiner, slater and plasterer, plumber and glazier, and electric lighting in the erection of a detached residence, garage, boundary walls, etc., at Greenroyd, Halifax. Plans may be seen and bill of quantities obtained of Thos. Kershaw, A.R.I.B.A., Architect, L. and Y. Bank Chambers, Halifax, to whom tenders are to be sent.

Feb. 14. **SOUTH SHIELDS.**—Formation of the forecourt of the municipal buildings, for the Corporation. A copy of the quantities and specifications and form of tender may be obtained on application to the undersigned, also drawings and form of contract inspected, at the office of the Architect, E. E. Fetch, A.R.I.B.A., 20, St. John Street, Adelphi, London, W.C. Tenders to be delivered to Moore Hayton, Town Clerk, Court Buildings, South Shields.

Feb. 15. **DURHAM.**—Erection of new Council schools at Usworth Colliery, Castletown, and New Lambton (Fence Houses); extensions at Eldon Lane Council school, for the C.C. Plans, specifications, and general conditions of contract may be seen, and bills of quantities obtained as follows:—1, Usworth Colliery, Castletown, and New Lambton schools, at the office of W. Rushworth, Shire Hall, Durham; 2, extensions at Eldon Lane school, at the office of F. E. Coates, Shire Hall, Durham. Tenders to be sent to J. Dawson, Clerk to the Education Committee, Shire Hall, Durham.

Feb. 16. **HOMERTON, N.E.**—Erection of pavilion "C" at the Infirmary at Homerton, N.E., for the Hackney Union. Applications for bills of quantities and forms of tender should be made, accompanied by a deposit of £5, before Jan. 31, to Frank R. Coles, Clerk to the Guardians, to whom tenders are to be sent. The contractor will be required to give approved security. The form of bond and plans may be seen at the Guardians' Office, Sidney Road, Homerton, N.E.

Feb. 16. **BOCKING.**—Erection of a new boiler house, sorting room, and other alterations to the laundry and kitchen at the Union Workhouse, Bocking, for the Braintree Union. Names to be sent to J. W. Start, F.S.I., Architect, Colchester, enclosing deposit of £2 2s. Bills of quantities will be forwarded. Drawings can be inspected at the Union Workhouse, Bocking, or at the office of the architect. Tenders must be sent to Alfred Hills, Clerk, Union Offices, Bocking.

Feb. 16. **GWAUNCAEGURWEN.**—Completing the erection of the Siloh Methodist Chapel, Gwauncaegurwen. Plans and specification can be seen with W. J. Hadley, Frondeg, Coelbren Road, Gwauncaegurwen. Tenders to be sent to D. T. Sims, J.P., Rock-Field, Neath. Further particulars may be obtained from the Architect, Arthur S. Williams, M.S.A., Llandilo.

Feb. 16. **NEWPORT (Mon.).**—Re-covering with zinc or copper part of the roof of the general markets, for the Corporation. The portion to be dealt with has an area of about 8,200 superficial feet. A sectional drawing of the roof, together with general specification, may be obtained from R. H. Haynes, Borough Engineer, on production of a receipt from the Borough Treasurer for £1 1s. Tenders to be forwarded to the Town Clerk, Town Hall, Newport. Fair wages clause.

Feb. 18. **BRADFIELD.**—Execution of the following works for the West Riding Education Committee:—Bradfield: Loxley New School—builder, joiner, slater, plumber, plasterer, and painter. Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders to be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

Feb. 22. **EDINBURGH.**—Raising existing car sheds, roofs, etc., at Henderson Row Cable Power Station for the Corporation. Specification and form of tender may be obtained from J. Walker Smith, Burgh Engineer, on deposit of £2 2s. by crossed cheque payable to Town Clerk. Tenders must be lodged with Thomas Hunter, W.S., Town Clerk, City Chambers, Edinburgh.

Feb. 23. **CLIFFORD (near Hay).**—Additions and alterations to the Council School, at Clifford, near Hay, for the Herefordshire County Council. Plans and specifications may be seen and bills of quantities and form of tender obtained at the office of the County Surveyor, Shirehall, Hereford, on deposit of £1 1s. Tenders to be delivered to John Wiltshire, County Education Secretary, Education Office, Shirehall, Hereford.

Feb. 25. **ST. DENNIS (Cornwall).**—Erection of a dwelling-house and shops at Fore Street, St. Dennis, for T. Varcoe. Drawings and specification may be seen at the office of B. C. Andrew, M.S.A., Architect, Biddock's Court, St. Austell, to whom tenders are to be sent.

Feb. 28.— **MERTHYR TYDFIL.**—Erection of twenty-two terrace houses in three blocks and six pairs of semi-detached villas, together with the construction of roads, sewers, and surface water drains, on the Meyrick Estate, Gwaelodygarth Field, Merthyr Tydfil, for the Grove Building Club. Drawings and specifications can be seen and forms of tender obtained at the office of T. Edmund Rees, Architect and Surveyor, Merthyr Tydfil. Tenders to be sent to Martin Evans, Solicitor, High Street, Merthyr Tydfil.

No date. **LONDON, S.W. (for the East Coast).**—Erection of 100 houses of bungalow type on the East Coast. Full particulars can be obtained from Browne and Folkard, Surveyors, 117, Victoria Street, S.W.

No date. **STAFFORD.**—Erection of cottages and buildings on small holdings in the parishes of Seighford (near Stafford), Hatherton (near Cannock), and Penn (near Wolverhampton), for the Small Holdings Committee. Particulars can be obtained from the County Estate Agent, 3, Martin Street, Stafford.

No date. **URLINGFORD (Co. Kilkenny).**—Erection of two new schoolhouses at Urlingford, Co. Kilkenny, according to plans and specifications approved by the Board of Public Works. Plans and specifications may be seen with Rev. W. O'Farrell, P.P., Urlingford.

No date. **WOODHOUSE.**—Execution of the following works for the County Council of the West Riding of Yorkshire:—1, Swallownest Provided School, alteration of the heating apparatus, installation of gas in the old school; 2, Treeton Provided School, alterations and improvements to premises, trades: builder, joiner, and plumber; 3, Catcliffe Provided School, asphalting and paving the playground. Specifications may be had from S. Abson, Education Offices, Woodhouse.

ENGINEERING.

Feb. 7. **NOTTINGHAM.**—Excavating and timbering pipe trenches between boreholes and receiving well; also constructing valve chambers at Burton Joyce pumping station, near Nottingham, for the Corporation. Drawings may be seen and copy of specification, and form of tender obtained on application to F. W. Davies, Water Engineer, St. Peter's Church-side, Nottingham, on deposit of £1 1s. Tenders to be sent to J. A. H. Green, Town Clerk, Guildhall, Nottingham.

Feb. 9. **ASHTON-UNDER-LYNE.**—Execution of the following works, for the Corporation:—Section A, one counter current jet condensing plant; section B, one natural draught cooling tower; section C, one exhaust turbine and 400-kw. direct current generator; section D, one electric balancer. Copies of the specification and form of tender can be obtained from the Borough Electrical Engineer, Wellington Road, Ashton-under-Lyne, on deposit of £1 1s. Tenders must be sent to John Neal, Borough Comptroller, Town Hall, Ashton-under-Lyne.

Feb. 10. **BINGLEY.**—Construction of a service reservoir at Kettlewell Close, Bingley, for the U.D.C. Plans and specifications may be seen and schedule of quantities obtained, on deposit of £1 1s. Cheques to be made payable to the Bingley District Council. Tenders to be sent to the Chairman, Water Committee, Town Hall, Bingley.

Feb. 10. **BOLTON.**—Supplying one Lancashire boiler, complete with superheater, etc., for the Corporation. Specification and form of tender may be obtained on application to Arthur A. Day, A.M.I.C.E., M.I.E.E., Borough Electrical Engineer and Tramways' General Manager, Spa Road, Bolton. Tenders must be delivered to the Chairman of the Electricity Committee, Town Hall, Bolton.

Feb. 10. **ASPATRIA.**—Execution of excavating, concreting, and walling, in connection with diversion of River Ellen at Stockdale; drainage at Stockdale; drainage at Whitefield House, for the Aspatria, Silloth, and District Joint Water Board. The whole of the works to be carried out in accordance with plans and specification prepared by Joseph Graham, Civil Engineer, Castle Street, Carlisle. Contractors may obtain copies of the specification and bills of quantities, with form of tender, and inspect drawings at the office of the Engineer upon deposit of £1 (cheque only). Tenders to be delivered to F. Richardson, Clerk, Aspatria.

Feb. 11. **CELBRIDGE.**—Sinking and walling a well and the erection of a pump at Cloncurry, for the R.D.C., in accordance with specification, which can be had on application to F. Shortt, Clerk of the Council, Council Office. Security required.

Feb. 11. **RHONDDA.**—Execution of: (1) Construction of a bridge 20ft. high and 16ft. span on existing foundations over the colliery incline at Nant Gwyn, Tonypandy; (2) improvement of Ardwyn Terrace, Ferndale. Plans and specification may be seen and forms of tender obtained at the Council Offices, Pentre, on deposit of £1 1s. Tenders addressed to the Chairman of the Council, Public Offices, Pentre. Fair wages clause.

Feb. 15. **WITHAM (Essex).**—Installation of a new vertical steam boiler and shed at the Bridge Industrial Home, Witham, Essex, for the Metropolitan Asylums Board. Drawings, conditions of contract, specification, and form of tender may be inspected at the office of the Board, Embankment, London, E.C., can be obtained upon deposit of £1. Tenders must be delivered at the office of the Board.

Feb. 15. **TORONTO, CANADA.**—Execution of the following work and supply of materials:—3, laying sewer outlet; 4, building sewage tanks; 5, supply of iron castings; 7, supply of structural steel; 7, supply of sludge valves, penstocks, and pedestals; 8, supply of cast-iron pipe; 9, supply of cranes; 10, supply of special tile. Plans may be seen and specifications obtained at the Office of the City Engineer, Toronto, and at the office of the Commercial Intelligence Branch of His Majesty's Board of Trade, 73, Basinghall Street, London, E.C. Specifications may also be seen at the office of Mr. Farnell, 11, Charing Cross Mansions, Glasgow. Tenders by registered post to be sent to Joseph Oliver (Mayor), Chairman, Board of Control, City Hall, Toronto.

Feb. 16. **SHEERNESS.**—Supplying and fitting heating arrangements, for the Sheppey Union. A committee will meet intending contractors at the workhouse by appointment. Letters to be sent to the Master, Sheppey Union, Minster, near Sheerness.

Feb. 18. **TORQUAY.**—Heating and ventilating the pavilion proposed to be erected in the Princess Gardens, Torquay, for the Corporation. Heating and ventilating engineers can obtain full particulars of Henry A. Garrett, Assoc.M.Inst.C.E., Engineer, Market Street Chambers, Torquay, to whom tenders and schemes are to be sent. Heating on the low-pressure hot-water system and ventilating on the inlet and outlet system preferred.

No date. **CLECKHEATON.**—Persons desirous of tendering for the construction of a railway siding at Flat Lane Chemical Works, Cleckheaton, for Henry Ellison, Ltd., should send in their names to Howorth and Howorth, Architects, Old Bank Chambers, Cleckheaton.

IRON AND STEEL.

Feb. 7. **MANCHESTER.**—Supply of ventilation grids and other castings in connection with drainage work, for twelve months ending March 31, 1911, for the Corporation. Samples may be seen and forms of tender obtained on application to H. Prescott, manager of the Drainage Department. Tenders must be addressed to the Chairman of the Drainage, etc., Sub-Committee.

Feb. 8. **SHEFFIELD.**—Supply of steel and iron work for twelve settings of ten retorts at the Neepsend Works, for the Sheffield United Gaslight Co. Contract No. 1: Supply and delivery only of cast-iron buckstay shoes, ash pans, and furnace fittings; 2, supply and erection of steel and iron work, consisting of rolled steel joists, cast-iron floor plates, etc., forming flooring and bracing; 3, supply and erection of steel and iron work in hydraulic mains, ascension pipes, gas and tar mains, etc. Drawings may be seen and specification, with form of tender and quantities obtained, upon application to the Engineer, J. W. Morrison, Commercial Street, Sheffield. Tenders must be delivered to Hanbury Thomas, Managing Director.

Feb. 9. **LADYSMITH, NATAL.**—Manufacture, supply, and delivery "free on rail" at the Port of Durban, Natal, of the following, for the Corporation:—About 720 tons of 12in. cast-iron pipes and special castings, certain sluice and air valves, and surface boxes and pipe cutter. Specification and schedule of quantities for the cast-iron pipes, etc., may be obtained, on deposit of £2 2s., with Webster, Steel and Co., London Agents, 5, East India Avenue, Leadenhall Street, London, E.C., to whom tenders are to be sent.

PAINTING.

Feb. 5—9. **NEWCASTLE.**—Painting the station buildings, etc., on the following branches of the North Eastern Railway:—1, Newcastle Central Station; 2, Newcastle, Forth Banks Goods Station; 3, West Hartlepool Station, goods warehouse, engine stables, etc.; 4, Ferryhill to Castle Eden, Ferryhill to Seaton Carew and Simpasture branches. Specifications, quantities and further information may be obtained on application to Charles A. Harrison, Engineer, Forth Banks, Newcastle-on-Tyne, up to Feb. 5. Tenders to be sent to the Secretary at York.

Feb. 8. **LEEDS.**—Cleaning down, painting, etc., the various police stations in the City of Leeds. Specifications may be seen and forms of tender and schedules of work obtained, at the Municipal Buildings. Tenders must be delivered to W. T. Lancashire, City Engineer, Municipal Buildings, Leeds.

Feb. 9. **LEICESTER.**—Painting, etc., the exterior of the Isolation Hospital, for the Corporation. Conditions of contract, specification, bill of quantities, with form of tender, can be obtained on payment to the Borough Treasurer, on deposit of £2. Tenders are to be delivered to the Town Hall, Leicester.

Feb. 9. **BRADING, I.W.**—Erection of school buildings, for the Isle of Wight County Education Committee. Plans and specifications may be seen at the County Education Offices, Newport, or at the offices of the Architect, 5, St. Thomas's Street, Ryde. Tenders must be sent to F. G. Flux, Secretary, County Education Offices, Newport, Isle of Wight.

Feb. 12. **CARDIFF.**—External painting at the Ely Workhouse, for the Union. Specification, together with the form of tender, may be obtained from Arthur I. Harris, Clerk, Union Offices, Queen's Chambers, Cardiff, to whom tenders are to be sent.

Feb. 15. **MANCHESTER.**—Cleaning and painting Northenden Bridge, over the River Mersey, for the Corporation. Specification and form of tender may be obtained on application at the City Surveyor's Office, Town Hall, Manchester, on deposit of £2 2s. with the City Treasurer. All cheques or postal orders are to be made payable to the order of "The Corporation of Manchester." Tenders are to be delivered at the City Surveyor's Office.

PLUMBING AND SAINTARY

Feb. 7. **KINGSBRIDGE.**—Laying 900 lineal yds., or thereabouts, of 4in., and 1,100 lineal yds., or thereabouts, of 3in. water main, and other work in connection therewith, for the U.D.C. Plans and specification can be seen during office hours on application to William Beer, Solicitor, Clerk to the Council, Fore Street, Kingsbridge, to whom tenders are to be sent.

Feb. 7. **MANCHESTER.**—Execution of general contractors' and plumbers' work, in connection with the drainage of houses and other premises for a period of twelve months ending March 31, 1911, for the Corporation. Forms of tender, general conditions, and specifications for each of the eight sections of the city may be obtained and samples of work and materials seen on application to H. Prescott, manager of the Drainage Department, on deposit of £1 1s. for each section. Tenders to be addressed to the Chairman of the Drainage, etc., Sub-Committee.

Feb. 9. **GOSFORTH.**—Enlarging and extending the existing pipe sewer in Haddrick's Mill Road, near "The Millstone" Public-house, for the U.D.C. All particulars may be obtained from George Nelson, A.M.I.C.E., Engineer and Surveyor to the Council, Council Chambers, High Street, to whom applications should be made for quantities. Tenders to be sent to Sheriton Holmes, Clerk to the Council, Council Offices, Gosforth.

Feb. 10. **LONDON, S.E.**—Carrying out certain drainage and other works at the Infirmary, East Dulwich Grove, S.E., for the Southwark Union. Specification, plans, conditions of contract, and forms of tender may be obtained at the omces of the architect, A. W. Tribe, 120, Clapham Road, S.W., on deposit of £5. Tenders should be delivered to Sydney Wood, Clerk, Union Offices, Ufford Street, Blackfriars Road, S.E. Fair wages clause.

Feb. 24. **FARNHAM.**—Provision, laying, and jointing of about 7,000 yards of 9in. stoneware pipe sewers, together with manholes, lampholes, and flushing chambers; also construction of liquefying tanks, four circular bacteria beds, sedimentation tank, sludge well, pump house, and other works, for the R.D.C. Drawings and specification may be seen, and bills of quantities obtained of the engineers, Willcox and Raikes, 63, Temple Row, Birmingham, on deposit of £3 3s. Contractors can also see copies of drawings and specification at 15, Victoria Street, Westminster, S.W. Tenders to be delivered at the office of Ernest Crundwell, Clerk, Farnham, Surrey.

Feb. 25. **WALLINGFORD.**—Extension of the Didcot Sewage Farm, including the construction of a concrete carrier, together with valves, etc., for the R.D.C. Plan and details may be seen, and copies of specification, bill of quantities, and form of tender obtained at 7, St. Martin's Street, Wallingford, Berks, upon deposit of £1 1s. Tenders to be delivered to G. F. Slade, Clerk to the R.D.C., 7, St. Martin's Street, Wallingford.

Feb. 28. **ALWICK.**—Execution of the following works, for the R.D.C.:—1, providing and laying about 1,800 yards of 4in. sanitary pipes, in 3ft. lengths, and construction of open reservoir to hold 50,000 gallons, near Shilbottle Wood House; 2, furnishing and laying about 1,006 yards 3in. cast-iron-socket pipes and fittings from Heather Leazes to Warkworth. Plans and specifications may be seen at the office of the Rural District Council, Alnwick, and copies at 94, Queen Street, Amble. Tenders to be delivered to the Clerk, H. W. Walton, Alnwick.

ROADS AND CARTAGE.

Feb. 5—9. **FORFAR.**—Quarrying or gathering, carting, and breaking materials for the repair of the highways in the Forfar district of Forfarshire, comprising the parishes of Airlie, Cortachy and Clova, Dunnichen, Eassie and Nevay, Forfar, Glamis, Glenisla, Inverarity, Kingoldrum, Kinnettles, Kirriemuir (excluding Burgh), Lintrathen, Newtyle, Rescobie, and Ruthven, for the year from Whitsunday, 1910, to Whitsunday, 1911. Schedules of quantities, with copies of specifications and conditions, may be had from the Surveyor, Donald Ross, Brechin Road, Kirriemuir, who will be at his office there to see intending offerers on Feb. 5. Offers to be marked "Tenders for Roads," and sent to John P. Anderson, District Clerk, Municipal Buildings, Forfar.

Feb. 7. **EAST RETFORD.**—Supply of broken granite and slag, for the year ending March 31, 1911, for the R.D.C. Forms of tender and conditions of contract will be sent by Thomas Henry, Surveyor, Surveyor's Office, Retford, Notts. Tenders, must be delivered to C. Barnby Smith, Clerk to the Council, East Retford.

Feb. 8. **MERIDEN.**—Supply of granite or other similar stone, for use on the highways in the several parishes in the district during the year commencing March 31, 1910, for the R.D.C. The stone to be delivered when and in such quantities as may be required at various stations or wharves. Tenders must be sent to A. W. Liggins, Clerk, 11, Priory Street, Coventry.

Feb. 8. **MOUNTAIN ASH.**—Paving portions of footways in Oxford Street, Mountain Ash, for the U.D.C. Plans and specification may be seen and forms of tender and bills of quantities obtained on application to W. G. Thomas, Surveyor, Town Hall, Mountain Ash. Tenders to be sent to H. P. Linton, Clerk, Town Hall, Mountain Ash. Fair wages clause.

Feb. 8. **LEWISHAM.**—Kerbing, channelling, and metalling the roadways and paving the footpaths with artificial stone (in separate contracts), of Vevey Street, Catford, for the Corporation. Plan and specification may be seen and forms of tender obtained at the Town Hall, Catford (Surveyor's Department). Copies of the specification may be had on payment in each case of 5s., which will not be returned. Tenders must be sent to Edw. Wright, Town Clerk, Town Hall, Catford, S.E. Fair wages clause.

Feb. 8. **LEWES (Sussex).**—Supply of materials, cartage, and team labour, for the maintenance of the main roads in the West, South, Central, and East Districts of the County, for the year ending March 31, 1911, for the East Sussex County Council:—1, stone, granite, and other approved material delivered in cargoes to the Council's wharf in Newhaven Harbour; 2, flints, stone, granite, and other approved material delivered to various railway stations and wharves; 3, flints, local stone, and other approved material delivered on the sides of the main roads; 4, cartage of materials from railway stations and wharves to the side of the main roads; 5, general team labour. Further particulars, conditions of contract, and forms of tender can be obtained on application to F. J. Wood, A.M.I.C.E., County Surveyor, County Hall, Lewes, to whom tenders are to be sent.

Feb. 9. **CHELMSFORD.**—Re-topping and repairing footpaths in a number of streets, for the Corporation. Copies of the specification, particulars of the work to be executed, and forms of tender, may be obtained at the Borough Surveyor's Office, 16, London Road. Tenders must be delivered to W. Smith, Town Clerk, Municipal Offices, 16, London Road, Chelmsford.

Feb. 9. **BRADFORD.**—Supply of about 20,000 tons of road metal, required for the macadamised roads within the city, for the Corporation. Form of tender may be obtained on application at the office of W. H. S. Dawson, City Engineer and Surveyor, at the Town Hall. Tenders to be sent to Frederick Stevens, Town Clerk, Town Hall, Bradford. Fair wages clause.

Feb. 9. **ESCRICK.**—Supply of best whinstone, tar macadam, slag, and granite, all broken, to be delivered, carriage paid, at one or more of the following railway stations, for the R.D.C.:—Foss Islands, York; Naburn, Escrick, and Stamford Bridge; and at one or more of the following wharves, namely, Blue Bridge Landing, York; Water Fulford, Naburn, Stillingfleet, Cottingwith Ferry, Thorganby, Wheldrake, Elvington, Kexby, and Stamford Bridge. Forms of tender can be obtained of the undersigned. A sample of stone to be sent to the Surveyor of Highways, Escrick Rural District Council, 1, Museum Street, York. Tenders are to reach Fred. A. Camidge, Clerk to the Council, 3, Stonegate, York.

Feb. 9. **FORFAR.**—Quarrying or gathering, carting, and breaking materials for the repair of the highways in the Forfar district of Forfarshire, comprising the parishes of Airlie, Cortachy and Clova, Dunnichen, Eassie and Nevay, Forfar, Glamis, Glenisla, Inverarity, Kingoldrum, Kinnettles, Kirriemuir (excluding Burgh), Lintrathen, Newtyle, Rescobie, and Ruthven, for the year from Whitsunday, 1910, to Whitsunday, 1911. Schedules of quantities with copies of specifications and conditions, may be had from the Surveyor, Donald Ross, Brechin Road, Kirriemuir, who will be at his office there to see intending offerers on Saturday, Feb. 5. In each district the committee are prepared to receive separate offers for quarrying or gathering, for carting, and for breaking. Offers to be sent to John P. Anderson, District Clerk, Forfar.

Feb. 10. **HUNTINGDON.**—Supply of gravel and sand for the year ending March 31, 1911, for the Hunts. County Council. Form of tender and condition of contract may be obtained on application to Herbert Leete, County Surveyor, 36, High Street, Huntingdon, to whom tenders are to be sent.

Feb. 10. **HALE.**—Making-up of a portion of Queen's Road, Hale, under the Public Health Act, 1875, for the U.D.C. Plans and specifications can be seen and bills of quantities and forms of tender obtained on deposit of £1 1s. at the office of the Council's Surveyor, S. A. Pickering. Tenders should be sent to J. G. Whyatt, Clerk to the Council, Council Offices, Ashley Road, Hale, Cheshire.

Feb. 10. **STOKESLEY.**—Supply of whinstone (broken and unbroken) and limestone for macadamising purposes, for year ending March 31, 1911, for the R.D.C. Further particulars and forms of tender may be obtained on application to W. H. Dixon, District Surveyor, Kirkby-in-Cleveland, near Stokesley, S.O., or to William Richardson, Clerk to the Stokesley Rural District Council, Stokesley, S.O., Yorkshire, to whom tenders are to be sent.

Feb. 12. **DESBOROUGH.**—Supply of granite required during the year ending March 31, 1911, for the U.D.C. Form of tender may be obtained from G. E. Marlow, Surveyor, Council Offices, Desborough, to whom tenders are to be sent.

Coming Events.

Wednesday, February 2.

ROYAL ARCHÆOLOGICAL INSTITUTION, 20, Hanover Square, W.—Mr. Andrew Oliver, Exhibition of "Two Alabaster Tables," Mr. P. M. Johnston, "Discovery of Early Wall Paintings in Kingsdown Church, Farningham," 4 p.m.

Thursday, February 3.

SOCIETY OF ANTIQUARIES, Burlington House, W.—Meeting, 8 p.m.

CARPENTERS' COMPANY LECTURES. — Sir Brumwell Thomas, on "The Joiners' Craft," Carpenters' Hall, 7.30 p.m.

Friday, February 4.

INSTITUTION OF CIVIL ENGINEERS.—Students' meeting. Mr. L. T. Wilson on "The construction and setting out of a low level sewer," 8 p.m.

ARCHITECTURAL ASSOCIATION.—Mr. W. H. Ward, on "Renaissance Church Architecture in France during the 16th Century," 7.30 p.m.

LEICESTER AND LEICESTERSHIRE SOCIETY OF ARCHITECTS.—Mr. Arthur Marshall on "Some Spanish Places and People," 8 p.m., at 5, St. Martins East.

Saturday, February 5.

ABERDEEN ARCHITECTURAL ASSOCIATION.—Discussion meeting. Mr. H. F. David, on "Alfred Stevens: his life and work," 7.30 p.m.

Monday, February 7.

BIRMINGHAM MUNICIPAL SCHOOL OF ART.—Exhibition of Students' Work opens at Rooms of Royal Society of Artists, New Street, and continues until February 19th inst., 10 to 10 each day.

THE SOCIETY OF ENGINEERS AND CIVIL AND MECANICAL ENGINEERS' SOCIETY (amalgamated Jan., 1910, under title of first named).—First ordinary meeting of the new society, Room 18, Caxton Hall, Westminster. Presidential address by Mr. D. A. Symons, M.Inst.C.E., 7.30 p.m.

THE ROYAL SANITARY INSTITUTE LECTURES.—Dr. Charles Porter on "Sanitary Law," 7 p.m.

THE SURVEYORS' INSTITUTION.—Mr. T. A. Dickson's paper on "The Report of the Royal Commission on the Poor Laws," is postponed. Adjourned discussion on Mr. Davidge's paper on "Town Planning Systems," and Mr. J. Willmott's paper on "The Housing, Town Planning, etc., Act, 1909," 8 p.m.

Tuesday, February 8.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCHITECTURE. — Mr. Banister Fletcher on "Roman Circi, Triumphal Arches and Town Gateways," British Museum, 4.30 p.m.

Wednesday, February 9.

CARPENTERS' HALL LECTURES. — Mr. Arthur Stratton on "Native Craftsmanship in Timber, Brick, and Stone, before the 18th Century," 7.30 p.m.

THE ROYAL SANITARY INSTITUTE LECTURES.—Dr. Charles Porter on "Sanitary Law," 7 p.m. *At Sessional Meeting*, Rev. J. B. Lock on "The Ventilation of the Large Examination Hall, Cambridge," 8 p.m.

Thursday, February 10.

PAINT AND VARNISH SOCIETY.—Mr. J. W. Lovibond on "Colour Nomenclature," 8 p.m., at the St. Bride's Institute, Bride Lane, E.C.

Friday, February 11.

THE ARCHITECTURAL ASSOCIATION DEBATING SOCIETY.—(Joint Meeting with the Junior Institution of Civil Engineers). Mr. F. R. Durham, A.M.Inst.C.E., on "Architectural and Engineering Consideration Town Planning," 7 p.m.

THE ROYAL SANITARY INSTITUTE LECTURES.—Dr. Charles Porter on "Sanitary Law," 7 p.m.

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS (Southampton Row, W.C.).—Mr. E. F. Strange on "Lettering," 8 p.m.

Monday, February 14.

THE ROYAL SANITARY INSTITUTE LECTURES.—Mr. Wellesley Harris on "The Duties of a Sanitary Inspector," 7 p.m.

Tuesday, February 15.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCHITECTURE. — Mr. Banister Fletcher on "Roman Tombs, Pillars of Victory, Aqueducts, and Bridges," British Museum, 4.30 p.m.

ILLUMINATING ENGINEERING SOCIETY.—Resumed discussion on Dr. J. H. Parson's paper, "Glare, its causes and effects." 8 p.m. at Society of Arts, John Street, Adelphi.

Wednesday, February 16.

CARPENTERS' HALL LECTURES. — Mr. Lawrence Weaver on "The Art of the Leadworker," 7.30 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Students' Meeting. Mr. W. Milburn, jun., on "Notes on Continental Hospitals," 7.30 p.m.

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Paulton, January 15, 1910.

Owing to pressure on our advertisement space we are obliged to hold over the Employment Register till next week.

February 9, 1910. Volume 31, No. 784.

THE BUILDERS' JOURNAL

AND ARCHITECTURAL ENGINEER.

This Issue contains articles of special interest to Builders and Contractors.

Caxton House, **Westminster.**

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L.C.C.'s Coming of Age.

The "coming of age" of the London County Council has been allowed to pass almost unnoticed, probably because the public were so completely absorbed in calculating majorities of a momentarily more interesting character. Thus an occasion has been lost of studying at length and at leisure the history of "the highest unit of local government." The Council would have done well to issue a carefully compiled history of what it has achieved during its twenty-one years of existence. Such an account, distributed in pamphlet form, would afford a valuable contribution towards the much-needed education of the citizen in his rights and duties, and it would not be destitute of importance for the more earnest student of civics, whom it would furnish with an instructive record of the use that the Council has made of its enormous powers, and, inferentially, of the extent to which those powers may have been maladministered. A matter-of-fact chronicle of acts and deeds would be particularly welcome, because it would enable the public to see the Council as it really is, and not as the distorting mirrors of rival political newspapers represent it to be. Although the Council is apparently so young—it was, of course, one of the so-called creations of the Local Government Act of 1888—its genesis may be traced at least as far back as the Act of Queen Elizabeth forbidding any further increase of buildings in London. The Council may be said to be in the direct line of descent from the Commission of Sewers appointed in the reign of Henry VI., on through the enactment of 3 James I., 1605, which extended the Commission's area of jurisdiction and down through the further Extension Acts of 1807 and 1837, and the formation, in 1856, of the Metropolitan Board of Works, which was the immediate precursor of the London County Council. It is remarkable that, in three hundred years, only these three bodies—the Commission of Sewers, the Metropolitan Board of Works, and the London County Council—have been directly responsible for the health and comity of London, and that, in a few years of strenuous activity, the Council should have done vastly more work than was accomplished in the centuries of more or less lax London government to which it was the heir. The Metropolitan Board of Works had been called upon to cope with extraordinary difficulties. As Mr. G. Lawrence Gomme pointed out many years ago, the growth of London prior to about 1850 had been gradual and normal. Then, owing largely to railway development, there came a period of tremendous expansion. To state the matter simply, the Metropolitan Board of Works had to provide for the sanitary well-being of a sudden and enormous increase of population; and on the whole the Board did splendid work, which has been unjustly discounted through the indignation aroused by the scandals created during its latter years by a few unworthy members. As for the Council, the most bitter of partisans will not deny that on the whole it has done a noble work for London. Its main fault has been that it has attempted too much, and that, in particular, it has been badly bitten by the craze for municipal trading, its rather desperate adventures in building and brickmaking, and its somewhat arbitrary enforcement of stringent building restrictions, being rather bad blots on an otherwise honourable history. These faults, however, were sternly checked at the last election. It is well that undue exuberance and extravagance should be curbed; but to be quite frank and impartial, the chief danger seems now to be that the Council may lapse into the opposite extreme, and become slothful and unenterprising. This also is a tendency that must be discouraged, for it is not to the interests either of the general community or of the builder that works should languish, but only that they should fall into the right hands.

Another Triple Alliance.

An optimistic leaderette in the "Globe" prophesies smooth things for the architect. After observing—perhaps with more truth than we should like to confess—that "the mass of the building which is now done in this country [why this insular exclusiveness?] knows no architect, and is subject to no laws" (which is obviously an excerpt from Mr. Ernest George's admirable address to R.I.B.A. students), our contemporary repeats Mr. George's very cheering assurance that "the idea of town-planning, which is comparatively new to us, is bringing an appreciation of architecture for smaller houses; it is inculcating the knowledge that a man must work, not only on his own plot, but must consider also his neighbour, combining with him for a pleasant lay-out and an harmonious grouping of buildings." Here the validity of the present tense is perhaps questionable, though it certainly adds vividness to the rosy-tinted prospect. Certainly, the Town Planning Act may be confidently assumed to imply very much more than increased salubrity and a more convenient lay-out. "In future, perhaps," our contemporary, adds, still echoing Mr. George, "the speculating builder, and the lawyer who finds the money for him, will realise the architect's help in improving the plan, so that some pleasant proportion may be given to the building, and some semblance of recognised style, while saving the present outlay on lavish and misplaced ornament." That last clause is surely a little bit wild, both as to its substance and its syntax; and the vision conjured up of the architect with the speculating builder at one elbow, and the money-lending lawyer on the other, is certainly not rich in æsthetic promise. There can be but little doubt, however, of the truth of the President's casual observation—that, as we could not fail to perceive and did not neglect to point out at the very inception of the Town Planning Bill, that measure, rightly administered, must bring greatly increased opportunities for the architect; and, incidentally, its operation may be found to emphasize the need for copyright in architecture.

The Extinction of the Genius Loci.

The contention that a building ought to grow out of the soil on which it stands has found its logical complement in the claim that the architect and the artificers ought also to be natives. But perhaps we have mistaken the gist of the following passage: "If there had been any life in the art schools of these great cities, like Leeds, Bradford, Liverpool, and Birmingham, the cities would have grown up quite differently; but in order to justify the greatness of their city and their own taste, whenever any important work is to be done, of course the London architect and the London painter are used, so that the one opportunity of having a living spirit in anything is lost. To take an instance—I went over the art school of Birmingham University. You have a great London architect designing a building entirely on paper, and the work is put into the hands of contractors who carry out the paper designs. Suppose you had a living school of architects in Birmingham and they had been invited to submit designs, had worked in co-operation with the fine local artists who exist there, and that they for the glory of their own city had all put their heads together and had produced a certain form of building and a certain form of art which would have a real con-

nection with the spirit of Birmingham itself. Then perhaps the art master in the municipal school could have said to the students, 'Such and such a building is to be erected. There will be an opportunity for those of you who have shown yourselves efficient to help in its construction by designs for fittings and decorations.' The University would then have been a monument of Birmingham culture at a certain date." Alas! poor Birmingham! Like many another town, it is doomed to lose its local characteristics and its native dialect, and to become cosmopolitan. The railways, the motor cars, the open competition system, and other malign forces of modern civilisation, have been too much for it; and the Town Planning Act will finish the deadly work. We deeply sympathise. Also we are sorry for the extinction of the dodo, and for the general obsolescence of home-knit stockings and home-made bread. But we bow to the inevitable with the best grace we can command. We demur, however, to the unjust expression "Entirely on paper."

Our Unspiritual Art.

It has been discovered and revealed to us that religious art in Europe is, as compared with the religious art of the Far East, unspiritual. Mr. Bernard Berenson has said it in a new book, and Mr. Lawrence Binyon has supported this opinion in the markedly spiritual columns of the "Saturday Review." While China and Japan come close to the utmost limits of what visual art can do to evoke spirit, one School alone, the Sienese, has an instinctive affinity with those Oriental Schools. Most European designs, it appears, are of architectural character; "the triumphs of European painting rest upon the power of modelling, of representing the power of communicating a sense of mass, weight, and bodily vigour." That is obviously true; and it seems to confirm two favourite contentions of a certain school of architects—namely, that a picture is a subordinate feature of a building, and that preferably it should be cut in high or low relief, if not in the round! It would remain unspiritual; but, alas! we barbarous Westerners would as a rule most willingly barter all the spirituality for a very small modicum of the sense of "mass, weight, and bodily vigour." It is perhaps for this reason that Gothic is going out of fashion, and that the recent strenuous endeavours to interest us in the architecture of India have failed to excite any appreciable degree of enthusiasm.

The Secret of Stonehenge.

Of the many attempts to solve the mystery of Stonehenge, that made by Mr. Charles F. Cooksey, in the current number of "The Nineteenth Century," is certainly one of the most interesting. The author is of those who believe in the existence in these islands of a prehistoric civilisation. Personal observation has convinced him "that, prior to the Roman invasion, there was a literature, a civilisation with settled laws, a knowledge of art, a large and well-directed army, commanded by men of very superior intellect and resource, and who for at least five hundred years maintained a not entirely unsuccessful resistance to Rome itself." He found, for instance, that the Roman city of Silchester was placed on the ruins of an earlier Celtic one, the remains of the houses of which were constructed with a knowledge of the art of building little inferior to that of their Roman successors. He thinks that the chivalrous King Arthur was no mere myth, but was perhaps identical with Caractacus. The "Kingdom of Ure" of Malory's romance he connects with the Eurovicians, a Belgo-Gallic tribe, who had the ancient city of Evreux as their capital, and who were among the earliest to make a settlement in Southern Britain. The author then looked for place-names that might be traced to these people, and found them in the Isle of Wight, as Yarmouth, Ewerland, and even Carisbrooke (?Caer Euroc). At Arreton Down he sees the Hill of Arre in the land of Ure, thus confuting the statement of Geoffry of Monmouth and Walter de Mapes that the Stonehenge relics came from "The Mountain of Killara in Ireland." At Arreton he discovered what he takes to be a large religious ring comparable to that of Stonehenge; and he unearthed traces of an old road leading from the ring towards Newport. The inference is, then, that the stones were removed from Arreton Down to Stonehenge; but how did they get to Arreton Down? and whence came they? Mr. Cooksey has traced them to a hill called Le Platon, in Bolbec, a few miles inland on the north bank of the Seine, where he found a curious old quarry from which he brought specimens of stone, one of which he says has been pronounced by expert geologists to have many points of similarity to the sarsens of Stonehenge.

Is Fresh Air a Failure?

In a report issued by the Board of Education on the Medical Inspection of Schools, the Chief Medical Officer, Dr. George Newman, notices that the greater number of the school medical officers have given careful attention to the very important subject of ventilation. In cases where it is found that ventilation is defective, the fault arises from one or both of two causes: (a) inadequate or defective means of ventilation, and (b) failure to take full advantage of the means of ventilation. Dr. Oliver, of Maidstone, found air in different rooms of one school yielding amounts of CO_2 varying from 8 to 21 parts per 10,000; Dr. Clements, of Batley, found that in two schools the impurity amounted to 9 to 15 parts; while Dr. Williams, of Sheffield, reports for three schools, 6.8 to 11.8 of CO_2 per 10,000; the fresh-air standard admitting but 4 parts. There are, of course, various reasons for neglect to use the means of ventilation. Some ventilators are improperly situated, and some teachers are supersentitive to draughts. In the latter case, the teacher's idiosyncrasy should not be lightly dismissed. The hardy disciples of that robustious school of thought which affects to believe that fresh air can never be otherwise than wholesome, may be led to abate somewhat of its enthusiasm in view of a recent report on the health of London County Council employees. It has been found that the health of the Council's sewermen is actually and considerably better than that of its park-keepers. The latter should get fresh air enough, in all conscience; yet it is found that they are peculiarly apt to suffer from tubercular complaints. Why? It is tentatively conjectured that, the parks being naturally much resorted to by consumptive persons, the ground becomes infected, and the bacilli are blown up with the dust and inhaled by the park-keepers. That may be one reason; but another considerable factor, it seems to us, is the lowering of the vitality, and hence of the power of resisting disease, of the men who are compelled to be out in all weathers. This is a condition that may apply to ill-ventilated—or over-ventilated—schools.

R.I.B.A.

At the general meeting on Monday, January 31, Mr. Ernest George, A.R.A., delivered his address to the students. He said:—

By established custom I address the junior members of our craft, those who have the inestimable gift of youth, and who will be filling the seats of their elders, I trust with benefit to the community.

Last year I gave my own experiences and expressed such views as I had arrived at, experience often showing what not to do again. Yet, if we in life could be allowed a second innings, probably we might not do more wisely. It is the common lot to work, and it is a matter of the first importance that your work should be that which interests you. Instinct and inclination may be taken as guides in your general direction.

I trust you have chosen the study of Architecture because it is attractive to you. It would be dull work for you, and the results would be deadly dull, if you took to the artist's career as you would to brewing or baking, with the humble aim of making an income. The latter is rather illusory and unsubstantial, and when it comes is the result of much hard work, in which the artist finds his pleasure, but which would be drudgery to the unillumined soul.

Architecture an Exacting Mistress.

I assume, then, that you are each conscious of the divine fire; it remains with you to see that it burns clear. To this end earnest application is necessary; and a thorough education both in science and art as well as in wider fields of knowledge. You will be called upon to make sacrifices and to relinquish some of the amusements and harmless frivolities of youth if you are faithful to your art; your pleasure must be in serving that exacting mistress.

Architecture is associated with every condition of man, and it should find appropriate use either for the temple or the tavern. The problems that will come before you are endless, giving constant variety to the work. There will be no time for idling. A painter may desist from his work awaiting inspiration; the architect, when grounded for lack of matter, may turn from composition to the many practical details that his occupation demands. He must recognise that he is a man of business, with grave responsibilities to his client; he must not pose as the brilliant genius, above mundane affairs. He must cultivate methodical habits and exactness.

In the Schools or in the office you will find young men sharing your pursuits and aims; and among them may be good companions and friends. Seek the society of fellow artists of all kinds; be they painters, sculptors, or craftsmen, it will be a mutual advantage. You will still have time to spare for the outer world, where you must not be unseen or unknown; it is there you find the client who gives you the chance of beautifying the world.

Cultivate Tact

in the treatment of the client when you get him; consider things from his point of view, his doubts and anxieties, financial and other, when starting on an important building enterprise. You probably know better than he does what he wants, or what he ought to want; do not vaunt that knowledge, but let your scheme seem to emanate from him. The plain man may tell you he "knows what he likes," and he possibly likes what is abominable; do not tell him so, he will be converted by degrees to like what is good. You cannot have all your own way, and your pet schemes may often be frustrated. After all, it is not your house that you build, though you are allowed the fun of shaping it. I have spoken of the natural man, the untutored, but I must acknowledge having worked for those whose refined tastes and judgment have been an unqualified advantage to the architect and to the building.

Education and Cultivation

of the mind should be always going on. Read much, and think much, and primarily make

careful study of noble buildings; see why they impress you; measure, plot, and sketch them. Cultivate observation and memory, so that these fine things remain with you; they will influence your work for good when you think to be drawing upon your inner consciousness.

The things that Solomon knew are nothing to the catalogue of details that you are expected to grasp It behoves you to know the history of architecture and to follow it through its many phases. It is well to be familiar with the literature of our art—the splendid books that have been produced in past times and in various languages. It is much to your advantage to have the command of foreign tongues. Indeed there is no branch of culture that is not a valuable asset in shaping the accomplished architect. I trust that you are gaining all the time a knowledge of construction, the paramount essential in the curriculum. Use every opportunity of visiting works in progress, builders' workshops and masons' yards; if also your hand can acquire some skill in any of the trades, it is all for your good. The limits of time and the shortness of life must be taken into account in making choice of subjects to be mastered.

Drawing.

I think we all accept the fact that sound training is necessary. First and foremost, acquire the art of drawing; it is the language in which your ideas must be told. Whether you are to be an architect or a landscape painter, drawing is best learned by the study of the figure from life or from the cast; it is the best training for the eye, demanding accuracy and judgment. The hand and the mind should learn to work together, evolving schemes or forms, and feeling for that which is best.

Avoiding all tricks, acquire a pleasant manner of drawing, one that makes your building presentable; for I have seen fair composition so expressed as to look forbidding—perhaps with capitals, mouldings, and carving put in with a heavy hand, such detail making dark splotches of those parts which would be the high lights of the building

But drawing has generally received its full meed of attention, and the greater danger is of regarding it as an end instead of a means. We have known such facility acquired that the hand has moved in advance of the mind—a fluency that speaks before thinking what is best to say. There is also drawing so pretty in its technique as to give fictitious attraction to a bad design.

The prizes we have the pleasure of giving to-night are for studies and compositions in some of which the drawing is, in my opinion, nearly as good as possible.

Archæology

will enter into your historical studies, but let it not be a matter of dry bones with you; do not follow it too far, troubling yourself with curious or unprofitable speculations; do not become the pedant. You should be conversant with the great achievements of all periods, yet I think the mind should be occupied with one method of building, of construction, and of treatment at a time. While examining the refinements and subtleties of Greek art and following on through the works of the great Roman builders, it would be undesirable to distract the mind with the study of the Gothic shrines, the soaring towers and spires of the North; they have their origin in another inspiration, another conception of the beautiful. There is the glory of dazzling light in the one case; while solemnity and mystery are the aim of the dim vaulted aisles of the mediæval sanctuary.

With all the striving after originality, I hope the rising architect will retain a reverence for Tradition. His best education is in the study of the fine work that his forerunners have done. As a change and recreation he has also the study of Nature, her laws, her methods, and her marvellous arrangements of colour. He must not, however, transplant the actual forms of verdure, chiselling them in stone, or using the fronds of ferns for metal castings.

Proportion

is perhaps the most essential element of good architecture. It costs nothing, and it is applicable to the humblest as well as to the noblest of works. How is it to be secured? It is the product of the trained mind and the practised eye. True, it has been reduced to a science, and there are lines laid down, with mathematical rules to be observed—rules that can be applied to the just proportion of length to breadth and height.

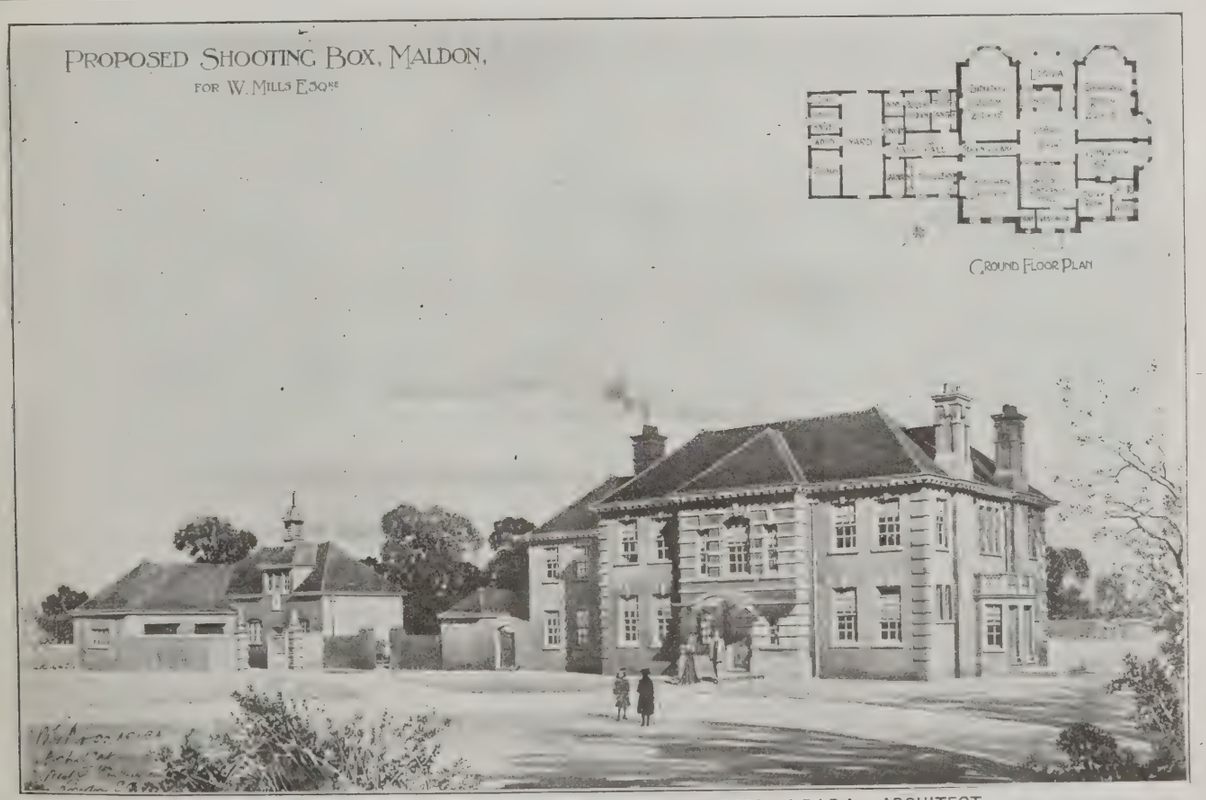
But the beauty of proportion comes in with every detail: with doors, windows, and their appropriate mouldings; and I think it can only be secured by a refinement of knowledge and taste—the subtlety of feeling that is indispensable to the production of fine music or painting. It is in a measure intuitive to the artist, but it is also a faculty for cultivation, and perhaps is gained most by the mental assimilation of great work.

Texture,

though secondary to proportion or shape, greatly affects the building; indeed, proportion is upset by over-large mouldings, keystones, or by sculpture in the wrong place, or to a wrong scale. The touches that should be the crowning glory of a work may, by ignorance, be made subversive to beauty. I must be forgiven for putting sculpture under the head of texture to the building, but as such it must be taken into account.

The sizes and jointing of stone courses are a factor in the matter of scale. We know the charm of small bricks, as seen in the Flemish buildings, and we admire the long thin brick in the Roman walls, while none can fail to be impressed by cyclopean stones as seen in the temple or in the bastions and walls that girdle an Etruscan city.

Smooth walls of ashlar stone or of gauged brickwork seem right with classic work and its delicate mouldings; while rough brickwork is in vogue for buildings of other types, some of our friends specifying that no mortar joint shall measure less than half an inch. The broken colour so obtained is pleasant,



PROPOSED SHOOTING BOX, MALDON, ESSEX. W. G. ROSS, A.R.I.B.A., ARCHITECT.

This house has been designed for a three-acre site on rising ground near Maldon Station. The site falls from the road, giving fine views from the back of the house, with the Blackwater in the distance. The best rooms are therefore placed on the garden front, with a south-east aspect. The accommodation is as shown with five good bedrooms on the first floor. The stables consist of two loose boxes, harness room, and double coach house, man's living-room, and hay and corn store on first floor. The elevations are in local sand-faced red bricks, with rubbed and gauged arches and Ancaster stone dressings. The cornice is of wood, and the roofs are covered with hand-made sand-faced dark tiles.

but the beauty of your work must not depend mainly on the accidents of texture and colour.

Colour.

What may be said of colour? It has an influence that appeals to us directly, for our happiness or distress; light and darkness are in its train. As a nation we are not colourists, and we have been shy of colour since the primitive Briton discontinued woad as a costume. Within the house there is the fear of losing light, while out of doors the feeling is that in our London streets all will presently be of the same low tone. There have been daring experiments with glazed materials, some with distinct success, but a shiny surface is not generally acceptable.

As a broad principle I think that raised surfaces and colour are seldom wanted together. A coffered ceiling or a good piece of modelling, with its projections well considered, does not want its background picked out with colour—its light and shade are an equivalent to colour; also a fine painted or mosaic ceiling is best as a flat or curved surface, or with only the slight projections of gesso.

We know that the Parthenon and other inimitable Greek monuments were originally in colour, the mouldings picked out, while the marble gods and goddesses were tinted in flesh tones, with coloured draperies. To me it seems that breadth would be exchanged for realism, the Greek masterpieces sharing the quality of waxwork; but I dare not question what was done by consummate artists of the great age.

In mediæval times the Gothic churches and castles had their shafts, ribs, and mouldings, in positive colours; the devices of heraldry supplying the *motif* of decoration, and the scheme, though vivid and crude, must have been splendid. The full glory of colour is found in fine stained glass, and that is at its best when throwing its tints on uncoloured walls. Walls of precious material or rich in decoration are best under the unobscured light of day.

Misplaced Ornament.

I will not talk to you of Styles, to advocate one or to disparage another: we have ceased to fight on that field. I will only say that the qualities making for good or bad are, in all styles, the same—viz., truth of construction, justness of proportion, breadth and simplicity, and above all simplicity. All the tawdry vulgarities that shock you are the violation of that quality: efforts after the pretentious or pompous; the assumption of something that is not. A building may be rich and yet broad in treatment; our Houses of Parliament may be taken as an example. The fascinating devices of Pugin give richness and texture to the whole surface, but they are so employed that the broad masses of Sir Charles Barry's composition only gain thereby. In contrast to this, the "Horse Guards," Whitehall, is a building severely plain, hardly a moulding to arches or openings, yet it gives almost an impression of richness by the proportion and disposition of the parts and the skill in arrangement of its lights and shadows. Misplaced ornament is the bane of architecture, as is also ornament that is out of scale.

We have touched upon the many things that it is good for you to know and to do; though you may be an Admirable Crichton, you will not accomplish all. You must make choice of that which comes best to you and for which you have affinity. In some cases combination meets the many requirements of the architect, who must play the parts of artist and man of business. If any two of you, quite sure of one another, agree thus to divide the work, it may be for your mutual happiness. The work will be done with fewer disturbing interruptions, and you will have companionship to lighten the worries that must arrive from time to time.

Simplicity in Life.

I have said study simplicity in design; I would further urge simplicity of life. Let your wants and your encumbrances be few, that you may be free in the race. Concentration of mind and of aim is essential if you are to be successful. I mean real success, which is not always to be measured by income. Comfort, cushioned ease, and expensive cigars are not a stimulus to the artist; discipline he needs, and the best form is self-discipline.

Live by Your Art.

I have before expressed my belief that it is well you should have to live by your art. It is good for you personally, and I think it is also good for the work. An architect has no opportunity of producing pot-boilers even when money is scarce. I do not know how many of you have been born with the traditional silver spoon in the mouth—I do not specially congratulate those who have. You have the harder fight against the spirit of indolence that is in us all. There is also the temptation to use the brains of others if you have them at command, to become mere dilettante, or, saddest, to become the art critic instead of the worker.

When sufficient knowledge and discrimination for the purpose have been attained by the student, foreign travel comes to him as an inspiration. With delight he will see in substance the monuments that have been familiar to him only in diagrams and text-books. There is joy in the freedom of life, and fascination in the change of scene, of climate, and of human interest. With these pleasant distractions discipline and application are specially called upon for the gathering of that which is precious and the refusal of all that is ephemeral or meretricious though attractive.

For those who are not privileged to make the grand tour there are priceless treasures to be found in our museums; doorways, fountains, monuments and bronzes of the great periods, and those now seen judiciously placed and well lighted in their spacious new home, accessible to all, and giving the student a quieter time for measuring and drawing than the traveller would obtain in a Continental street. These objects demonstrate the treatment and workmanship of the artist and craftsman, but much of their meaning is lost when these features are divorced from their natural surroundings. The student must look at things as a whole, noting the important element of scale; he must not be absorbed by details.

Over-crowding.

Our technical schools, State or rate aided, have been turning out batches of young men partially equipped for doing your work, and they will be provided from the public funds with drawing boards and T-squares for the purpose. Till they get outside the schools they do not learn, poor fellows, that the field is over-crowded and that we have no use for them; there is at the same time a great lack of good mechanics, a deficiency which they ought to supply.

There is an effort among ourselves to raise the standard, both social and educational, of the practitioner, believing that thereby the quality of work will be raised. It will be only by the use of your higher endowments that you will keep the field. Our "art" teaching has been fraught with curious results, and I fear we have many bad artists who might have been fine craftsmen.

It is worth much to you to acquire literary style, your letters and reports being terse and clear of verbiage. The art of public speaking should be part of your equipment; you may take the advice as sound from one who lacks it. It will always be pleasant in this room to hear the voice of any young man who will add to the interest of the subject considered; he may often contribute profitably to the discussions. I speak of debating, not of bear-baiting. We have instances, fortunately rare, of young persons seeking prominence by the latter process; perhaps giving notice to "ask questions"—a string of them, pertinent or impertinent. Of all things avoid professional politics and cabals. They disturb that tranquillity which is essential to the performance of good work, while they occupy time that should be given to the claims of art.

In this Institute, our Brotherhood, our aim must be to help one another. We do not all meet with equal fortune; and if success comes to you, give a helping hand to your fellow who has less luck in the lottery. Fortune is a fickle dame, and none can tell which of you now entering the arena is to be the great architect of the future. The ranks are well filled, I will not say overcrowded; but for those of you who use your opportunities aright, who train seriously and possess your own souls, there will be work for your hands to do.

Speculative Building.

We are in the habit of judging the standard of architecture by the public or prominent buildings of the year, and by such pretty pictures as appear in the professional journals. It is painful, however, to remember that these are a very small portion of the building that is done in the country, the mass of which knows no architect and is subject to no laws. In the future we trust that the speculating builder, and the hard-headed lawyer who finds him the money, will realise the advantage of the architect's help to improve his plan, to give pleasant proportion to his building, and a semblance to some recognised style, while saving him his present outlay on lavish and misplaced ornament.

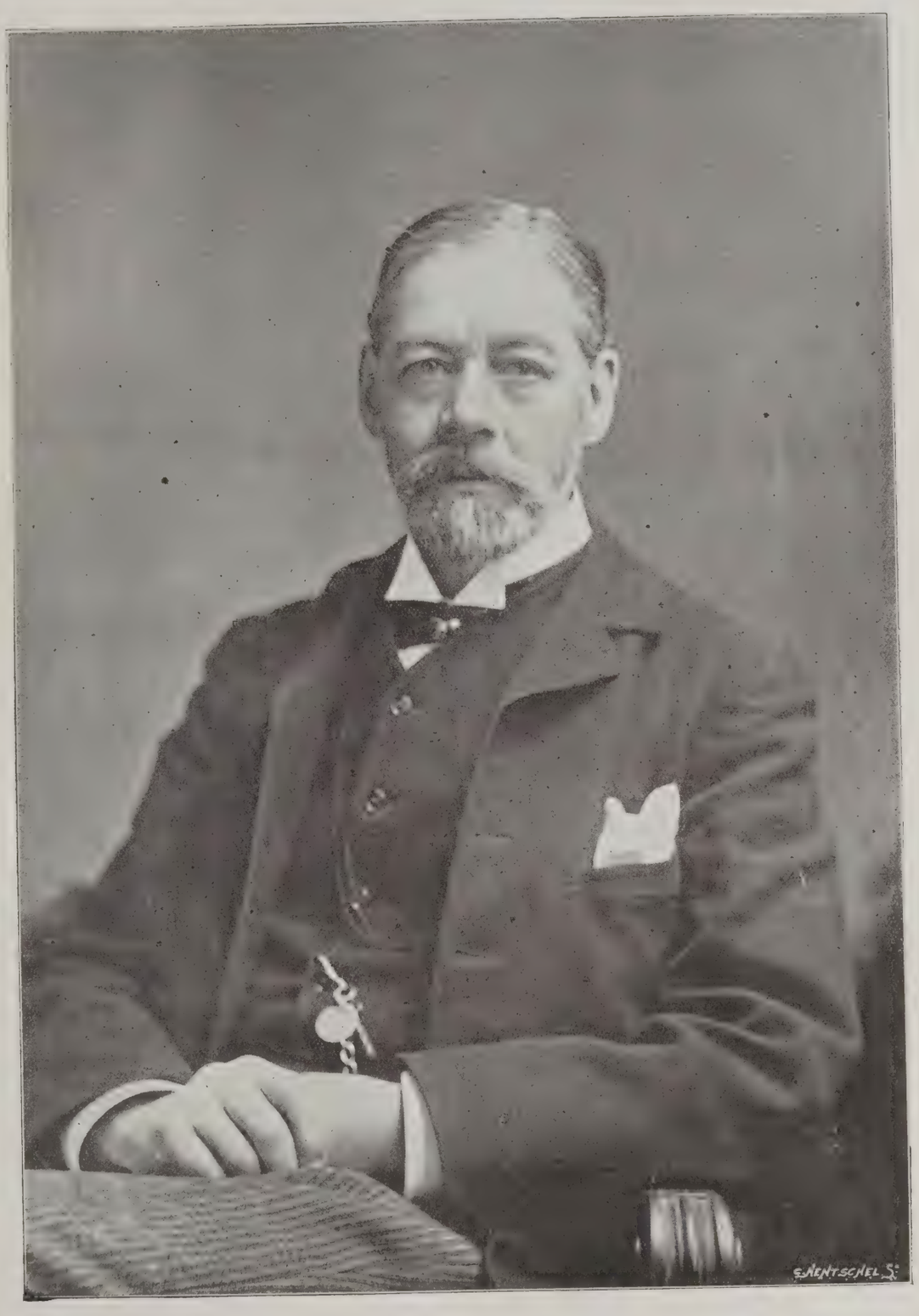
There is with us the beginning of an appreciation of architecture. There is the idea, comparatively new to us, called Town Planning; the knowledge that we must work not only on our own plot, but consider also our neighbour, combining with him for a pleasant lay-out, a monumental disposition, and grouping of buildings.

I verily believe, in the period that you enter upon, architecture will rise to a higher level than it has known in our day. I earnestly hope to achieve that end is the steadfast aim of you architects of the future. I wish you good luck, and a large store of happiness to be found in the work which it will be your privilege to do.

Mr. Mervyn E. Macartney then read his criticism of drawings submitted for the Institute prizes and studentships 1909-10 as follows:—

I feel deeply honoured in having been invited to review the works submitted for the Institute prizes and studentships. It is a privilege as well as an honour; but privileges, to be worth anything, are generally hedged round with duties, and so it is in this case. To discharge conscientiously this task is no light matter, especially for one, like myself, who has never entered any of these contests. I have never heard "the bells chime at midnight," nor have I racked my brain for recondite mottoes like "Touchsoane." There is this much to say for these competitions, that I firmly believe that they are awarded by the judges without fear or favour to the design or drawings considered best. I feel certain that your tribunal is absolutely impartial; and this fact must be of enormous value to you when entering these lists. It mitigates the soreness of defeat to know that you have lost because a better man has won. On the other hand, nothing discourages a man more than the feeling that he has been unjustly dealt with, especially when he is young and has not had any experience of the world's wicked ways. We should all be happy to stand in the shoes of the winners, and set out on our travels through the enticing lands which history points out as the birthplace of our Art—to Italy, to Greece, to France, or, less distant, to wander through our own land with all the blithe carelessness of youth, the enthusiasm, the whole-hearted devotion to Art. And to those who have failed I would say, you can at least hope to follow them later. Although your work in the present instance has proved unsuccessful, it will surely, by the experience, by the increase to your knowledge, help to make you cultivated architects. It will do that at the very least; it may also lead you to victory another time.

But, after all, the reward is his who has through months of self-denial carried to completion a definite and difficult piece of work. And the feelings of Gibbon on relinquishing his pen after his labours on "The Decline and Fall of the Roman Empire," are not



MR. THOMAS GRAHAM JACKSON, R.A., ROYAL GOLD MEDALLIST, 1910.

Mr. Jackson, who has been nominated as the recipient of the Royal Gold Medal this year, was born on December 31st, 1835. Educated at Brighton College, he entered, in 1854, Corpus Christi College, Oxford, and the same year he was elected Scholar, and ten years later Fellow, of Wadham College, Oxford. Mr. Jackson has always had a strong bent towards Gothic work—in which category, however, he includes much that is generally classed as Early Renaissance. As he himself puts it: "I regard all buildings which conform to the conditions of English climate, material, and habit, as Gothic." Mr. Jackson was a pupil of Sir Gilbert Scott, and his principal works have been new buildings at Oxford and Cambridge Universities.

very dissimilar to those of the weary student who lays down his pencil with his last drawing finished.

I may be allowed to say a word on the value of these competitions. As you all know, architectural education at the Beaux-Arts is almost entirely a matter of "concours," and those, too, of a magnitude that would make most of us grey-headed; but you also know with what results. The great American schools do no less, and their recent achievements are no less astonishing. There may be some disadvantages in this system of education, but they seem to me counterbalanced by its obvious advantages. Apart from the effect on the student of competing with his fellows, and learning from his blunders, and getting rid of all the nonsense he may have imbibed, it prepares him for the wider strife of his later life. Most public buildings nowadays are put to competition, and offer to the young man unequalled opportunities of displaying his ability. I may remind you, too, that it has nearly always been the same; you all know that Brunelleschi was unsuccessful in a certain competition for bronze gates, and lived to crown St. Mary-of-the-Flower with a great dome.

It is sometimes objected that these competitions are too academic in character, too much removed from everyday practice to be of much use to the student. From this view I entirely dissent. The exigencies and shifts of real practice will come soon enough, and these academic exercises, while teaching design, give to the intellect an agility to be acquired in no other way, and therefore I congratulate all students whose courage has successfully carried them through a long and arduous undertaking.

Two main branches of work have to be considered—studies of ancient building and original designs. Too much stress cannot be laid on the utility of the first of these studies. In no other way can the student learn to understand architecture as a thing of three dimensions—a thing solid and stable like the rocks and hills; a thing, like these, to stand through years and centuries exposed to the ravening teeth of time. This is one of the most useful lessons the student can learn—that architecture is not paper. By studying ancient buildings he will learn to understand the weights of architectural features, their values. If he analyses the impression made on his mind by a building, he will discover the qualities that made for sound architecture—repose, dignity, and unity. However much he is interested in detail, he will find that these are like notes of music—serving merely to build up some grand symphony of sound.

The greatest thinker of the eighteenth century, one whose mind like the very sun irradiated everything, likened architecture to "frozen music." I like this simile, for it seems to crystallise in two words all criticism of great architecture. And no one who has been moved and delighted by some fine building will, I think, be inclined to doubt its truth. So that the student should try to discover the vital qualities in the building he chooses to delineate, and pay more attention to the masses than to the details which only help to build up the main conception. In his drawing out he should endeavour to be as clear and concise as possible, trying to express the spirit of the work—as far as this can be done by geometrical drawing—rather than his own idiosyncrasies.

With the original designs, clear and simple draughting should be striven for. But this is secondary to the design, and the student, before entering this phase of his work should have made himself quite clear as to the requirements of the programme. From this brief premise let us pass to a short review of the work itself which has been submitted in the present instance.

The drawings as a whole are not of transcendent excellence. Indeed, I consider that, taking them *en masse*, they are below the average. There are some good examples of draughtsmanship and colour, but they are few. There is little unanimity in the rendering of drawings, which, by the way, adds considerably to the difficulty of judging, and points to the fact that there is at present no definite teaching in this country. There are almost as many styles of drawing as there are candidates. Some are in the French style, but they lag far behind the real thing; others are done in a slap-dash "Art Nouveau" with a Teutonic touch that is rather amusing.



9-13, ESSEX ROAD, ISLINGTON, N. LOVEGROVE AND PAPWORTH, ARCHITECTS.
The front of these premises having been cut off through a street widening scheme the new front shown in the illustration has been built from the designs of Messrs. Lovegrove and Papworth of 374-8, Old Street, E.C. for Messrs. C. F. Anderson & Co. The base is faced with salt glazed bricks and the upper part with fixed stocks with artificial stone dressings of a warm cream colour. The general Contractors were Messrs. R. Schooler & Son.

The good old-fashioned type has still its followers. Originality has a certain charm, and has the additional, questionable, advantage of attracting attention. This is notably the case in the design "Horseshoe," awarded the second prize in the Soane Medallion competition. But it would be impossible to live in the same house with that perspective.

Now, if one looks at the drawings collected at the Victoria and Albert Museum, one is struck by the sobriety and dignity of the exhibits. There is no attempt to advertise the cleverness of the draughtsman. It is good honest work, and attempts only to render truthfully what it set out to do without any *arrière pensée* of applause. It may be said here that this quiet unobtrusive draughting requires more skill and patience than the slap-dash method. Perhaps the extensive use of perspectives is the cause of this anxiety to shine. Personally I instinctively decline to be drawn by the alluring and meretricious. I should recommend students to leave out all unnecessary details, such as figures and motor-cars—the guardsman and nursemaid seem to have had their day, but other figures as ill-advised and as badly drawn have taken their place, which always remind me of the blind man's remark in the New Testament that "he saw men as trees walking," and as for the motors—no self-respecting inspector would give them a licence.

Taking the awards as they appear in the Institute Journal, we have the measured drawings first. The first prize is awarded to the author of a set drawings showing the Wellington monument, "Roma." The details are beautifully drawn, but the half-inch drawings are less attractive. They lack crispness and decision, but on the whole they make a useful set, although below the average of other years.

The drawings placed second, "François Mansart," are remarkably good. His subject is the Hotel Carnavalet, Paris, and if the large-scale drawings had been up to the standard of his small drawings, it would have come into more serious competition with the winner.

"Adige" was placed third, with drawings of the Palazzo Pompeii and Palazzo della Gran Guardia Vecchia, Verona, but his execution lacked crispness and did not rise to his high theme.

Two sets of the West Front of St. Paul's were submitted, both conscientiously drawn. Those by "Puggins" are extremely accurate, and I would impress on students the necessity for absolute correctness. Another set shows Christ Church, Spitalfields—a rather gaunt looking subject when shown in grim outline of black and white. This last competitor would be well advised to consult the conditions more closely in future. He will find that six strainers are required, and if his drawings had been adjudged the best, he would have been placed *hors concours*.

The next prize on the list—the Soane Medallion—is the most important, and although the subject of the competition was an inspiring one, it has not called forth any great merit. The fault lies to some extent in the conditions themselves, as perhaps the boundary of the site was too confined. However, the first two designs are good. The first, "Mirth," is a good sober study of Renaissance work, very well worked out, but indifferently drawn; a serious omission in the plan is the absence of a foyer. The perspective, however, does justice to the design; indeed, is it quite the best in the exhibition. The second, "Horseshoe," is an extremely clever design, but I fear in execution its crowning feature would be lost. Its clever perspective has been mentioned above. "Sunlight and Air" submits a design worked out with a French flavour. The effect in perspective is not quite happy. An imaginative study, cleverly rendered, is drawn by "L'Espoir." "Mafie's" drawings are extremely interesting, but the design fails as a whole. If it is allowed, I should recommend the author of "Budget" to retire quietly into political life.

Three sets of drawings were submitted for the Owen Jones Studentship, and the prize is awarded to Mr. W. O. Miller, whose work deserves great admiration, but it is regrettable that he did not choose a better illustration of modern work than the façade of the Church of SS. Pudentiæ and Pudentianæ at Rome, the front of which has been covered in modern fresco decoration in imitation of mosaic. I endorse the recommendation that the sets of strainers submitted by Mr. H. R. Wilkinson should have some award. Mr. Gibbons should be commended for the very painstaking and careful drawing he has made of the Italian mosaic pavement from the Presbytery of Westminster Abbey, especially as the whole was drawn and coloured on the spot.

The drawings submitted for the Pugin Prize are on the whole very good. Mr. Hubert Frazer, who is awarded the prize, has an excellent variety of drawings clearly and well done. The two gentlemen, Messrs. Chisholm and Cowper, bracketed for second place have also done good work.

Thirteen competitors submitted designs for the Tite Prize. There seems to have been some misconception in their minds as to the kind of loggie best suited to the site. Here, again, if we may say so, the conditions were faulty. One has only to consider the size of the sunk garden—actually about one tenth of the area of Lincoln's Inn Fields—to see this. In spite of this confined area the bulk of the competitors choose to shut it in with raised loggie, which in reality would have a poor crowded effect. None of the designs was considered to possess sufficient merit to warrant the prize being awarded, and it it therefore withheld. The most meritorious scheme, "Jupiter," offers no obstruction. The sunk space (it cannot be called a garden), is surrounded by a terrace raised a little above the level of the street, and the corners are marked by raised shelters—quite a needless addition. His drawing is only fairly good, and his perspective is bad. "Tomahawk," placed second, has no obstruction opposite the palace, although he has surrounded the other three sides with screens. The triumphal arches at the sides are too heavy and quite

out of place. "Comprized Within" is placed third, with a rather careless set of drawings. The perspective is the best of them. Most of these drawings are very much below the usual standard of the work in this competition.

Mr. C. D. Carus-Wilson is awarded the Arthur Cates Prize for some excellent drawings. His design for a country house is also good, at least as far as the exterior is concerned; the plan is poor. Mr. Wm. Dean is commended for his drawings of the staircase of Cromwell House, which are extremely vigorous and crisp.

The Grissell Gold Medal is awarded to "Fra Angelico" for a fairly good study of a church in ferro-concrete. This competitor is commended for his constructive ability. The architecture is of a nondescript and futile character, and the perspective distinctly poor. Mr. W. Milburn, junior, has been awarded the Godwin Bursary in view of the convincing nature of his essay and knowledge of hospital work.

In conclusion I should like to say one word more to students. I have said above that the task of the judges is made extremely difficult by the fact that the drawings are finished in every conceivable style—shadows projected on plan till the scheme is hidden, others coloured like a kaleidoscope, and elevations treated in a hundred different and confusing ways. I should recommend students to alter all this, to finish their drawings simply in pen and ink, and to figure titles, names of rooms, etc., in legible and fair Roman lettering. I hope to see this embodied as a definite requirement in the instructions to competitors in the future. When a perspective is required it is obviously useless to project shadows on elevation. Do not imagine that it is easy to make a fine set of drawings in pen and ink—far from it; but it is by far the clearest and best way of exposing a design.

Discussion.

Mr. Reginald Blomfield, A.R.A., proposed a vote of thanks to Mr. Ernest George, and said he hoped that students would read and re-read his admirable address. Such shrewd advice, coming from one so experienced as Mr. George, might be taken as a sort of pilgrim's script. He had listened, he continued, with much interest to the criticism of work, read by Mr. Macartney, who was eminently fitted to criticise as one who enjoyed exceptional opportunities of studying at first hand that masterpiece which was the finest example of Renaissance work in England—probably in the world. The judges must have had considerable difficulty in allotting the prizes this year owing to the excellence of the work submitted, which he believed to be equal to that of previous years. The Soane and the Tite prizes were, he understood, to encourage design in the grand manner; but the very limited dimensions did not allow the student sufficient elbow room. The many and diverse methods of draughtsmanship were somewhat unsatisfactory, and he hoped that some day an advanced school of design would make an effort at standardisation of treatment. He would like to see the prizes extended right up to the hilt, for it was a matter of great satisfaction to find work, as they had seen at the Alpine Club, of such high promise. During the last two or three years there had been an abominable epidemic of Ionic capitals, from the volutes of which people were in the habit of hanging swags, until it had become perfectly nauseating. The custom came, as they knew, from France. He had been told recently that the Arts in France, and particularly Architecture, had become bankrupt, and no doubt there was some truth in the statement. The careful study of old work was the only way to form a manner of one's own. Exuberance of ornament suffocated beauty; and he advised architects young and old to rely on their brains and imagination, rather than on the camera and the sketch book.

Sir W. B. Richmond, K.C.B., R.A., seconded the vote of thanks, and congratulated the Royal Academy upon the election of Mr. Ernest George as an associate to its ranks. He sincerely hoped that the time would come when they would have more architects among them at the Academy. He recalled the fact that, many years ago, when he had gained a silver medal, Mr. George had received a gold one. He congratulated the author of the "Mistress Art" upon his speech, which was for him (Sir William) perhaps a tiny bit too Palladian. He entirely agreed with all the strictures that had been made upon him with respect to games. He was an old man now, but once he had been a devil at games. However, he would far sooner see the youth of the country making a Territorial Army, or a band of boy scouts than expending so much energy upon the useless game of football. Consultation with the daily paper would show about four inches of matter, perhaps less, dealing with educational subjects, and four columns about cricket in Australia or somewhere else. The address by Mr. Macartney was as full of meat as an egg. He himself had been preaching for years the same gospel at the Academy, but the difficulty was to get the young men to "catch on." Referring to the colouring of Greek architecture, Sir William said it was wrong to think that the Greeks applied the gaudy colours that we, and more especially Germany, would use. The marble walls of the Greek buildings were first covered with wax, so as to receive a delicate colour. If they examined the purest colouring in the Parthenon they would see something quite delicate, something quite unaggressive, like spring flowers. The buildings throughout Sicily had retained the exquisite colouring that had been applied, in some cases, so far back as the second century B.C. No blue had been used, only black and white, which in that climate had the appearance of blue. If colour was to tell at all in England it had to be crude. He maintained that architecture, however pure in itself, was not injured, and might be considerably influenced for good, by judicious colouring.

Societies' Reports.

The Institution of Civil Engineers.

At the ordinary meeting on Tuesday, the 1st February, the Council reported that they had recently transferred to the class of members, Messrs. G. Gonsalves and T. W. A. Hayward.

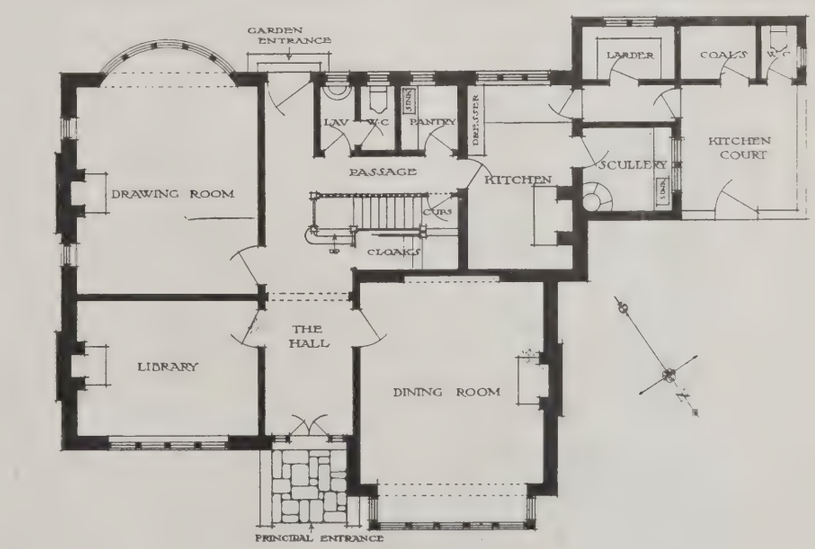
It was also reported that 24 candidates had been admitted as students, viz., H. Bächtold (Manchester); A. T. Bennett (Stroud, Glos.); C. W. Boyle (Leeds); G. M. Brown, B.Sc. (St. Andrews), (Seremban, F.M.S.); N. S. Clouston, B.A., B.A.I. (Dubl.), (Dublin); J. L. H. Cooper, B.A. (Dubl.), (Gateshead); S. Crowther (Leeds); A. S. Culham (Bury St. Edmunds); B. N. Dutta (Arbroath); E. W. Eller (London); K. Gauldie, B.Sc. (St. Andrews), (London); H. J. Gwyther (Manchester); W. L. Hamilton (Edinburgh); N. H. T. Homer (Swanage); D. F. Irving (Bristol); H. P. B. Jones (Southsea); E. C. Last (Garston); E. Mallett, B.Sc. (Eng.) (Lond.), (Southend-on-Sea); W. G. McCracken (Glasgow); B. L. St. C. Miller (Bristol); J. A. Rodwell (Leeds); R. V. W. Stock (London); A. F. Tippett (London); B. H. Witty, B.Eng. (Liverpool), (Liverpool).

The monthly ballot resulted in the election of:—

Nine members, viz., W. F. H. Creber (Sheffield); R. A. Fullerton (Glasgow); T. Glover (Norwich); S. Hunter (North Shields); E. H. Lloyd (Cairo); J. D. McLauchlan (Edinburgh); A. H. Roberts (Leith); H. Rowell (Newcastle-on-Tyne); W. J. Wilgus (New York).

26 Associate members, viz., R. J. Angus, Stud.Inst.C.E. (Calcutta); A. S. Barker, Stud.Inst.C.E. (Newcastle-on-Tyne); T. S. Brown, Stud.Inst.C.E. (London); H. Cockburn (Rio Tinto); W. E. Desbruslais (Nagrakata-Jalpaiguri, India); M. E. Y. Eliot (Standerton, Transvaal); P. N. Everett (Yeovil); D. Furness, Stud.Inst.C.E. (Poulton-le-Fylde); C. J. Gyde (Johannesburg); R. B. Higginson (Punjab); F. P. Khan, B.A. (Cantab.), (London); H. F. Mason, Stud.Inst.C.E. (London); T. Muirhead, B.Sc. (Glas.), Stud.Inst.C.E. (Glasgow); J. A. Orrell, Stud.Inst.C.E. (Bradford); D. Paterson (Singapore); A. Priestley, M.Sc. (Victoria), (London); H. I. Robinson, Stud.Inst.C.E. (Sevenoaks); H. Stringer, B.A. (Cantab.), (Nanking); E. M. Tabor (Eastbourne); H. Terrell, Stud.Inst.C.E. (Chittagong); A. Tomlinson, M.Sc. (Victoria), Stud.Inst.C.E. (Manchester); F. R. Unwala (Bombay); J. Warrack, B.Sc. (Glas.), (Manchester); T. W. Wishlade (London); J. W. Wooding, B.Sc. (Eng.) (Lond.), Stud.Inst.C.E. (London); H. R. Young (Dunedin).

Mr. Harry W. Weedon has moved his offices from 75, New Street, Birmingham, to more extensive chambers at 95, Colmore Row, Birmingham. Telephone, 7317 Central.



GROUND FLOOR PLAN

SCALE 10 3 0 10 20 30 40 50 FEET

PROPOSED HOUSE AT GUILDFORD, SURREY. R. F. JOHNSTON, ARCHITECT. (See centre plate.)

Notes on Competitions.

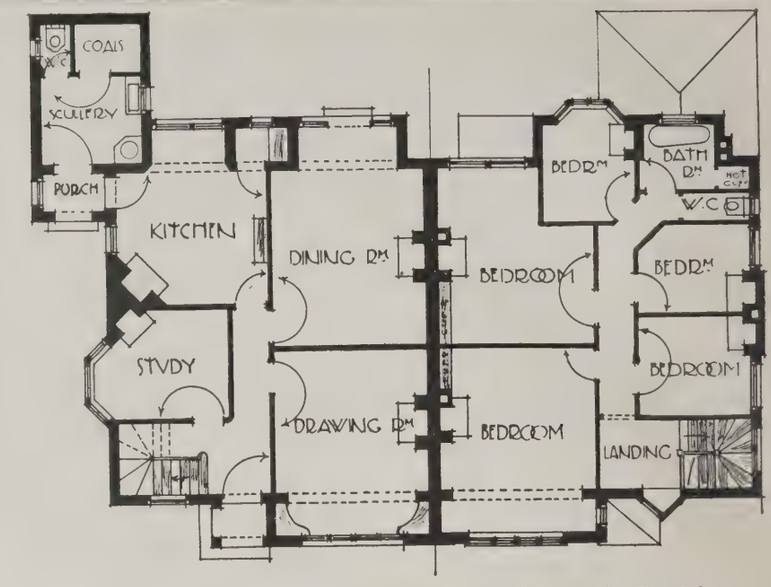
LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Mar. 1.	GLAZED BRICKWORK DESIGNS AND ESSAYS. A committee of glazed brick manufacturers invite designs for works to be executed in glazed brickwork, also essays as to the advantages to be derived from the use of this material in accordance with conditions to be obtained from J. Johnston Green, 142, Liverpool Road South, Southport. Premiums of 100 guineas, 50 guineas and 25 guineas awarded to designs and essays jointly. Assessor Mr. Max Clarke, F.R.I.B.A., appointed by the President, R.I.B.A.
Mar. 31.	SHEFFIELD: ENDCLIFFE PARK CHURCH. Plans desired for Church for 650, Institute for 150, Primary Department for 125, Junior Department for 95, and Caretaker's Apartments. Premium, not merged in commission, £35. Assessor, Chas. Hadfield, Esq., F.R.I.B.A. Questions until February 10. Delivery on March 31. On receipt of 5s. the Secretary, J. W. Nicholls, 64, Everton Road, Brocco Bank Sheffield, will furnish conditions and instructions, with plan of site, showing existing buildings, levels and drainage—these not returnable. Deposit returned only to those who send plans.
May 31.	MUNICIPAL OFFICES, KARACHI. The Municipality offer a premium of 7,500 rupees (£500) for the best design, detailed plans and estimates for new Municipal Offices. Cost not to exceed 500,000 rupees, and the style of architecture is left open to the designers. Ferrotype plans of the site and a general arrangement of the floors of the building showing the accommodation to be provided, together with a copy of instructions to architects, will be supplied to intending competitors on application to the Chief Officer and Chief Engineer, Karachi Municipality. A charge of Rs. 5 will be made therefor, which will not be refunded. Each set of drawings must be sent in anonymously, but accompanied by a sealed envelope containing the author's name and address. Each set of drawings and all the documents required, including the sealed envelope, must be securely packed in a wooden box addressed as follows:—The Chief Officer and Chief Engineer, Karachi Municipality, Karachi, India, and forwarded, at the competitor's own risk and charges, in time to reach the Chief Officer on or before the 31st day of May, 1910. It is proposed to apply to Government for permission for one of the chief architects to act as assessor to decide on the design to which the prize shall be awarded. The decision of the assessor will be final and not be open to dispute. The decision of the Municipality will be made within three months of the latest date for submission of designs, and payment of one-half of the premium will be made thereafter to the author of the selected design, the balance to be paid when the further details specified in the instructions to architects have been supplied. On payment of the premium the Municipality will have all rights in the design, with power to erect the building under its own agency, either according to the design selected or with such additions or alterations as it may deem necessary.
No Date.	SECONDARY SCHOOL AT PETERBOROUGH, for Soke of Peterborough Education Authority, to accommodate 250 scholars, but allowing for enlargement so as to accommodate 300 scholars. Particulars of the general instructions and conditions, together with a plan of the site, may be obtained on application to Walter J. Deacon, Clerk to the Authority, Cross Street, Pteugh.

Elementary School, Southend-on-Sea.

In the local competition for an elementary school for 1,200 children recently promoted by the Southend-on-Sea Education Committee, the assessor was Mr. T. J. Bailey, F.R.I.B.A. The committee have now made the following awards based on his report:—1st permium, design under motto "XL. Alternate," by Mr. P. Brockbank; 2nd ditto, "Axial," by Mr. W. G. Ross, A.R.I.B.A.; 3rd ditto, "Education," by Mr. J. T. Greenhalgh.



TWO SEMI-DETACHED HOUSES ON THE FINCHLEY MANOR ESTATE.
ROSSER AND ANNAN, ARCHITECTS.

Correspondence.

[The Editor declines responsibility for the statements made or opinions expressed by correspondents.]

Competition: A Remedy for the Financial Loss to Architects.

To the Editor of THE BUILDERS' JOURNAL.

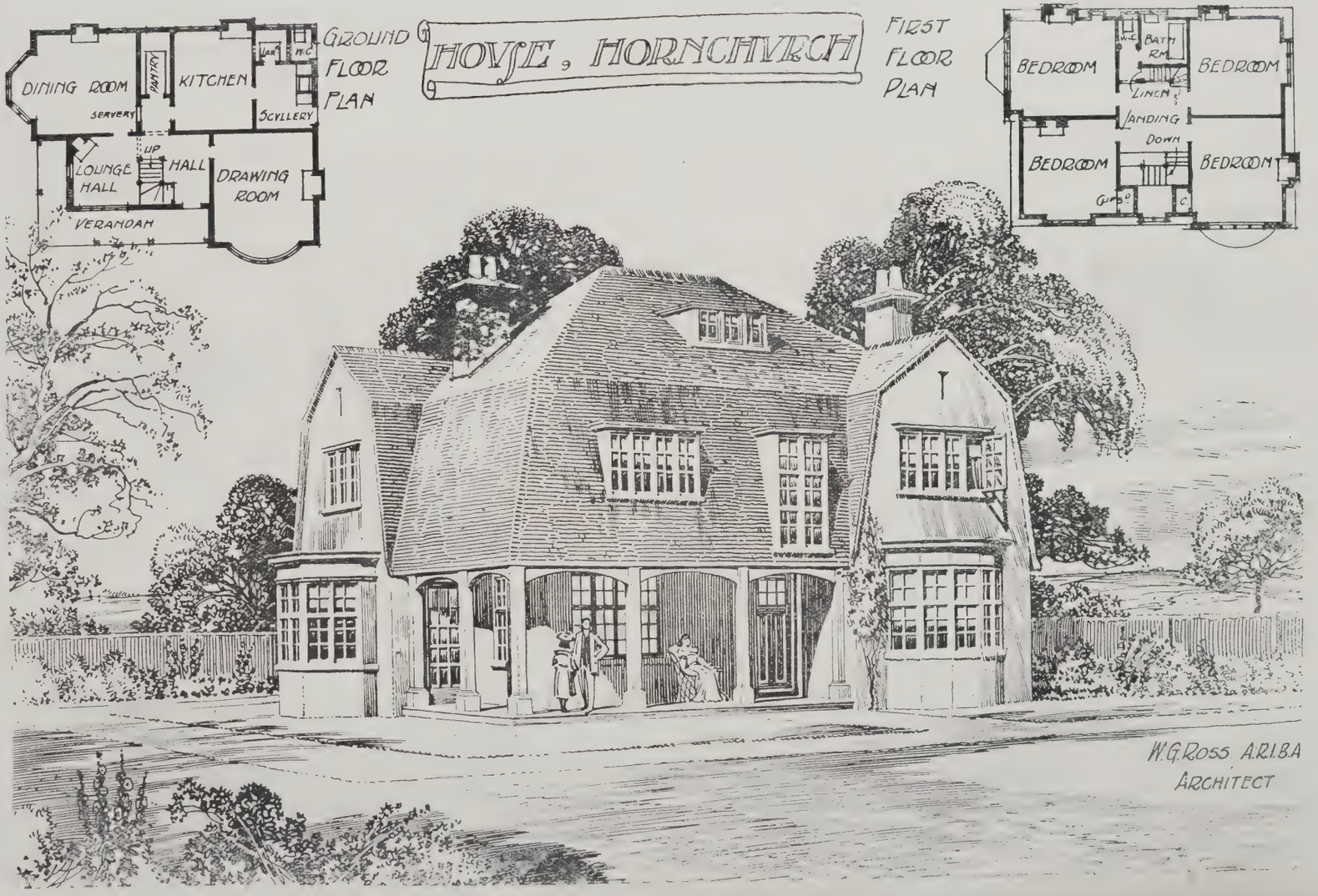
SIR,—I have read with interest Mr. Edward M. Gibbs's letter on the subject of Financial Loss to Architects Caused by Competitions, and at the moment at least am quite sympathetic (having made a design for the Museum of Wales, and finishing all of the drawings but one in time—but a day late with that one, sufficient cause for disqualification!— and hence am filing the work of two or three weeks away in the lumber room).

The point Mr. Gibbs has raised has already been studied in the United States, and the writer was interested to discover by means of personal observation that nearly two-thirds of the cost of a set of competitive drawings goes into the inking in of line drawings at ⅛in. scale; that by doubling the scale one very nearly doubles the cost of the drawing; that is to say, if a set of drawings at 1-32in. scale take ten days to produce (inked in), they will take about nineteen or twenty days to make at 1-16in. scale and, say, thirty-five days at ¼in. scale. This proportion of cost of pencil drawings with shadows cast and washed in is very much less, but, of course, requires much more skilful assistance than when ink is used. If a finished set of pencil and wash drawings at 1-32in. scale take ten days to complete, the same drawings at 1-16in. scale can be made in about thirteen days, and at ⅛in. scale in about fifteen to sixteen days. This analysis of time is the result of notes which have been made during the making of competition drawings by the writer, and upon twenty or more important competitions. One or two notes which the writer has in his note-book may be of general interest to architects entering competitions:—

On the L.C.C. Hall Competition, an expert draughtsman pencilled in one five-storey bay of a running motif in Mr. Belcher's design in 22 minutes, and inked it in in 50 minutes. By making careful note of the time spent in the various moves made by the draughtsman, I found that twenty minutes were spent in actual drawing of lines, six minutes in adjusting T-square and set-square (the design included fluting columns), and most of the remainder in trying the pen, filling it, cleaning it, and reaching for the ink bottle; four minutes were spent using an ink-eraser. On the same competition—towards the end—I kept track of erasures (by noting the sound, of five men working in the same room) and found it to be almost continuous during three hours, and at times two or three men were erasing at once. I also noted that about four out of five errors were made by the students or young draughtsmen, while one of the best men drew for three successive evenings without using knife or ink-eraser.

Generally, it will be found that it does not pay to employ students upon competitive drawings unless exceptionally skilful at lettering, and with sufficient experience with plans to be trusted with inking in. If the drawings are to be in pencil and wash, the architect can execute most of them himself, or with the help of one or two good assistants upon duplicating, and a student to help generally in the way of service rather than upon the drawings.

In the competition for the big groups of buildings for West Point Military Academy, Mr. W. S. Eames, of Eames and Young, of St. Louis, wrote to each of the twelve invited competitors (probably the twelve most prominent offices in the United States), and asked them to state the cost of their drawings. The average cost was found to be about $3,000 each set. The lowest cost was given by Messrs. Cram, Goodhue and Fergusson—the successful competitors—who stated that most of the drawings were made by Messrs. Cram and Goodhue, but assistance in finishing cost about $1,800. Messrs. Eames and Young's design cost about $2,600, and was executed almost entirely by six very skilled and high-priced assistants. In some of the offices employing their regular draughtsmen of all grades of ability, the cost varied from $3,000 to $4,000. Mr. Burnham's fine drawings, which were inked in with light ink before rendering, were reported as costing about $5,000. The actual cost of the twelve sets was somewhere between $25,000 and $40,000. The deductions which I make are these: First, that inking in ought not to be required; second, that in an open competition the drawings should be at a very small scale, and as few as possible; third—which would result from the foregoing—the drawings should be made by the architect himself, and with the assistance only of men as competent as himself. Perspectives should be prohibited unless it is thought proper for the designs to be plainly signed.


HOUSE, HORNCHURCH
GROUND FLOOR PLAN
DINING ROOM
SERVERY
PANTRY
KITCHEN
VAR.
W.C.
SCULLERY
UP
LOUNGE HALL
HALL
DRAWING ROOM
VERANDAH
FIRST FLOOR PLAN
BEDROOM
BATH RM.
W.C.
BEDROOM
LINEN
LANDING
DOWN
BEDROOM
BEDROOM
W.G. ROSS A.R.I.B.A
ARCHITECT


PROPOSED HOUSE AT GUILDFORD SURREY
FOR W. STUART MURRAY ESQUIRE
R. F JOHNSTON ARCHITECT
R.F. JOHNSTON
DELT 1909

As to competitions in general they ought to be conducted not for the purpose of securing a design, to which the architect is bound to adhere, but for the purpose of selecting an architect whose ability to execute a given problem should be indicated by the *parti pris* in the design which he submits. There is too great a tendency, in England especially, to consider the architect as a kind of skilled draughtsman and guarantor of what the builder's price will be, and to employ him as the servant rather than as the professional and artistic adviser of the owner. "Conditions" of competition ought to be discountenanced by the architectural societies, and a "programme" of competition substituted. The architect selected ought not to be limited to produce exactly what he submitted in the competition or to be in danger of losing the commission if he makes an error in his estimate.

From my observations of competitions I am led to believe that the best results practically and artistically are obtained when the duties of the assessor are reduced to a minimum, when the requirements of the client are stated in general terms, and the approximate price only, exclusive of ornament, is given, and when the architect selected can modify his detail at will after selection. To this end a mixed and double competition would give the best results—that is to say, by having a competition open to all, but with a dozen of the best men invited and paid, for a period of one month, and requiring drawings at a scale sufficiently small so that they could each be placed on a sheet of, say, half-imperial size. From the designs entered in the first competition, in which every competitor should be obliged to take part and enter, on an equal footing in other respects than that of invitation and payment to a few, from two or three to a dozen might be selected to enter upon a more detailed set of drawings; but even these should not admit of too much detailing, and if fine pencil drawings were required, 1-16th inch (or 1-8th inch in very small structures) scale should be sufficient for the purposes of the assessor.

There may be some objections to the above suggestions—possibly from the draughtsmen who draw lines which look like shoe-strings—but I put them forward as leading in the direction of improved status of the profession, and as a means to cutting down the drain on its financial resources.

FRANCIS S. SWALES.

Notes and News.

In a series of experiments to determine whether concrete could be conveyed in the plastic condition from the place of mixing to the point where it was to be deposited, Messrs. Buzzell and Larkin have, according to "Science Siftings," attained results which seem to determine the feasibility of this plan. The experimental plant consisted of a hopper tank maintained under compressed air, in which the concrete was placed, and from which a pipe led to the point of deposit. Half a cubic yard of broken stone concrete was deposited at the end of 400ft. of 4-in. pipe in less than five seconds. One must not forget that Mr. Edison also claims to have devised a liquid concrete for making his "poured" or moulded houses.

* * *

The Chain Concrete Syndicate, of 1, Basinghall Square, Leeds, and Carlton House, Castleford, recently issued a pamphlet on their system of reinforced concrete, which consists in great part of a description of an interesting example of reinforced concrete, viz., the construction of an underground lavatory at Bridlington, and a reprint of the article descriptive of the system which was published in our columns some time ago. The pamphlet is worthy of perusal by all those specially interested in the subject.

One of the largest stones ever cut in Britain is a block of granite brought from Polkanuggo Quarry, Cornwall, to form the foundation stone of the sill of the new west entrance at the North Eastern Railway Co.'s docks at West Hartlepool.

* * *

Our Plate.

Proposed House at Guildford, Surrey.

The site proposed for this house has a south-easterly aspect, and is surrounded by some fine old trees. The rooms are of convenient size, the drawing room having a semicircular French window leading to the garden. The servants' quarters have been kept well away from the rest of the house, with suitable access to the dining room from the kitchen. Special thought has been given to the cupboards, pantry and linen-cupboard. There are, four bedrooms, dressing-room, bathroom, etc., w.c., box-room, and servants' bedroom, on the first floor. The hall is panelled in oak to a height of 7ft. The roof is covered with hand-made and sand-faced roofing tiles. The walls are rough-cast; the chimneys being built of small hand-made red bricks. The garden lies south and east. The architect is Mr. Robert F. Johnston, of London.

House at Hornchurch.

This house is built on a corner plot on the Great Nelmes Estate. The accommodation is as shown with one bedroom in the upper roof. The dining-room fireplace is recessed in an ingle fitted with seats. The walls externally are cement rendered, rough cast and distempered cream colour. The roofs are covered with Tuckers hand-made sand-faced tiles. The windows are glazed with leaded glass, and the opening lights are fitted with metal casements and slips. The woodwork externally is painted apple green. Mr. Walter Gray Ross, A.R.I.B.A., of 1, West Street, Finsbury Circus, E.C., is the architect.



A PAIR OF HOUSES AT FINCHLEY.

This drawing shows a perspective view of a pair of houses recently erected on the Finchley Manor Estate. These have been built with brickwork, roughcasted externally on all elevations. The roofs are of red tiles, the entrance halls and staircases have old panelled dadoes, and the windows are filled with leaded glass of artistic and simple pattern. The builders were Messrs. Frecker and Co., and the Architects Messrs. Rosser and Annan, of Sheen, S.W.

HOW THE LABOUR EXCHANGES WILL WORK.

By W. H. Beveridge, Director of the National Labour Exchanges.

At the annual general meeting of the National Federation of Building Trades Employers of Great Britain and Ireland, held at the Trocadero Restaurant, Piccadilly Circus, London, on January 26, the President (Mr. Ernest J. Brown) introduced Mr. Beveridge, of the Board of Trade, who had kindly consented to explain the working of the Labour Exchanges, of which he is at the head.

A National System.

An Act was passed last year, he said, authorising the Board of Trade to establish and maintain a national system of labour exchanges, to which employers wanting workpeople of any kind might send and notify their needs, and at which workpeople, when in search of employment, might register with a view to hearing of any vacancies notified. Since the passing of that Act, the Board of Trade had been busy establishing these exchanges, and in a few days they hoped to open about 80 of them in the principal towns of the country. Later, the number would be considerably increased by the inclusion of the smaller towns, but at present they had arrangements in hand for opening, either on February 1st or soon afterwards, about 80 exchanges in the principal towns, by which he meant, roughly, all towns with a population of over 50,000. They did not take the population basis absolutely, but that was a rough guide.

The Premises and the System.

Those exchanges were simply offices, in premises hired for the purpose, to which workmen might go when they wanted employment, and register their names, giving particulars as to their trade, qualifications, etc. The workmen would have to come in person. They would probably allow people who lived at a distance from the exchange to apply through the post, but, as a rule, the workman would have to go and register in person. He would answer certain questions, and then being registered, he would remain on the register for a week, after which he must go and renew his registration. He did not mean that they were only going to see these men once a week. Any likely workmen they would encourage to go each day until work could be found for them. If they were going to make a success of this at all, they wanted to have a labour supply pretty readily available. In Germany they had gone so far as to have waiting rooms for the men. He did not know whether they would come to that in England, but at present they proposed simply to try and get the men to call at frequent intervals in their search for work. If, when a vacancy was notified, they had not got a man available, they could always send out for him, but they wanted as far as possible to avoid that necessity. Ultimately, they hoped the exchange would be the place through which a man would usually get a job.

Telegraphic Address, "Labex."

With regard to the employer, the exchange was simply an address to which he could send when he had a job, for which he would want men. He would simply have to write to the labour exchange in any particular town, or he could telephone (all the exchanges would be on the telephone), or he could even telegraph. He might say that the telegraphic address would be, everywhere, simply the word, "Labex," and the name of the town. An employer, instead of writing and asking for men, might send a messenger or a foreman, who could choose between the men who were waiting at the exchange. It was suggested to the Board of Trade, in a conference they had with some of the employers' representatives, that it would be useful to have some of the exchanges open at night, so that a foreman who wanted men next morning could go and pick them out for himself overnight. That was a matter in regard to which they were not going to make any hard and fast rules, but which they were going to settle according to the circumstances of the trade and the locality. They wanted everywhere, so far as was possible, to fall in with the existing trade customs and convenience.

No "Hobson's Choice" for Employers.

There was one thing they were not going to do, and that was that they were not going to take from employers and foremen the business of choosing their own men. That was not the exchange's business at all. The business of control and choice and dismissal naturally remained with the employers. What they were going to do was to make certain that employers could get at once men to choose from, and they were going to make a sort of preliminary selection. He did not mean that the exchange managers would be able intuitively, at first sight, to judge whether a man was competent or not, but they would, as soon as they got experience, find out something about the men from the kind of reports concerning them



MR. W. H. BEVERIDGE.

Mr. Beveridge was educated at Balliol College, Oxford, and was elected in 1902 Stowell Civil Law Fellow of University College, Oxford. For a time he was Sub-warden of Toynbee Hall, and he has also been a member of the Central (Unemployed) Body for London, and acted as Chairman of the Committee which established the London Labour Exchanges. He is the author of a book on "Unemployment," upon which subject he is a recognised authority.

given by the employers, and in that way they would undoubtedly find out which of the men were no use at all, while, on the other hand, they might hear from an employer that such and such a man was good, and that he would like that man sent to him on the next occasion. In that way they thought there would come about a quite natural process of selection, not by deliberate action, but simply because the managers' one object would be to send men to suit the employers and not to send men who would bring the exchanges into disrepute. In that way, too, the exchanges would make it undoubtedly easier for men of good character to get at once into touch with a job, and as a consequence it would make it harder for the incompetent men to pick up the odd jobs that they did pick up now and again at the beginning of a building job.

Weeding Out.

In certain parts of the country it happened that there was a considerable process of weeding out at the beginning of every building job. Builders took on all the hopeless people that came along, and they had gradually to get rid of them. The exchanges were going to begin that process a little earlier, and instead of the builders having to take on everybody who came along, and to weed them out after trial, the exchanges were going to weed them out beforehand, because they would have made the discovery beforehand that those particular men were no good, and were not to be sent while there were better men available. There were, of course, times when employers might have to take on anybody they could get. He was afraid those times had not been very frequent in the building trade of late, but he supposed that even building would recover eventually, and then he was convinced that they would find the existence of the labour exchanges a very great advantage. Whatever might be the case in the big towns, it was not always easy to get men at once in the smaller towns, and it was not always easy to get competent men. That was roughly what the exchanges were meant to do.

There were one or two special points which he would like to mention. He had hoped to be able to lay before them the regulations which had been made general as to the working of these exchanges. Unfortunately, it had not been possible to get them published in time, but he could indicate roughly the principles which were to be adopted. As to travelling expenses, the Act enabled the Board of Trade to make regulations authorising themselves to advance travelling expenses to men travelling to jobs. That would always have to be by way of loan, and they could make loans either to the workmen or to the employers. If an employer wanted men badly and was willing to pay their travelling expenses, the exchanges would advance those expenses to the men for them. They would not, as a rule, advance money, but would give railway tickets, by arrangement with the railway companies, and either the men or the employers must repay the exchange later. That matter would be fully dealt with in the regulations.

Benevolent Neutrality.

As to the attitude they would take up in regard to wages and the question of strikes, briefly their attitude was that those things did not concern them. Questions of wages should be settled between employers and workmen, either collectively or individually, and the exchanges would simply give the information that they possessed. They would tell the workmen what were the wages offered, if they knew—and it was more useful that they should know—and the men could accept or refuse. As to trade disputes, when there was an actual strike, there again they had had a proposal made to them that they should shut up shop altogether. They felt that that would land them in difficulties in deciding as to whether there was a strike or not, and so they proposed to take the line, which was universally approved in Germany, that they would not shut up shop, but if there was a strike and they got a vacancy notified to them which was a vacancy caused by the strike, they would let the workmen know it was a strike vacancy, and he could go or not as he chose. They proposed all through simply to give information, and not to take responsibility for decisions in disputed questions. They were to be the servants of employers and workpeople, and not their masters.

Advisory Committees.

Thirdly, they proposed to have advisory committees. The control of the exchanges and the final decision must in every case remain with the Board of Trade. The officers would all be officers of the Board of Trade, but they thought that in some cases they might like to have a means of getting at the opinion of the employers and workmen of a district and therefore they proposed to establish advisory committees so as to refer such questions to them. Those committees would consist simply of employers and workmen, with a chairman agreed upon by a majority of both sides, and if he was not so agreed upon, then he would be appointed by the Department. He did not think those committees would have

to settle many disputed questions; but if there were any such questions. there would always be equality of voting power between employers and workmen, and the chairman himself would not have a vote. Thus, if there was equality of voting, the chairman would simply report the fact to the Board of Trade.

"Give it a Fair Trial."

He thought those were all the special points worth mentioning, but he would be glad to answer any questions put to him. He would like to ask them to give the system a fair trial. It was always difficult to persuade any body of business men that anything proposed from outside was going to be of advantage to them, so he would simply put it that it would not be a loss to them. He thought himself it was going to be a distinct advantage. Undoubtedly they had got an almost unanimous opinion that some sort of machinery such as this was necessary from the point of view of the workmen and of the question of unemployment. He would not weary them by quoting authorities, but it was a fact that all those authorities who had approached the matter from the point of the question of unemployment, had come to that conclusion. He hoped they would feel it possible, therefore, seeing that it was not going to be any loss to them, and that it might be an advantage, to give the system a fair trial. By a fair trial he meant not simply sending to the exchange once a year or so when they were in real difficulties for want of men; it was no good dealing at a shop only when they were in difficulties, because no shop would stock goods unless it had a fairly regular demand. The more they made a practice of sending to the exchange, the more likely they were to have a man for them in an emergency. It was no good waiting till the emergency came and sending only then.

[It May Make Mistakes.]

Another point was that it was not giving the exchange a fair trial to try it once and then have nothing to do with it because it happened to make one mistake at the beginning, and sent them an unsuitable man. They could not be absolutely secure against mistakes in the beginning; they could not be absolutely certain that every man who appeared to be qualified was absolutely competent, but they could make quite certain that they were not going to continue making mistakes, because they were bound to get a knowledge of the men gradually, in the working of the system. They therefore wanted the employers, if they got a man who was not suitable, not simply to dismiss him, and leave the exchange alone for the future, but to tell the exchange that the man was unsuitable, and to ask for a better man next time. Their one object would be to do better next time, and to bring the employers and the competent workpeople together more quickly than they did at present. In conclusion, he wished to thank them for listening to him so patiently. (Cheers.)

At the L.C.C. Central School of Arts and Crafts, a series of demonstrations dealing with the growth of a house began on Monday, February 7th, 1910, and will be continued every Monday during the session from 8 to 9.30. A complete set of working drawings of a small house recently built will be used. The peculiarities of the site so far as they have influenced the planning and construction will be explained; and the materials and work of every craft, also the drainage, hot and cold water supplies, etc., will be fully dealt with. Every student will be expected to bring a book for sketches and notes. Applications should be made at once to the Secretary at the school. A few more applications are also invited for the class in lettering and stone inscription carving, conducted by Mr. A. E. R. Gill, on Tuesday evenings, at 7 o'clock.



ELECTRIC CRANE AT HAMBURG.

This is a light crane which can be built of steel to any reasonable height—say, 50 feet. It revolves at the cab level, is driven electrically, and stands close up to the scaffolding. A number can be erected at one time along the front of the building, as they do not traverse.

THE BUILDER'S FOREMAN.

By Alfred B. Searle.

The advent of machinery and of new methods of construction in the building trade is revolutionising certain departments in a way which is too obvious to be overlooked and too small to be realised in all its fulness by those most concerned. In days gone by the primary qualification in a builder's foreman was his ability as a workman, and it was recognised that any young apprentice who had sufficient intelligence, and who was skilled at his work, might rise to the position. Within recent years, however, this has been altered so completely that some of the most successful foremen, employed by the largest firms, have only a superficial knowledge of the actual handicraft, and have been chosen more for their shrewdness and general capability of "seeing ways out of difficulties" than for their actual manual skill. Just as the clerk of the works is the technical representative of the architect or owner, so the foreman is the representative of the builder, and for this purpose a man skilled in the reading of plans, quick to see how to overcome those puzzling little problems which are always occurring, and which must necessarily, to a large extent, the unforeseen, and with sufficient personal "force" to have his instructions carried out promptly and satisfactorily, is worth far more, under modern conditions, than the best joiner, mason, or bricklayer who ever lived, if the latter is destitute of the qualifications just mentioned.

So great has been the change, in fact, that it is questionable whether any serious importance is to be attached to the supposed necessity for mechanical skill on the part of the foreman, and whether the demand of modern building construction is not creating the need for a type of man which cannot be produced as the result of an ordinary apprenticeship to a trade.

The ordinary workman of to-day—especially if he be of the sort out of which the older foremen were made—is a man who thinks much and who does not hesitate to express his opinions. He may have been badly misinformed as to the true state of affairs in the relationship between capital and labour in the modern state, and may have various theories and ideas, either original or imported, as to what should be his true position in life, and if these ideas are sufficiently dominant they may prove as much of a hindrance to his success as a foreman as they were a blessing to him as a craftsman.

For this reason some employers are seriously considering the advisability of employing as foreman men who have been trained specially for the purpose in technical and other classes, but who have not any special skill as workmen. They are doing this because the foreman who is a strong upholder of his trades union is inconvenient from the employer's point of view, and consequently it is easier to get certain kinds of work superintended by men trained apart from the ordinary apprenticeship, than from those who have been promoted in the ordinary way.

This tendency is to be regretted, for it is based on a fallacy as to the fundamental duty of the foreman, and assumes (which is by no means correct) that the foreman's chief work is to keep the skilled and other workmen profitably employed and to prevent waste of time.

As a matter of actual fact, the foreman's true position is to stand intermediately between the employer and the individual workmen and to see that, as far as possible, the interests of both parties are fully secured. This is by no means so easy as appears at first sight, for the tendency is for the masters to overwork the men, or to make impossible conditions on the one hand, and for the workmen to "slack" and waste time (and therefore money) on the other. Hence one of the primary requisites in the modern foreman must be the ability to judge fairly any complaints or suggestions which must be received from either party, and to give a wise opinion thereon.

This implies the selection of middle-aged men as foremen, for younger ones are apt to fail in appreciation of the men's position, and to be so anxious to please their employers as to have but little influence on those who are, after all, their fellow workers.

Indeed, "influence" is the keynote to the whole position. Without it a man may be extremely clever as a worker or as an organiser on paper. He may have ample knowledge of the technical side of his work, but he cannot get other men to work efficiently. One of the easiest ways for a foreman to lose influence is to prove his incompetency as a workman, for there is nothing which makes it so easy to ridicule a man as to attempt to show another how to do a piece of work and to fail to do it himself. For this, if for no other reason, it would appear to be always necessary for a foreman to be a good all-round workman. Indeed, it is difficult to understand how a man can justly decide the wage-earning value of a particular operation unless he is able to do the operation himself, and thus know the amount of thought and care, as well as the actual time required.

Quickness of perception and the power to control other men are thus found to be only two out of many important characteristics required in a foreman; a thorough technical knowledge, not only of his own trade, but of all those allied to it. Perhaps if a single characteristic were to be selected as the one of greatest importance at the present time, it would be a sympathetic attitude to both masters and men, for with this a foreman will be able to influence both his employers and those under his charge. He will be able to see that justice is done between the parties, and by the judicious expression of his own opinion, based on his knowledge as a workman and as a technical student of both the trade itself and of economical problems affecting labour and capital, he will prove a valuable aid to the success of the firm employing him, and an equally valuable friend and adviser to those he is employed to direct. A truly sympathetic attitude will prevent him from favouritism on the one hand and excessive harshness on the other, and will be his chief means of carrying out his duty with the least friction. It will enable him to suggest improvements to his employers in matters of construction and arrangements, and to effect economies in costs without undue hardship on the workmen.

THE RE-BUILDING OF THE CAMPANILE, VENICE.

By A. G. H. Thatcher.

The collapse of the Campanile in 1902 has proved to be only an event in its history. Its re-erection will give additional zest to future reading of the story of one of the most interesting buildings in Europe. A very short résumé of the principal incidents recorded since its foundations were laid will perhaps be acceptable. To the Doge Tribuno Memno is usually attributed the honour of commencing the pile, between the years 880 and 912. An old tradition preserved in the library of St. Mark's states that the groundwork was of extraordinary area and depth, but some excavations by Signor Boni in 1885 proved this to be incorrect.

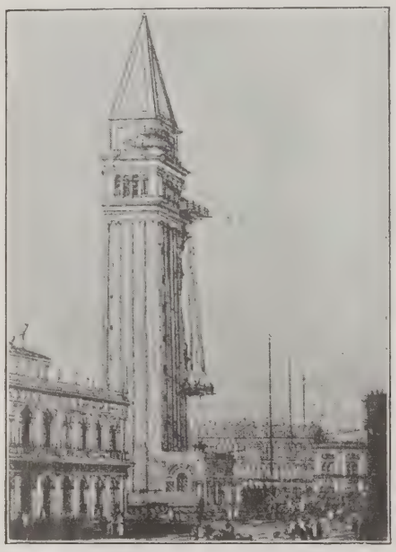


FIG. 1.—THE CAMPANILE OF ST. MARK, VENICE.

From a picture by Canaletto at Windsor Castle, showing the swinging cradle.

The base was then found to be of 12 stone courses, having a height of 16ft. 6in., two feet of which at the time rose above the pavement level, although with the old pavement this rise was about 3ft. 6in. The exposed portion of the base ranged round the square tower as steps. The stonework was carried on horizontal oak beams resting on clay, and kept together by piles of white poplar.

It would appear that for a considerable period only the lower portion of the Campanile existed, and that it was then chiefly used as a watch tower. Further evidence shows that a completion was reached between the years 1148-1157, and that the dimensions were: Height, 230ft., and plan, 40ft. sq.

In 1178, a wooden belfry was added, the credit for which is given to Barratièrs. From then until 1328 nothing in particular is recorded, but year later a restoration was carried out by Maestro Montagnana. In 1388, lightning took effect upon it, and about 1403 the upper portion was burnt. Timber was again used in its construction, but it only lasted some fourteen years, when fire, caused by the effect of a thunderbolt, again made destruction. The lessons learned from these disasters suggested the use of stone in the reconstruction. and the tower was carried somewhat higher than before. In 1489, lightning again played havoc, and it was not until 1511 that a commencement was made to substitute a permanent structure for the temporary covering. Partly owing to an earthquake shock, reconstruction from the cornice upwards had become necessary, and was completed rapidly in 1514.

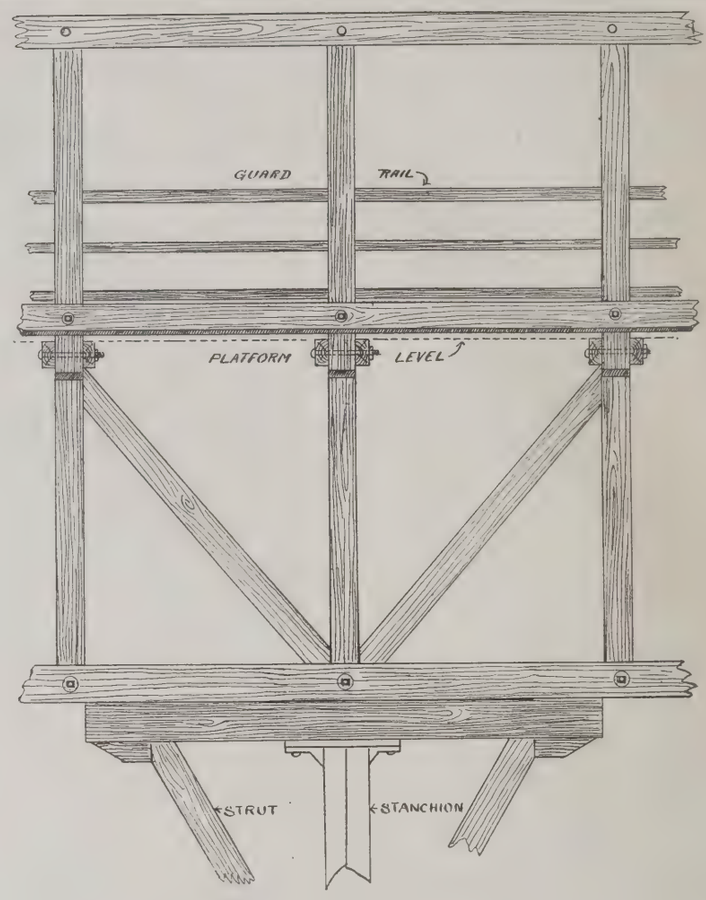


FIG. 4.—ELEVATION OF RISING PLATFORM.

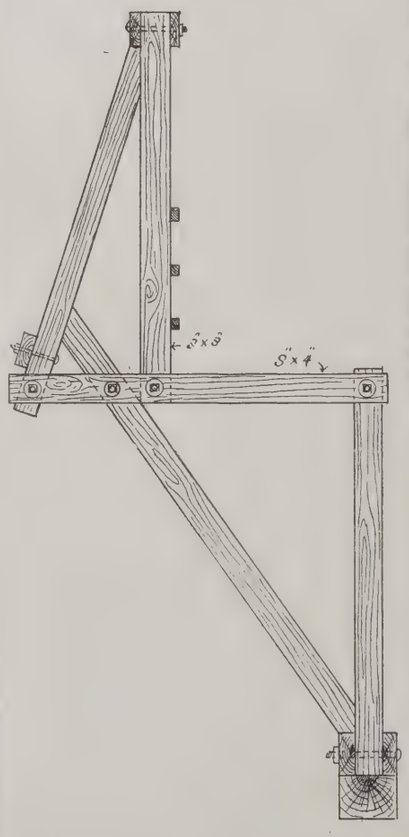


FIG. 3.—SECTION OF RISING PLATFORM.

An added beauty was given to the tower in 1540 by the erection of the Loggetta designed by Sansovino.

In 1548 and 1565, lightning was responsible for further damage, and a restoration was made after the second occurence. Further damage was done by lightning or fire in the years 1656, 1745, 1761, and 1762, but a conductor fixed by Waldo in 1776, has been very effectual.

From that time, until the recent collapse, little has to be recorded. Additions were made to the Logetta for its further adornment and enlargement, and about 1873 the somewhat insignificant shops which had been, during the course of time, erected around the tower were cleared away.

During the latter part of the nineteenth century, many rumours were abroad as to the defective condition of the building, and some steps were taken to ascertain how far these suspicions were correct. It came too late, however, and the structure fell on July 14th, 1902. An eye-witness, in describing the scene, has said that early on that day little puffs of dust were seen issuing from the cracks in the main walls. These increased in volume, and it was at once seen that internal disintegration was taking place. The Piazza was immediately cleared and railed off by poles, and very shortly afterwards the whole erection buckled, as it were, and fell towards St. Mark's Cathedral. The Loggetta was, of course, demolished, but no lives were lost, not even a pigeon perished the Venetians somewhat proudly say.

The fallen material lay as it fell for some 8 months, when steps were taken to commence clearance and rebuilding. Further delay afterwards ensued. It was found necessary to renew the piling under the walls. The first bricks provided proved to be unsuitable, and some argument ensued as to whether the steps around the base should be



FIG. 2. THE CAMPANILE OF ST. MARK, VENICE.

This view shows the progress of the new Campanile by September of last year. Details are given in the article and drawings on the opposite page of the unique form of scaffolding adopted for the construction, a form which might be equally suitable for similar structures in this country.

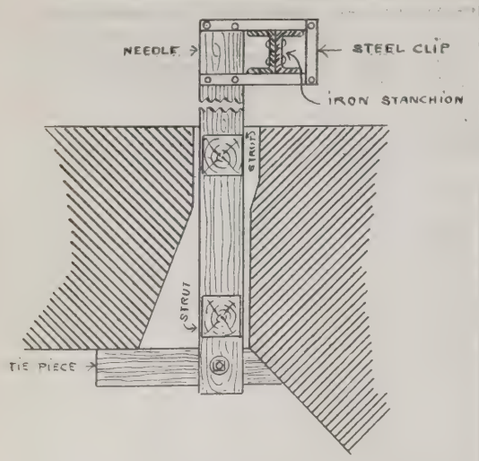


FIG. 5.—PLAN OF CLIPS TO STANCHION.

3 in number as before the collapse, or 5 as originally built on the lower pavement. The material was carefully sorted over, and much —especially that for the Loggetta—will be re-used. This portion of the building is being carefully pieced together in the courtyard of the Doge's Palace in an effort to re-use some of the rare marbles; and doubtless when re-erected, it will present largely its earlier appearance.

The tower itself is being built to its previous design. It is probably well known that until the cornice is reached no staircase exists, the ascent being made by a series of "pontes" or slopes, some 37 in number. It is said that about the year 1905 Napoleon ascended these on horseback.

The bricks for the new erection are from Treviso, some 30 miles from Venice. They average in size about 12in. × 6in. × 3in. Istrian stone is being used where such work is required. At the present time the height to the cornice has been reached, and it will therefore be some time before completion takes place.

Apart, however, from its architectural history, the Campanile has a peculiar interest attaching to the particular types of scaffolding that have been used in its repair and re-erection.

In 1745, after one of the periodical impairments due to lighting, the repairs, which proved necessarily extensive, were undertaken and carried out by means of a hanging scaffold raised and lowered by a windlass..

A drawing in Windsor Castle by Canaletto (Fig. 1) shows the arrangement, with a considerable amount of detail. The records of the time refer to this scaffolding as being invented for this express purpose, and it is possibly the first example of what is now known as a painter's boat or cradle. The Italian engineers must have a special aptitude for designing scaffolding, for they have, in the re-erection now going on, devised a system which, so far as the writer is aware, has no parallel. Fig. 2 is a general view of the structure as it exists at present.

When a height of about 40ft. had been reached, a framework to carry a platform was built entirely around the tower. Figs. 3 and 4 show a section and elevation of this in detail. A reference to the elevation (Fig. 2) will show that a series of small windows are built in the walls. They are arranged to throw a light on each landing, so that they exist also on each façade. This afforded the engineers an opportunity of which they readily availed themselves. When it became necessary to raise the platform, lengths of channel iron were bolted to the lower beams in duplicate to form an H stanchion of each side of the frame, so that they would hang vertically over each series of window openings, and by these the framework was raised. Additional lengths of channel-iron were added as the scaffold was worked up; and to keep these stiff, collars were fixed in each window to clip the irons. This is shown in Figs. 5 and 6.

The lifting arrangement is shown by Fig. 7. Beams carried through the walls as cantilevers formed the required support, and carried a metal base from which the purchasing power could be gained. The steel plates or beds were perforated in their centres, so that a steel screw rod about 20ft. long could be passed through each. The perforations were not at right angles to the bed, but slightly inclined, so that the lowest ends of the rods reached the channel iron support to the scaffold itself; and to this they were strapped and bolted. On the iron beds, hollow steel barrels with a female thread were placed, and received the steel screw rods. As shown in the diagram, the stanchion could then be forced upwards by means of capstan bars turning the steel barrels. The rate of progress was slow, about 1oft. in two hours. Two men were required to each handle during the operation. The exceedingly slow movement had its advantages, in that there was less likelihood of an uneven rise in the framework above. The pliability of the steel rod is necessary to allow the standard to rise without causing undue cross stress upon the rod itself.

For the purpose of erecting square towers, this system of scaffolding has many advantages. Ordinary pole scaffolding will not stand above a certain height with safety; it then requires a new base; and the same may be said even if square timbers are used, with the exception that the possible height is greater. This difficulty was met with in erecting the tower for the Roman Catholic Cathedral, Westminster. The scaffolding

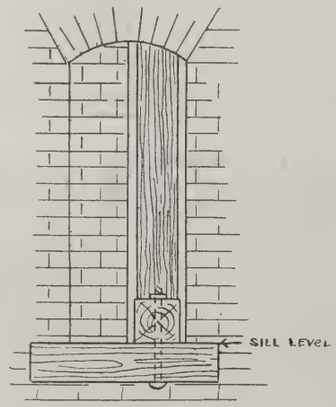


FIG. 6.—ELEVATION OF CLIP TO STANCHION SEEN FROM INSIDE THE BUILDING.

there was erected internally, and showed a tendency to buckle when about half the ultimate height was reached, necessitating a fresh base of timbers laid from wall to wall.

With the Campanile erection, the pointing and cleaning down can be carried out by bringing the framework down in the opposite manner from which it was raised, so that it is difficult to see any real disadvantage to its use. Being of a more scientific nature than ordinary scaffolding, the knowledge of an engineer would be required to ascertain the proper strength needed in the materials used, also that the structure would maintain its rigidity. In this particular instance, the margin of strength is such that the higher portions of the building are to be erected by means of more ordinary scaffolding which will stand upon the framework as it now exists, supplemented by booms laid across the building, as seen in Fig. 2.

The materials, bricks, etc., were hoisted up the interior of the structure. For the safeguarding of the workmen, a guard-rail was fixed, as shown in Figs. 3 and 4, and this was increased in value by the use of netting, which completely enveloped the whole of the scaffolding on the outside.

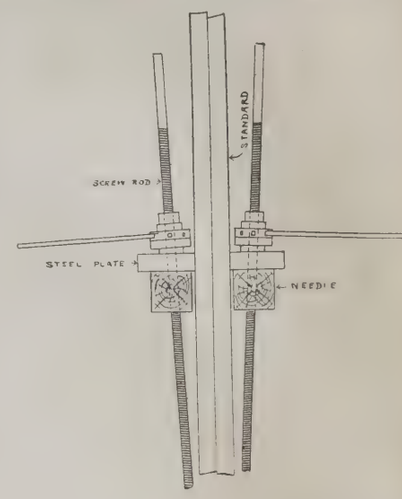


FIG. 7.—THE RE-BUILDING OF THE CAMPANILE, VENICE. FRONT VIEW OF APPARATUS TO FORCE IRON STANDARDS UPWARDS.

SECONDARY SCHOOL, YORK.

The new municipal secondary school for girls has been erected by the Education Committee of the York Corporation on the Sycamore estate, facing the river Ouse, from which it is separated by two fields. The north elevation forms the entrance front, and extends to a total length of 202ft. The style is Renaissance, with tiled roof and small gables. The main feature is the central building, the school assembly hall showing five large circular-headed windows, the semi-arches of which are formed of small tiles. In front of the hall is a one storey building, with the main entrance in the centre. The stonework of the entrance is of "Queen grit" stone, with a very fine grain, and extremely suitable for outdoor work On either side of the entrance is a small window formed of the same kind of stone. The extensions or wings at each end of the central assembly hall are lower than the main building, which gives variety to the elevation. The wings contain latrines, lavatories, cloak-rooms, etc., and at the west side are also a large lecture theatre, while in an extension to the south are domestic science room, dining room, etc. At the east side there is a similar cloak-room accommodation, and also a very commodious and completely furnished chemical laboratory. On the south elevation the building forms three sides of a square, the open side being towards the river and affording a fine view beyond the Ouse. As the expense was rigidly kept down there was no room for anything ornate in the external architecture of the school. The whole of the bricks were of local manufacture, supplied by Messrs. Wray and Sons. There is some effective ornamental cornice work in brick. The roof tiles are thick sand-faced. The whole of the internal woodwork, doors, architraves, mouldings, skirting, etc., is in bay mahogany, which imparts great richness to the building, and contrasts particularly well with the generally light silver grey tones of the walls. The architect is Mr. W. H. Brierley, of Lendal, York, and the clerk of works Mr. F. W. Cotton. The general contractors are Messrs. Wm. Airey and Son, of Leeds. The sub-contractors were: Dodson, tiler; Shouksmith, blacksmith work; Bellerby, painter; Cram, plaster; York Corporation Electricity Department, electric lighting. The building has been fitted throughout with Osram lamps.

Of the sixty or seventy Labour Exchanges which were opened last Monday week, nineteen are in London. "Their work," said Mr. Winston Churchill, in an interview, "will be all uphill until they get a wide *clientèle* among employers."

THE CONCRETE INSTITUTE.

Mr. Matthews's paper on "Reinforced Concrete" Chimneys was reported in our last issue.

The Discussion.

In the discussion which followed the reading of the paper, the Chairman (Mr. W. T. Hatch, M.Inst.C.E.,), remarked that there was room for other than brick chimneys was suggested perhaps by the fact that there were very few such structures without more or less extensive signs of being cracked.

Mr. William Dunn said there was no doubt that reinforced concrete was a suitable material for chimney construction. There has been failures, but those failures had been from faulty construction or design, from defects within their power to control. Mr. Matthews had only referred to one failure, but in the investigation made by Mr. Sandiford E. Thompson for the Association of American Portland Cement Manufacturers in 1907 (in which he investigated about 400 chimneys), he mentioned more than half a dozen complete failures—blown down, fallen down, or torn down because of their defective condition. Brick chimneys, as the chairman had said, usually showed cracks; indeed, it would be strange if they did not, as the temperature inside was so much above that outside, especially when there was a gale of wind and sleet. The inside lining of the lower part was a protection, but the temperature all up the shaft remained high. Indeed, it was only about 20 per cent. or 30 per cent. less near the top than at the bottom, so that at the top of the inside lining, where the shaft was not protected, one would expect to see cracks. From photographs of reinforced concrete chimneys which he had seen, such cracks were found, both horizontal and vertical cracks, and though sufficiently alarming were not necessarily dangerous. At that point there was also usually a reduction in the diameter of the shaft, and especial care was required with the reinforcement. One difficulty in chimney design was that one must proceed by trial and error, as in the case of arches. i.e., adopt a design and test it for stability. The excellent paper in "Engineering" referred to by Mr. Matthews, gave a formula for the thickness of a chimney according to the stresses allowed the bending moment, the mean radius and the weight above the section, but as the weight varied with the thickness, one had to adopt a tentative thickness first and to test the section afterwards. For those who did not follow reasoning expressed by means of the calculus, Mr. Dunn suggested the graphical method of calculation, which would be found in a paper he contributed to "Engineering," published on December 25th, 1908. It had not that great advantage which was to be found in Messrs. Taylor, Glenday and Faber's paper, of giving a rule for the thickness of chimneys, but it gave a very simple means of determining the stresses in circular reinforced sections under combined stresses, which could be understood without a knowledge of the calculus. The durability of a reinforced concrete chimney was largely a question of temperature. It appeared from experiment with cubes and from experience with actual structures that temperatures of 400 degs. to 600 degs., such as were really met with at the base of chimneys, did not injuriously affect gravel concrete. It was only after a temperature of 750 degs. or thereabouts had been reached that injury resulted. This left a comparatively small margin in case of excessive temperatures. Of course, concrete formed of limestone should never be used for work exposed to great heat. The tests made by Prof. Norton had shown that limestone concrete began to lose strength at temperatures under 500 degs. Mr. Matthew's experiments were made with concrete with an aggregate of iron works clinker which had been exposed to fire; but actual experience with chimneys was worth more than laboratory tests, and they were very much indebted to Mr. Bamber for his exceedingly interesting report on an actual chimney. Mr. Bamber was a careful and accurate reporter, and they should attach very great importance to what he said. Mr. Dunn suggested that the concrete used in chimneys should be a slightly wetter mixture than was usual, in order to secure proper adhesion to the bars. He also thought circular rods seemed preferable to T bars for the reinforcement, owing to the special care required in tamping the concrete round T bars to secure adhesion. Mr. Matthews had said there was a saving of about half the time compared with a brick chimney, but Mr. Dunn said he would not like to claim that advantage for reinforced concrete chimneys. In all chimneys the rate of execution was limited to a few feet in height per day, and he doubted the wisdom of going further with reinforced concrete than brickwork.

Mr. Percy Taylor thought that the linings of reinforced concrete chimneys could be more conveniently constructed in sections and supported on brackets from the outer shell with allowance for expansion. He thought this would expedite erection, as much time was taken up in constructing the double shell in the first half of the chimney of the kind dealt with in the paper. He referred to difficulties of design, but stated that by the use of plotted curves simple formulæ could be used to design work fairly quickly and conveniently.

Mr. James Lyle said his firm had built a reinforced concrete chimney 261ft. high by 20ft. diameter, and they had some cracks in it. Mr. W. Johnson, engineer to Messrs. A. Lyle and Sons, Ltd., said before they had decided to build a concrete chimney they made several blocks about 3ft. square by 6ins. thick, reinforced and made in a similar manner to ordinary reinforced concrete with small ballast and mixed very wet. Those blocks had been in the flues subjected to about 600 degs. to 700 degs. F. for 3½ years, and the concrete was practically destroyed. He knew that there was very little difference in expansion between steel and concrete, but there was some, and it was his opinion that that had had some some effect in the result. Messrs. Lyle's also made two blocks 2ft. by 2ft. 8ins. thick with an aggregate of 3½ parts sand to 1 of cement, mixed dry and reinforced like the chimney. These blocks were well rammed, and had been in the flue 2½ years, and there was no comparison between them, and the blocks they mixed wet. He did not agree with Mr. Thompson in the report on American chimneys that the concrete should be mixed wet. He thought a deformed bar should be used, and the concrete be made, consistently with a good job, as dry as possible, with just a little moisture coming to the top, and that this concrete would stand heat much better than concrete which had been mixed wet. After their chimney had been erected 12 months they scaffolded up the inside and examined the lining. They swept off the soot, which was about ¾in. thick, for a height of 90ft., and found at the offset about seven or eight cracks—definite fractures. These were not air or surface cracks; they varied from ⅛in. to 3-16ths in. in width. They had not the same number of cracks on the outside as on the inside. They had three or four on the outside, and these were much smaller. This was against all theory, but there it was. They had recently strapped their chimney up to 12 or 16ft. above the offset. They saw nothing in the chimney to cause alarm, but thought seeing there were these fractures, that it was better to take it in time and prevent the cracks going further. The straps were placed 6ft. apart. He thought a lining to a reinforced concrete chimney should be built after the body of the chimney, and quite separate and apart from the outside shell. If he were building a chimney again he would take the lining to the top and allow an air space of not less than 10 to 12ins. A good many ducts should be made through the outer shell so that air could pass freely into this space and keep the outside shell cool. He thought a thick offset was wrong. The big mass of concrete and variation in the diameter at that point caused unequal expansion. The chimney should be taken parallel from the bottom to the top, and with as little variation in the thickness as possible.. If a reinforced concrete chimney were properly designed and properly built, it would be a good chimney. He thought there was as much in the building of a concrete chimney as there was either in its shape or the material that was put into it. A responsible man should be on the chimney the whole of the time from start to finish, because so much was left in the hands of the men putting it up, and if one mistake was made the chimney was faulty. They had to put a man in charge of their chimney during construction, and he had no doubt if any of them built a similar chimney they would have to exercise the same care.

Mr. Alfred Brown, of Belfast, thought a brick chimney could be built as quickly as a reinforced concrete one. He had had a 200ft. brick shaft erected in three months,



HENLEY MEMORIAL HALL, MANSFIELD. TEMPLE MOORE, F.R.I.B.A., ARCHITECT.

The building consists of a main hall with three class-rooms on the south side opening out of it. The largest class-room immediately to the south of the platform, is separated from the hall by a folding screen so that it can be used in conjunction with the hall when required. There are two cloak-rooms at the main entrance, also convenient kitchen, etc., provided beneath the raised platform of the hall. The building is designed to harmonise with St. Marks Church and is faced externally with local stone. There is a handsome 3-light window in the west gable above the porch and the hall is further lit on either sides by dormer windows in the open timber roof which is of a simple hammer-beam construction.

and working in 14 weeks from commencement.

Mr. Oscar Faber, B.Sc. (Lond.), A.C.G.I., referred to the desirability of keeping the thickness of chimneys as small as possible, firstly because it was easily demonstrated that it was cheaper to stress the steel at a low unit stress, and put a comparativelly large quantity of steel in the shell, with a thin shell, than to adopt a thicker shell with a lower percentage of steel. Then the chief practical difficulties in making a successful concrete chimney were to prevent it from cracking, and there was no doubt whatever that the thinner the wall was made the less tendency there would be for the concrete to crack, due to temperature stresses, which depended entirely upon the difference in temperature between the outside and inside of the shaft, and the smaller the thickness the less would be the difference. In the chimneys at Northfleet in every case the tendency to crack was at the outside of the chimney, which was what one would expect. It was very curious that the chimney at Messrs. Lyle's works should have cracked in exactly the opposite manner.

Mr. Matthews, in replying, did not agree with Mr. Dunn that a wet mixture was desirable. He thought round bars were preferable to T bars for the reinforcement in chimneys.

THE GUILD OF ARCHITECTS' ASSISTANTS.

South Wales Branch.

The first annual meeting of the South Wales branch of the above Guild was held in Cardiff on Thursday, January 27th. In the unavoidable absence of the hon. secretary, Mr. Harris gave a résumé of the progress which had been made since the formation of the Guild. He said a lot of uphill work had had to be accomplished, for, as always happened in forming new organisations, there was a tremendous lot of labour involved in overcoming the lack of enthusiasm which existed among those whom the Guild was formed to benefit. Everyone recognised the need of such an organisation among architects' assistants, and yet few seemed willing to put their shoulders to the wheel and help on the work. There was a lot of preliminary and it might seem to some thankless labour before any great measure of success could be attained; and yet he was certain they had every reason to be pleased with their progress. In time he felt sure the Guild would be a real live force in the profession, and of inestimable value to the younger generation of architects.

The constitution of the Guild was then fully discussed, and the proposed laws and regulations were in general approved. The relations of the local branches to the central body came in for some detailed criticism, but it was generally conceded that the proposals submitted to the members (published in the papers the preceding week) were for the most part quite satisfactory, and the hon. secretary was instructed to report to this effect to headquarters. There is therefore every expectation that if the other branches adopt the proposed "constitution," the Guild will soon be recognised as a firmly organised national body.

Manchester Branch.

The inaugural meeting of the Manchester branch of the Guild of Architects' Assistants was held at the rooms of the Manchester Society of Architects on Thursday, Jan. 20th last, with A. E. Corbett, Esq., A.R.I.B.A., in the chair. The Chairman expressed himself as being in general sympathy with the objects of the Guild, but, in regard to education he thought that assistants might well leave the question to older men, men who had more experience of actual practice. He also suggested that the insurance programme of the Guild might very well be extended to sick and death insurance and, the fourth object of the Guild, that of the formation of a Federal Council of all existing societies, be regarded as very dubious of accomplishment.

Mr. Herbert Cox, a member of the Provisional Committee of the Guild, then delivered an address explaining its objects and methods. He pointed out the arrival of a purely commercial type of principal who was not only entering into competition with, but gradually squeezing out the older men, and had proved himself more likely to expect an assistant to work under irksome conditions both as to salary and employment. The report of the Provisional Committee was then read, and the procedure of the Guild in the matter of employment bureaux and insurance was fully described. The R.I.B.A. examinations were then criticised by the speaker, and the examination in steelwork specially referred to. He hinted that the character of the examinations would be much improved by the introduction of paid examiners. The object of the Guild was to set up a more exclusive standard and to assist only those actually within the profession. The movement in relation to the proposed Federal Council could only be brought about by a strongly organised body of assistants, and then their case for education as well as for other perhaps more important matters would obtain the official recognition of the profession.

The meeting was then thrown open to discussion, in the course of which the chairman stated that he had recently advertised for an assistant and found his own society inadequate; he had received many replies from men who had been in practice for themselves and some had held good Government appointments. It was shewn that the scheme of unemployed insurance would be managed by a special sub-committee of the Finance, Committee, the members of which would only be elected by those participating in unemployed benefit. There would be no place for the "wastrel" because the qualifications of all full members would be carefully studied.

The committee for the branch was then elected with Mr. P. Caminesky, A.R.I.B.A., 24, Brunswick Street, Chorlton-on-Medlock, Manchester, as hon. secretary. The meeting closed with a vote of thanks to Mr. Herbert Cox and the chairman.

THE WARMING AND VENTILATION OF PUBLIC BUILDINGS AND FACTORIES.*

By T. W. Aldwinckle, F.R.I.B.A.

Public Elementary Schools.

One of the most difficult buildings to warm and ventilate is a public elementary school. The cubic space per child in the class-rooms is only 140 ft., and windows are not desirable (for lighting purposes) on both sides of the room. Open fireplaces are almost out of the question. This is an instance when "natural" ventilation fails altogether, the proportion of CO_2 with such ventilation often rising to as much as 18 parts in 10,000 during the winter months. Any attempt to improve this by large inlets of air through open windows only lowers the temperature to 52 degrees or 53 degrees, which is much too low for children to sit and work in, to say nothing of the inevitable draughts. Dr. Kerr, the Medical Officer to the Education Committee of the London County Council, in his report for the year ending March, 1904, points out the failure of natural ventilation in the case of London schools, and strongly recommends mechanical ventilation, preferably a combination of plenum and exhaust, with an air supply of 1,500 cub. ft. per child per hour, which is about 11 changes of the air per hour. The effect of temperature upon the children's work is also dealt with by Dr. Kerr. He says: "From enquiries it seems that the London school child takes little notice of variations in temperature between 56 degrees and 64 degrees, and apparently does its best work at about 58 degrees. A fall below 55 degrees gives rise to comment, and a rise to 65 degrees to unpleasant subjective symptoms, slackness and inattention in some, headaches in others."

As to the relative merits of "upward" and "downward" ventilation, much will depend upon the character and purposes of the building. The exhaust system seems to lend itself to upward ventilation, and provided that the air inlets are not too high above the floor line the arrangement is simple and effective. It is most suitable for council rooms, class-rooms, factories, workshops, and the like, where the air is removed at once upwards from the breathing line. It does not appear to be so suitable for any class of building with galleries. There is also this in its favour, that as the vitiated air is warm and tends to rise, and as the convection currents set up by the bodies of persons are also upward, the upward system is following to some extent natural laws.

There are, however, instances of exhaust ventilation, notably the removal of dust, etc., from factories, where downward exhaust is far preferable.

Places of Public Assembly.

Downward mechanical ventilation would seem to be the most suitable for theatres, public halls, and all crowded places having galleries, the system being plenum with exhaust. The warmed fresh air can be driven in at a moderate velocity from the ceiling, or at a level near the ceiling line, without causing any preceptible draughts. The air intake being at the top of the building, the source will be purer than elsewhere. The incoming air will be naturally distributed throughout the whole of the auditorium, and will find its exit at the lower part of the hall, the outlet current being induced by exhaust fans, and the exits being under the seats, against the walls, and in other suitable positions. and not causing any perceptible draughts. This is preferable to bringing in the fresh air under seats and similar positions, as such inlets cannot be kept clean, but will always be clean enough for vitiated air to pass out through. As the audience are, after a short time, as previously explained, practically providing all the warming, it is a great advantage that the entering air, which under these circumstances must be cool, should enter at some distance from the audience, or cool draughts might be experienced. The trouble as to the vitiated air of one tier of galleries being carried up or down to to another (a trouble associated with both upward and downward systems) can, to some extent, be obviated by having exhaust outlets in connection with each tier. Theatres and similar buildings are usually free from the down draughts arising from the cooling surfaces of windows and skylights, and this greatly simplifies the arrangements, as these down draughts are very serious and very difficult to deal with.

It is possible to have the plenum upward system without auxiliary exhaust, provided the outlets are efficient in area, in suitable positions, and properly protected against the disturbing action of wind, but downward ventilation with plenum only would not be so successful, as it is impossible to arrange outlets near the floor line, without providing some exhausting power, as the downward current is in opposition to the natural upward tendency of the vitiated air, and such outlets would be useless against the wind, and would most probably, some of them at least, become inlets. It follows, therefore, that in many cases the plenum and exhaust downward system will be somewhat expensive to instal, but its superior advantages are great, and it is the most complete system of ventilation I know of. The vitiated air is at once removed below the breathing line, the dust caused by work is removed beneath the worker, and the fumes from the laboratory benches are removed beneath the chemist or student. This is particularly the case in factories which are mostly top lighted. Any

*Concluding part of an abstract of a paper read before the Association of Engineers-in-charge.

attempt to get rid of the air at the top is considerably checked by the downward currents of cold air set up by the cooling surfaces of the skylight. It is preferable, therefore, to have the warm air inlet sufficiently high and so deflected that the current of warm air shall travel along or near the ceiling line, and subsequently descend to the breathing line. The downward current will in that case be comparatively pure air.

In this connection it may be mentioned that the "natural" ventilation of a hospital ward in winter, with open windows and open fires, is practically "downward" ventilation, the open fireplaces being powerful exhausts close to the floor line.

Whatever the system of ventilation adopted, be it natural or mechanical, upward or downward, what is required is frequent changes of the air in the room, thus providing a large amount of air per occupant, the movements and distribution of the air being so arranged and controlled that the impurities which are given off shall be removed as soon as they arise without the possibility of their accumulating.

At the new bacteriological laboratories, recently erected at Sutton for the Metropolitan Asylums Board, I provided a system of plenum and exhaust ventilation and warming upon the lines I have here indicated. There are seventeen rooms thus ventilated, varying in size from 13ft. by 10ft. to 17ft. by 13ft., and all are 10ft. high, and are on both sides of a central corridor. The building is one storey high, with a small basement. The fresh air is admitted through a large louvred opening, passes through a filter screen previously described, and is driven through a heating battery into the main central duct by a centrifugal fan at the rate of 180,000 cub. ft. per hour. The heating battery consists of 10 two-column radiators, each of 80ft. heating surface, in which water circulates at a temperature of 150 degrees F. Each radiator is controlled by a valve, so that any part of the battery can be put on or off, and thus regulated to suit the external temperature. The central duct is tapered and has low-pressure hot water circulating pipes in same to maintain the temperature of the air. From this duct rise glazed fireclay branches, leading to the vertical inlets in the room, 18ins. by 9ins., and 8ft. high, of cast iron, the whole of the front except the air inlet at the top being a door, as access for cleaning. Each inlet has a regulating valve, and is placed against the inner wall opposite to the windows. The air enters the room at a height of 7ft. 6ins. from the floor, at a velocity of 3½ft. per second, and the momentum carries it along the ceiling line to the opposite side, where the cooling action of the windows causes it to descend. It then comes under the suction influence of the exhaust, which is close to the floor level, on the same side of the room as the inlet. The air is then drawn into an exhaust duct below the floor, which runs into a vertical brick shaft about 28ft. high, at the top of which is a propeller fan discharging the air into the atmosphere. The power of the exhaust fan is somewhat less than that of the inlet for the reason already stated. The air of the rooms is changed about six times in the hour, and a temperature of 60 degrees is easily maintained when the external temperature is 20 degrees. Owing to the heating surfaces having a low temperature, this is a complete absence of that closeness and heaviness in the air of the rooms, so frequently complained of in plenum system.

Ventilation of Factories.

The ventilation of factories is a subject by itself, as not only have the rooms to be warmed and ventilated, but noxious matters arising from many of the manufactures have to be separately removed, as near as possible at their point of origin, so as to prevent them from mixing with the general air of the room, and this we term "local" ventilation, as distinguished from "general" ventilation, which relates to the removal of vitiated air from the room. As regards general ventilation, the majority of factories are content with natural ventilation, as the results of open windows and skylights with steam heating, there being usually plenty of steam available. This is generally satisfactory, where there is a fairly large cubic space per worker, but not otherwise. The Factory Act only requires a cubic space of 250ft. per worker, except during overtime, and the inspectors will pass a maximum of 12 parts of CO_2 in 10,000 during daylight, and 20 parts when gas is used as an illuminant. These are not very exacting standards. With a small cubic space mechanical ventilation is absolutely necessary, and according to tests in Haldane's Departmental Report of 1902, very satisfactory results have been attained in many factories where both plenum and exhaust fans have been used.

The removal of local impurities is, however, quite a different matter, and requires special treatment. The impurities to be removed consist of dust, fumes, steam, poisonous spray, sawdust, textile dusts, dust from metal polishing and grinding, and the like. Very interesting particulars of the methods in practice for getting rid of these impurities are given in Dr. Haldane's Second Report on the Ventilation of Factories and Workshops (Appendix), issued in 1907. The general principal is downward exhaust ventilation, occasionally supplemented by a plenum inlet. The point of origin of most of these impurities being at the worker's bench, and consequently below the worker's head, it is essential that such impurity should be immediately removed downward, so that it cannot be breathed by the worker. The introduction of a plenum inlet above the work will emphasise this downward movement, and prevent any dust from rising. In some cases the dust is drawn into a hood on a level with, but in front of the worker, in which case the plenum jet of air is at the back of the worker. But in every case the impurities are at once removed away from the worker. These extraction shafts remove the air and impurities at a very high velocity, much higher than the general ventilation. In the case of noxious fumes, such as those from linotype composing machines, the extraction is upward, there being placed over each melting pot a conical hood connected with a vertical pipe running into a horizontal trunk overhead, at the end of which is placed a powerful exhaust fan. At a very large cabinet-making works near London, where about 2,000 workpeople are employed, I saw an excellent system of both upward and downward exhaust ventilation in connection with the numerous circular-saw benches, and other apparatus. The light sawdust was removed from above the bench, and the heavier chips were removed below the bench, all passing into overhead and underground trunks eventually uniting above, the material being driven into a chamber above the boiler house, to be sent through hoppers into the boiler house for use as fuel. The power to drive these fans was about 80 h.p. The whole of the foregoing arrangements are in the interests of the health of the workers. Employers who thus spend large sums of money for such a purpose have their reward in the increased health and vigour of their workpeople, and the improved capacity of the latter for producing good work.

In railway workshops and the like, large galvanised steel trunks run along a little above the springing of the roof, with outlets at regular distances. Fresh air (warmed in winter) is driven by a centrifugal fan through these trunks, and is thus distributed throughout the building. The outlets for the air generally consist of a number of large open doors. This air is generally distributed at high velocities.

Where there are large quantities of steam given off in workshops and factories, its removal cannot be effected by currents of cold air. The air blown in for this purpose must be warmed, at all events in winter.

Methods of Warming.

When we come to deal with the methods of warming buildings, we find that these will vary with the system of ventilation. With the simplest form of natural ventilation we have the open fire, that extravagant, much abused, but really cheerful and healthful method. For the rooms only in a public building they are still the most comfortable and wholesome form of warming, and form excellent extraction ventilators, provided always that there are suitable air inlets, such as Tobin's tubes or partially open windows. No system of artificial or mechanical warming and ventilation will ever be as wholesome and comfortable for such a purpose. This refers to single rooms and offices, and not large general offices, where a good number of persons are congregated, and where open fireplaces would be inconvenient and out of place.

Hot Water and Steam Radiators.

Leaving the subject of open fireplaces, we come to artificial warming, and the first is direct heating by hot water or steam radiators, which in some systems of natural ventilation take the place of open fireplaces. Great improvements have, in the past few years, been made in the various types of radiators, most of the improvements emanating from America; the heating surfaces have been better designed and their efficiency thereby increased. Whenever possible the radiators should be placed against an external wall, so that an air channel can be formed at the back, and in all cases, whether against an inner or outer wall, a baffle should be fixed to the wall immediately above the radiator to prevent the deposit of blacks and dust upon the wall above, caused by the convection air currents set up. Swinging radiators are very convenient for access to the wall for cleaning purposes, but these are somewhat costly. They should, however, always be used for hospital work. It is preferable, in all cases, for the radiator to stand on wall brackets and not on feet, so as to leave the floor clear for cleansing purposes. The inlet and outlet branches to and from the radiator should each have a valve, in order that any radiator can be removed without disturbing the general circulation.

Exposed or "direct" radiators heat both by radiation and convection, but principally by the latter, and the efficiency of the heating surface is considerably increased by fresh air currents passing across them. The freer the circulation of air round the surfaces of the radiator the higher is the efficiency and for this reason, low radiators are more effective than high ones, and single column radiators than those with two or three columns. There should, therefore, be a good air space between the loops. Ribs or other like extensions of the heating surfaces are of little value, at all events in hot water radiators. It is necessary to paint radiators, and it has been found that bright and glossy paints reduce the amount of radiation, and that a dull, dark paint is preferable. The colour or brightness of the paint does not, however, affect the convected heat. The best position for a direct radiator is under a window, as being the part of the room with the most cold currents of air.

When radiators are used in connection with authorised inlets in an extraction system of ventilation, the incoming air is generally required to have an upward current. It is not a good arrangement to enclose these radiators in iron cases, as there are difficulties in cleaning the interior. It will be sufficient if removable baffles are fitted to the front of the radiator for about two-thirds of its height. This will give the requisite direction of the air.

Wherever radiators are used, whether for direct or indirect heating, the temperature should not exceed 150 degrees for the reasons already given.

When the warming is in connection with the plenum system, it is not desirable in many cases to make the incoming air the sole source of means of warming, as in most cases this would necessitate undue heating of the air. It is preferable to admit the air at a temperature not exceedingly 10 degrees or 15 degrees above the required temperature of the room,, and to supplement this by direct heating by means of radiators.

Means of Heating.

As to the medium to be used for creating the required temperature in the radiators, pipes, or batteries, we have live steam, exhaust steam, and hot water. High-pressure steam is a costly medium, as its latent heat is less than that of low-pressure steam, and the latter is, therefore, more generally used. When exhaust steam is available this is still more economical, as it is to some extent frequently a waste product, but this is only available when there is steam power of some kind on the premises. There are two systems of hot-water heating, viz., high pressure and low-pressure. The high-pressure system, commonly called Perkin's system, is a sealed circulating apparatus in which the water is heated to a temperature of 350 degrees, with a pressure of 135lbs. on the square inch. Small pipes are necessarily used. It is a convenient method of heating in some cases, but from our point of view the high temperature of the heating surfaces is a fatal defect. This system is not very generally used in these days. Low-pressure hot water gravity circulation is very simple and effective, as it supplies its own motive power for the purpose of circulation, and low temperatures can be obtained for the heating surfaces. Low-pressure hot water gravity circulation is of two kinds, the one pipe and the two-pipe systems. As its name indicates, the two-pipe system has a flow and return in separate pipes to each circulation, the branch inlet to the radiator leading from the flow pipe, and the outlet leading to the return pipe. In the one-pipe system the inlet and outlet branches from the radiators lead from the same pipe, which is a flow-pipe so long as it is feeding the radiators, after which it returns to the boiler. This system is by far the simplest and most effective, and is free from the danger of short circuiting to which the two-pipe system is very liable. As, however, in the one-pipe system, the hot water having done duty in the radiator, returns somewhat cooler to the same flow pipe (and the radiators may be numerous), the tendency is for the water in the flow-pipe to become a little cooler, and to meet this difficulty the heating surfaces of the further radiators should be proportionately increased.

Separate Circulation to Each Floor.

Where there are several floors to a building there should be a separate circulation to each floor leading from two large drums, one for the flow and one for the return, these drums being in circulation with the boiler. A valve placed on each flow-pipe close to the drum will admit of the necessary regulation of flow, so that one floor shall not get a better circulation than another. In all gravity circulations great care must be taken in the matter of air pipes, otherwise trouble may ensue. The overhead or drop system is practically the one-pipe system with descending instead of ascending branches. It is useful in many positions where the other systems would be unsuitable.

Whatever the system of circulating adopted one matter should be borne in mind, viz., that any circulating or branch pipe which is not doing duty, either by radiation or convection, should be coated with a good non-conducting composition, so as to prevent loss of heat.

To surmount the difficulties arising to the circulation from dips and other obstacles, and for other good reasons, several ingenious apparatuses have been designed to force the circulation, three of which I will describe. In these cases pipes of smaller diameter can be used. It must, however, always be remembered that these generally require motive power of some kind, to be represented by steam power or electric motors, and that this has to be paid for in annual cost.

System of Warming.

In the Pulsia' system the hot water is circulated compulsorily in continuous pulsations, the water in an ordinary water boiler being brought to boiling point, and rising in a pipe taken from a boiler is converted into steam, which is used for displacing a body of water in two cylindrical vessels, forming part of the apparatus, and placed in a certain relationship to the supply tank. An arrangement of "syphon" pipe in one displacer is used as a cut-off for the steam in such a manner as to cause alternative displacement of water, condensation of steam, and consequent refilling of the displacers with water. The whole of the circulating pipes, radiators, boiler and pulsial displacers, form one connected open-bore system, under atmospheric pressure. No sunk boiler-room is required, and pipes of small diameter are used. The apparatus is noiseless, and admits of any desired temperature of the circulating water being regulated, from a low temperature to a high one. It will be noted that no independent steam supply is required, the steam used being generated in the apparatus itself.

The Cable system is automatic, using very small pipes, and is a self-contained system without pumps, working with a boiler pressure as low as 1½lbs., or with exhaust steam only. The most important part of the apparatus is a thermo-syphoniser, in which condensation of the steam causes a powerful suction on the return pipe, which draws the water round the system at a high velocity. The boiler can be placed at any level, provided it is at a certain minimum distance below the expansion tank, and basement excavation can be thus avoided. The circulating pipes, flow and return, can be run from the apparatus in any direction up or down, and at any desired level. The temperature of the circulating water is automatically regulated.

The Turbo system consists of a Turbo accelerator, driven by an electric motor, taking ¼ h.p. for the small, and ½ h.p. for all but the larger sizes. It is practically a forced circulation, and thus independent of levels and of dips, and other obstacles, and admits of the circulating pipes being small. It can be easily adapted to existing circulations.

There is also the ordinary system of forced circulation, suitable for large hospitals and other institutions, where there are several detached buildings on the site. For this purpose there is a central heating chamber, preferably close to the boiler-house, in which the water is heated in large steam heaters, from whence it is pumped along circulating pipes in subways at a velocity of from 3 to 4ft. per second, to the several buildings, with branch gravity circulations into each building. These forced circulations can with advantage be arranged in the method of ring mains, i.e., two pipes running round the group of buildings, and thus forming a ring, each pipe starting from the heater and going in the opposite direction, and then returning to the heater. Each circulation starts as a flow-pipe and runs as such for half the journey, when it becomes a return pipe. Thus a fair equality of flow temperature is maintained throughout the ring. But there is another great advantage arising out of this arrangement. The two rings are connected by cross pieces and three-way valves, so that any part of the system can be shut down for repairs, leaving the whole of the remainder of the system in circulation. Care must be taken to provide a sufficient number of expansion joints in these mains. Exhaust steam from the pumps and engines is used in the heaters supplemented, as may be necessary, by low-pressure, live steam. It is prudent to have a spare heater, and the pumps in duplicate. This arrangement of a central heater chamber is much more convenient than having steam heaters in each building, and saves labour on the part of the staff. I wish to emphasise the importance of having the circulating pumps of ample size, in order that the circulation may be efficient without forcing the pumps. This has not always been done with these installations. This question of a comfortable margin of power equally applies to all other parts of a heating apparatus, whether boilers, circulating pipes, or heating surfaces.

Steam Heating.

As regards steam heating, I may mention the Webster vacuum system, and the Nuvacuumette system, both of which deal primarily with exhaust steam.

The Webster vacuum system uses exhaust steam supplemented as occasion may require by live steam. The exhaust pipe from the engine passes through an oil separator, and is carried through a system of distributing mains to the several radiators, which system can be upward or downward, according to the nature of the building. Each radiator has two valves, the outlet or return end of the radiator having an automatic valve designed to prevent the escape of steam into the return main, while freely permitting the discharge of air and water thereto. The return mains lead to a vacuum pump, having first passed through a suction strainer and condenser head for removing any chips or scale that might otherwise enter the pump. The vacuum pump discharges to an air-separating tank, from which the water passes through a sealed discharge pipe to the feed pump. The speed of the vacuum pump is automatically controlled by a vacuum governor, which can be set to maintain any degree of vacuum in the return mains. Low pressure live steam can also be used with this apparatus.

The Nuvacuumette system is upon somewhat similar lines, but with one important difference. The automatic valves controlling the steam supply to the radiators are placed on the inlets, but the return or condense outlets from the radiators have no valve, and are open to the condense main. Thus the vacuum in the condense main extends into the radiators, the radiators being under the same absolute pressure as the condense main. By this arrangement the temperature of the radiator can be regulated by the vacuum maintained. With the usual vacuum of 10ins. the temperature of the steam would be 193 degrees, and this can be lowered to 170 degrees by increasing the vacuum to 18ins. Thus a fairly low temperature can be obtained for the heating surfaces, although not so low as in hot-water apparatus.

There are many public buildings where no steam is required for any other purpose, and in such cases hot-water heating is preferable, as a hot-water circulating boiler requires very little attention, whereas steam boilers require the skilled attention of an engineer.

On the other hand, in the case of factories where there will be a good deal of steam-driven machinery, the heating medium will generally be steam, as there will be a large quantity of exhaust steam available, for which, in many cases, there would be no other use. In the cases of one-storey factories with roofs on the factory or saw-tooth system, the heating is effected by steampipes running just below the springing of the roof. This prevents undue cooling of the air by the open roof and glass.

In calculating the necessary amount of heating surface in batteries, radiators, or pipes, regard must be had to, and allowance must be made for, not only the amount of incoming air which has to be warmed, but also to the loss of heat from walls, windows, ceilings, floors, or open roofs; and a further allowance must be made for exposed positions and a northern aspect. Allowance must also be made in those cases where the heating apparatus is closed down during the night, during which period the external walls will have cooled down. The loss of heat from these sources is considerable, and in some cases amount to almost as many units of heat as are required for the purpose of warming the whole of the incoming air.

It is essential that the amount of heating surface should be such that the building can be quickly warmed in the morning, not only for convenience, but as a matter of economy in fuel. It is cheaper to get the heat up in building in a short time than to have to continue the process for three or four hours.

In conclusion, I have to point out that the cost of working ventilation and warming apparatus should be considered when they are designed, so as to avoid undue expenditure of power in mechanical ventilation, and excessive consumption of fuel in connection with warming apparatus, the latter being a matter of the utmost importance.

SOME IMPORTANT LEGAL DECISIONS IN 1909.

By a Barrister-at-Law.

Near the commencement of a new year it is not unprofitable to glance at the development of the law relating to building which has taken place during the last twelve months. Strangely enough, there is but little to be found in the statute book for 1909 which is of especial interest to builders. Nor do the law reports supply a very plentiful crop of cases which closely affect the builder or the building owner. For the most part the cases which have a remote connection with building relate more particularly to building by-laws.

It is proposed to consider a few of the leading cases reported in the "Times Law Reports" and the "Justice of the Peace" during the past year.

Arbitration.—Among cases relative to arbitration one may be mentioned as being of interest to the engineer who is asked to act as arbitrator. A dispute having arisen between two persons, A and B, each of them appointed an arbitrator, and the arbitrators appointed an umpire. The umpire made an award in favour of A, and directed B to pay the fees of A's arbitrator. B having refused to do this, the arbitrator brought an action to compel him to pay them. It was held that although he was not appointed arbitrator by the defendants, the defendants were bound to pay the fees, as there was an implied promise to pay the arbitrators and the umpire for their services.

The Preparation of a Tender.—Another case illustrates the great care which should be exercised in preparing a tender, especially where it is made to a local authority. In *Johnson v. Islington Union*, 73 J.P. 172, the plaintiff saw an advertisement in a newspaper inviting tenders for the supply of certain goods required by a board of guardians. He tendered on a printed form supplied by the guardians for the supply of a certain disinfectant manufactured by him. The tender was accompanied by a sample of the disinfectant labelled "Anite," which was delivered to an officer of the defendants. On the printed tender the defendants had asked for a tender for "Heydozone," and the plaintiff omitted to alter the word "Heydozone" into the word "Anite" on the tender, so as to make the tender agree with the label on the sample delivered. The defendants accepted the tender of the plaintiff for the supply of "Heydozone."

The Local Government Board require that the tender form supplied by the guardians should be in a prescribed form under an Order dated December 31st, 1877. The tender supplied to the plaintiff varied in certain respects from this prescribed form. It was held, on the facts, that the plaintiff had failed to show that the minds of the two contracting parties were not *ad idem*, or that the defendants had misled him in any way, and that consequently the contract was binding on him.

Right to Claim for Extras.—Many a contractor would be willing, after the work is done, to tear up his agreement, and claim for what he had done, as upon a *quantum meruit*. It is not easy to foresee the contingencies which are likely to arise in carrying on the work. In *Jackson v. Romford R.D.C.*, 73 J.P. 248, the plaintiff contracted to carry out sewerage works for the defendant council. In consequence of orders, the work was varied, and rendered much more expensive. The plaintiff claimed to be entitled to payment as on a *quantum meruit*, based on the cost and value of the work. It was held that he was only entitled to be paid on the basis of the contract price together with extras. It also appeared that the engineer had given no final certificate, and that many of the extras were not ordered in writing. In these circumstances it was held that the referee could deal with the extras on their merits.

Restriction Covenant in Architect's Agreement.—The force and effect of a "restriction covenant" has occasionally to be considered by architects when entering into agreements. *Prima facie* a restriction covenant, that is to say, an agreement which prevents a man exercising his calling, is illegal and void as being against public policy; but it is obvious that the sale or purchase of a goodwill would be impossible if some reasonable restriction were not allowed. In one case (*Robertson v. Wilmott*, 25 T.L.R. 681), decided by Mr. Justice Warrington, the question arose as to what is meant by practising as an architect or surveyor. The defendant covenanted not to practise as an architect or surveyor within a defined area for a number of years. It was held that he committed a breach of that covenant by acting as manager at a fixed salary to another architect.

Restrictive Covenants as to Building.—There is another class of restrictive covenant of considerable interest to builders and building owners, namely, covenants which restrict the class of buildings which may be erected on land. In a somewhat complicated case (*Powell v. Hemsley*, 25 T.L.R. 649), decided by the Court of Appeal, it appeared that the defendant bought certain land, part of an estate which was subject to a covenant that only houses of a certain character should be built upon it. He leased a portion of the land, and the lessee built a house which did not conform to the covenant, without obtaining the consent of the original vendor. The lease having come into the hands of a trustee, who disclaimed it, the defendant went into possession. Subsequently the plaintiff bought the whole estate from the original vendor with the benefit of all covenants. He sued the defendant for the breach, and asked for an order that the houses already built might be pulled down. The Court of Appeal held (1) that the covenant was broken once for all when the houses were built contrary to it; (2) that there was no evidence that the defendant had encouraged or formulated the breach so as to make him liable for it; and (3) that the plaintiff had no rights in respect of breaches committed before he purchased.

Meaning of the Term "Building."—In the domain of local government law, there are several decisions of interest to builders. Thus, the meaning of "building" has been considered more than once. In one case (*Haurchan v. Leigh U.D.C.*, 25 T.L.R. 540), a man who converted a railway carriage into a dwelling was held to have constructed a "new building" within the meaning of the Public Health Act, 1875, S. 159, which, as it did not comply with the by-laws, the local authority were justified in pulling down. In another case it was held that two covered-in reservoirs of a combined capacity of about 6,000,000 cubic feet, constructed by the Metropolitan Water Board, were "buildings." The result of this was that the district surveyor was entitled to fees under the by-laws and the London Building Act, 1894, for surveying the reservoirs (*Moran v. Marsland*, 25 T.L.R. 235).

Liability for Not Depositing Plans in Compliance With By-law.—The question, Who is liable? becomes very important when the duty of complying with a sanitary notice



Photo: T. Lewis.

DETAIL VIEW OF THE ASHTON MEMORIAL, LANCASTER. JOHN BELCHER, R.A., ARCHITECT.

This magnificent pavilion, which was erected in the Williamson Park, Lancaster, was a gift of Lord Ashton to the town of Lancaster.

is entrusted to a builder or a plumber. In *Kershaw v. Brooks*, 13 J.P. 231, a plumber was employed by a house owner to execute certain sanitary repairs. The work was done by the son of the plumber, but no plans were deposited as required by the by-laws. The plumber was summoned for penalties. It was held that as there was nothing to show that he was not merely carrying out the orders of the house owner, he could not be convicted. Seeing that builders and sewerage contractors are often entrusted with the work of complying with sanitary notices, it is worth while to notice that where the owner of property adjoining a private street is called upon to sewer, level, and pave the street, certain formalities must be complied with. Thus the notice must contain specific reference to the deposited plans of the structural work intended to be executed (*Stourbridge U.D.C. v. Butler*, 25 T.L.R. 24).

Liability for Extraordinary Traffic.—"Extraordinary traffic" on highways is often a source of trouble and vexation to builders and contractors. The local authority may recover the expense incurred in putting a highway right after there has been such traffic; but where work has been done under a particular building contract, they must take proceedings not less than six months after the completion of the contract or work. In the case of *Carlisle R.D.C. v. Carlisle Corporation*, 1909, 73 J.P. 121, it was held that the term "building contract" means a contract for the building of any physical construction, and that the term "the completion of the contract" means completion so far as regards the constructional work comprised therein; and that where the constructional work consists of several component parts so closely connected that each would be useless without the others, the period of six months begins to run from the completion of the whole work, notwithstanding that the damage to the roads may have been caused exclusively by the haulage of materials in connection with some or one only of the component parts of the work.

Mr. B. T. Batsford has taken over from Messrs. George Newnes, Ltd., the remaining stock of Mr. Baillie-Scott's volume "Houses and Gardens," and has reduced the selling price from £1 11s. 6s. to 18s. net.

* * *

Messrs. Pepler and Allen, architects, surveyors, and estate agents, late of 3, George Street, Croydon, and 37, Queen Victoria Street, E.C., have taken over the practice of Mr. Thomas Adams, land agent and surveyor, 3, Pall Mall East, London, S.W., Mr. Adams having been appointed to organise the new Town Planning Department at the Local Government Board. Messrs. Pepler and Allen have moved their offices to 3, Pall Mall East. Telephone, 637 Central, and telegrams, "Rusinurbe, London."

ARCHITECTS OF THE DAY.

In addition to the list of works designed by Mr. P. Morley Horder, given in our issue of January 26, the following (which were received too late for inclusion) may also be mentioned:—Houses at Milford Haven and Denbigh, Wales; house near Liverpool; alterations to Garboldisham Manor and house at Garboldisham, Norfolk; Parish Halls at Pitsford, Northants, and Luton, Beds.; alterations and decorations to house at Kensington Palace Gardens, and houses in Brook Street, and business premises in the City and West End, London; house at Wendover, Gerrards Cross, and Beaconsfield, Bucks; houses at Compton, Surbiton, Upper Warlingham, and Redhill, Surrey; houses near Bramdean, at Hambledon, and Milford-on-Sea, Hants; houses at Tunbridge Wells and Langton, and cottage at Speldhurst, Kent; houses at Forest Row, and Lindfield, Sussex; 2 houses at Cheltenham, alterations and decorations at Farm Hill Park, Stroud, and at Rodborough Court, Stroud, Glos.; churches at Muswell Hill, Leyton, Bowes Park, Hackney, Westcliffe-on-Sea, also additions and decorations to church at Thurso, N.B., Rodborough, and various mission churches.

Coming Events.

Wednesday, February 9.

Carpenters' Hall Lectures. — Mr. Arthur Stratton on "Native Craftsmanship in Timber, Brick, and Stone, before the 18th Century," 7.30 p.m.

The Royal Sanitary Institute Lectures. —Dr. Charles Porter on "Sanitary Law," 7 p.m. *At Sessional Meeting*, Rev. J. B. Lock on "The Ventilation of the Large Examination Hall, Cambridge," 8 p.m.

Institution of Civil Engineers.—Students' Visit to Kensington Dust Destructor, Wood Lane, Shepherd's Bush.

Manchester Society of Architects.—Professor S. D. Adshead, on "Town Planning," 8 p.m.

Edinburgh Architectural Association. —Mr. B. C. Douglas will read paper by Mr. Charles Ower on "Architecture and the Poets." Mr. H. J. W. Tillyard, on "Some Buildings and Defences of Ancient Sparta."

Thursday, February 10.

Paint and Varnish Society.—Mr. J. W. Lovibond on "Colour Nomenclature," 8 p.m., at the St. Bride's Institute, Bride Lane, E.C.

R.I.B.A.—Science Committee Meeting.

Friday, February 11.

The Architectural Association Debating Society.—(Joint Meeting with the Junior Institution of Civil Engineers). Mr. Stanley Hamp, Mr. F. R. Durham, A.M.Inst.C.E., on "Architectural and Engineering Consideration Town Planning," 7 p.m.

The Royal Sanitary Institute Lectures. —Dr. Charles Porter on "Sanitary Law," 7 p.m.

L.C.C. Central School of Arts and Crafts (Southampton Row, W.C.).—Mr. E. F. Strange on "Lettering," 8 p.m.

Junior Institution of Civil Engineers.—See Architectural Association announcement above.

Saturday, February 12.

Junior Institution of Civil Engineers.—Anniversary Dinner at the Hotel Cecil, 7.30 p.m.

R.I.B.A.—Last day for receiving notices for Business Meeting on February 28th.

North of England Institute of Mining and Mechanical Engineers.—General Meeting, Wood Memorial Hall, Newcastle-on-Tyne, 2 p.m.

Monday, February 14.

R.I.B.A.—Mr. Edward Warren on "George Frederick Bodley," 8 p.m.

Institution of Mechanical Engineers.—Graduates' Lecture. Mr. F. L. Martineau on "Petrol Motors," 8 p.m.

The Royal Sanitary Institute Lectures. —Mr. Wellesley Harris on "The Duties of a Sanitary Inspector," 7 p.m.

Tuesday, February 15.

University Extension Lectures on Ancient Architecture. — Mr. Banister Fletcher on "Roman Tombs, Pillars of Victory, Aqueducts, and Bridges," British Museum, 4.30 p.m.

R.I.B.A.—Practice Committee Meeting.

Illuminating Engineering Society.—Resumed discussion on Dr. J. H. Parson's paper, "Glare, its causes and effects." 8 p.m. at Society of Arts, John Street, Adelphi.

Wednesday, February 16.

Edinburgh Architectural Association. —Mr. D. Y. Cameron on "Gothic Architecture," 8 p.m.

Carpenters' Hall Lectures. — Mr. Lawrence Weaver on "The Art of the Leadworker," 7.30 p.m.

Northern Architectural Association.—Students' Meeting. Mr. W. Milburn, jun., on "Notes on Continental Hospitals," 7.30 p.m.

Thursday, February 17.

R.I.B.A.—Literature Committee Meeting.

The Royal Sanitary Institute Lectures. —Mr. Wellesley Harris on "The Duties of a Sanitary Inspector," 7 p.m.

Friday, February 18.

The Architectural Association. — Mr. E. Swinfen Harris on "The Life and Work of William Butterfield," 7.30 p.m.

The Royal Sanitary Institute Lectures. —Mr. Wellesley Harris on "The Duties of a Sanitary Inspector," 7 p.m.

Leicester and Leicestershire Society of Architects.—Mr. S. Perkins Pick on "Drainage and Sanitary Fittings," 8 p.m. at 5, St. Martin's East.

L.C.C. Central School of Arts and Crafts (Southampton Row, W.C.).—Mr. E. F. Strange on "Book Ornament," 6 p.m.

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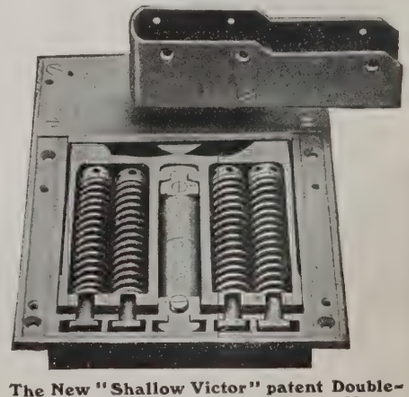
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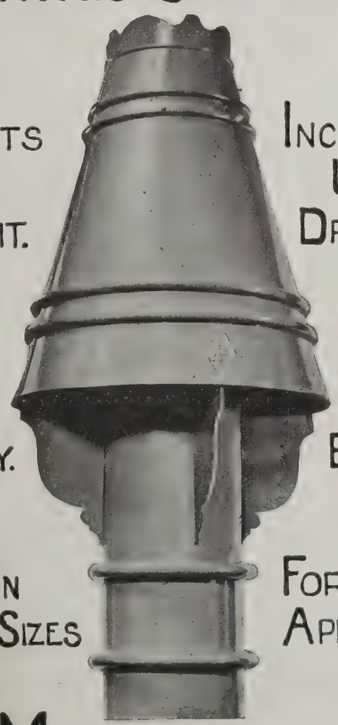
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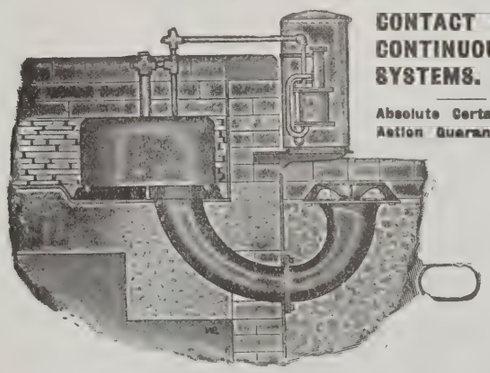
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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, Builders' Journal, *Caxton House, Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Bury (Lancs.).—For additional workhouse accommodation, for the Guardians. Mr. Alfred Hopkinson, architect, 15, Agur Street, Bury.

S. Barker, Pilsworth Road, Heywood	£9,630
J. Wilson and Son, 156, Soho Road, Handsworth, Birmingham	9,596
C. Lomax, Ramsbottom	9,592
R. Neil and Sons, Strangeways, Manchester	9,386
Thompson and Brierley, Union Saw Mills, Bury	9,180
Young, Tinker, & Young, Monsall Street, Queen's Road, Manchester	9,085
S. and J. Smethurst, Ltd., Rochdale Road, Oldham	8,660
J. Inman and Sons, Bolton Street, Bury	8,570
J. Partington, Middleton Junction, Manchester	8,500
J. Tinline, Parker Street, Bury ...	8,365
J. Byrom, Ltd.,* Woolfold, Bury ... Architect's estimate, £8,907	7,987

*Accepted.

Chelmsford.—For the construction of proposed new school in Trinity Road, for the Education Committee.

Johnson and Hawkes, Chelmsford	£15,633
J. L. Glasscock and Son, Bishop Stortford	15,620
W. Laurence and Son, 21, Finsbury Circus, and Waltham Abbey ...	15,444
R. E. Nightingale, Lambeth ...	15,260
F. G. Minter, Putney	14,178
G. Grimwood and Sons, Sudbury ...	14,989
J. Youngs and Son, Norwich ...	14,975
J. Smith and Son, Witham	14,945
J. Rayner, East Hanningfield ...	14,925
Mason and Son, Haverhill ...	14,750
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W. E. Blake, Plymouth	14,495
F. Bennett, Ipswich	14,450
J. S. Hammond and Son, Romford ...	14,438
H. Smith, Clacton	14,311
H. Flint, High Wycombe	14,287
T. Partington and Son, Ipswich ...	14,100
G. Henson and Son, Wellingborough	14,040
Spencer, Santo and Co., Ltd., Kensington	14,016
T. J. Bailey, Anchor Street, Chelmsford	13,904
Clark and Sons, Cambridge ...	13,990
C. Roper, Ipswich	13,989
F. Weight, Springfield	13,800
H. Potter and Son,* Chelmsford ...	13,475

*Accepted, including glazed tiling.

Laughton (Yorks).—For erection of new school at Laughton, for the Kiveton Park Education Sub-Committee. Accepted tenders:—

R. Charlesworth, Sheffield, builder	£2,469 19 0
H. Boot and Son, Sheffield, joiner	1,349 0 0
Dawber, Townsley and Co., Hull, slater	275 13 0
S. Rushworth, Shipley, plumber	599 0 0
A. Wilkinson, Ossett, plasterer	229 19 0
C. Jagger, Clayton, painter ...	92 10 0

London.—For erection of the new fire-station in Brunswick Road, Bromley-by-Bow, for the London County Council.

Higgs and Hill, Ltd., Crown Works, South Lambeth, S.W.	£11,974
Holloway Bros. (London), Ltd., Belvedere Road, S.E.	11,790
W. Smith and Son, Harleyford Road, S.E.	11,769
W. Johnson and Co., Ltd., Wandsworth Common, S.W.	11,666
Holland and Hannen, Hyde Street, Bloomsbury, W.C.	11,666
F. and T. Thorne, Isle of Dogs, E.	11,637
Leslie and Co., Ltd., Kensington Square, W.	11,605
J. Carmichael, 331, Trinity Road, Wandsworth, S.W.	11,570
F. and H. F. Higgs, Station Works, Hinton Road, Herne Hill, S.E. ...	11,549
Kirk and Randall, Warren Lane Works, Woolwich, S.E.	11,365
Perry and Co. (Bow), Ltd., Tredegar Works, Bow, E.	11,316
C. Wall, Ltd., 4, Lloyd's Avenue, E.C.	11,258
H. L. Holloway,* Church Street, Deptford, S.E.	11,150

Architect's estimate, £11,375.

*Accepted.

(*Tenders continued on page viii.*)

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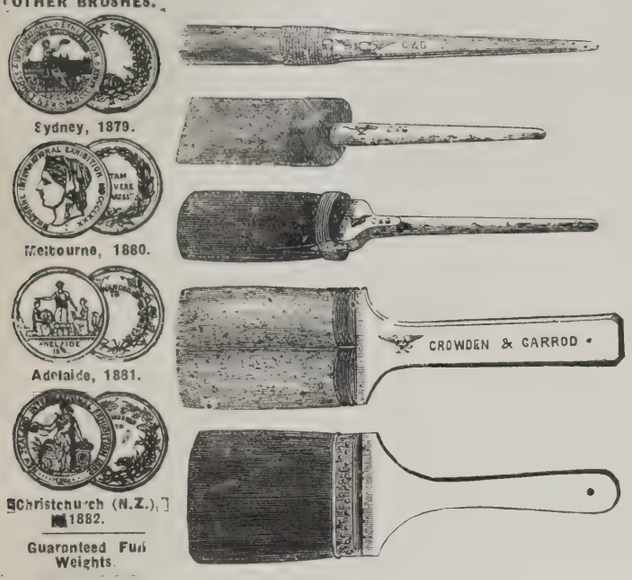
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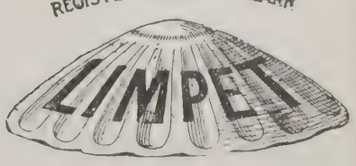


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(Tenders continued from page vi.)

Llanelly.—Accepted for re-roofing and restoring Llanelly Parish Church, Breconshire, for the Rev. Geo. Roberts. J. Vaughan Richards, architect.
Foster and Hill, Abergavenny, £597 15s.

Minster-on-Sea.—Accepted for eight cottages, Minster Cliffs and Station Estates, Minster-on-Sea. J. Wornell, architect, 68, Cheapside, E.C.
F. W. Burtwell, Brentwood, Essex, £1,237 10s.

Minster-on-Sea.—Accepted for a detached cottage, Seaside Avenue, Minster-on-Sea. J. Wornell, architect, 68, Cheapside, E.C.
Hancock and Kettle, Sheerness, £160.

Nottingham.—Accepted for re-building Nos. 14 and 16, Low Pavement, Nottingham. Messrs. A. R. Calvert and William R. Gleave, A.R.I.B.A., architects, Nottingham:—
J. Wright, £4,177 15s.

Nantwich (Cheshire).—For erection of new Council schools, Bean Street, for the Cheshire County Council Education Department. Mr. H. H. Brown, architect, Brazennose House, 20, Brazennose Street, Manchester.

M. Stone and Sons	£11,147
Young, Tinker, and Young ...	11,067
F. Matthews	11,035
R. Neill and Sons	10,966
Cox and Vaughan	10,698
J. Harding	10,690
J. Dolan and Son	10,623
J. Hamilton and Son	10,558
R. Carlyle	10,525
T. Brown and Sons	10,500
Birchall Bros.,* Middlewich	10,297
Clayton Bros.	10,102

*Accepted.

Pontypool (Mon.).—For pulling down existing buildings and erection on the present site of a new headquarters station, at Pontypool police station, for the Standing Joint Committee. Mr. William Tanner, F.S.I., county surveyor.

Leadbeter and Co.	£2,795 0 0
R. W. Moon	2,779 0 0
D. Davies and Sons, Cardiff ...	2,775 0 0
A. J. Colborne, Swindon ...	2,689 8 9
W. H. Campbell, Pontypool ...	2,687 0 0
Blundell and Bevan, Blackwood	2,658 10 0
W. Powell and Son, Hereford	2,650 0 0
J. Jenkins, Ltd.	2,650 0 0
Bailey Bros., Pontypool ...	2,643 0 0
A. and J. Richards, Griffithstown	2,549 0 0
G. F. Leadbeter	2,496 0 0
A. S. Morgan and Co. ...	2,495 0 0
J. Brownscombe and Son ...	2,490 0 0
J. Burgoyne and Son, Pontypool	2,483 10 0
J. H. Williams	2,459 0 0
E. Sainsbury, Pontypool ...	2,442 0 0
C. H. Reed	2,440 0 0
Poulton and Whiting,* Pontnewydd	2,406 0 0

Rest of Newport.
*Accepted.

Pontypridd.—For erection of a cottage hospital at Pontypridd, for the Executive Committee. Messrs. A. O. Evans, Williams, and Evans, architects, Pontypridd.

W. E. Willis, Ystrad	5,125 0 0
Jones Bros., Abercwmboi, Aberdare	4,615 0 0
G. Hallett	4,300 0 0
Hamilton and Millard, Caerphilly	4,024 0 0
Williams and James, Pontypridd	3,866 12 6
D. Davies and Sons	3,841 0 0
J. Allan, Ltd.	3,708 10 8
Knox and Wells, Cardiff ...	3,663 0 0
R. Jones, Caerphilly	3,621 12 6
E. R. Evans and Bros.,* Cathways	3,590 0 0
Jones Bros., Treharris ...	3,600 0 0
A. J. Colborne, Swindon ...	3,569 0 0

Rest of Cardiff.
*Accepted.

Pontyrhyl (Glam.).—Accepted for erection of infants' new Council school, Pontyrhyl, for the Glamorgan Education Committee. Mr. D. Pugh-Jones, F.S.I., county architect, Cardiff:—
F. W. Loughor and Co., Pontycymmer, £3,177 10s.

Port Talbot (Wales).—For erection of new schools, for the Glamorgan County Council Education Committee. Mr. W. James Nash, A.R.I.B.A., architect, 8, Angel Street, Neath.

D. Jenkins, Ltd.	£17,000 0 0
M. Cox	16,054 18 3
Waring, Cole, and Waring ...	15,152 7 0
D. W. Davies and Howell ...	14,293 10 10
D. Davies and Sons ...	14,154 0 0
J. Goodridge and Son ...	13,978 0 0
Loughor and Co.	13,261 7 2
G. Mercer	12,695 0 0
W. Williams,* Cardiff	12,114 0 0

*Accepted.

Reading.—For alterations and additions to nurses' home at the workhouse, Reading, for the Guardians. Mr. W. Roland Howell, architect, Reading, and 18, Percy Street, London, W.

R. Curtis	£2,396 0 0
C. Sutton	2,305 0 0
Collier and Catley	2,200 0 0 ...
J. H. Margetts and Son ...	2,187 0 0
Mc. E. Fitt	2,172 0 0
E. Newberry	2,150 0 0
G. S. Lewis and Bro.	2,000 0 0
R. Webber and Son	1,991 0 0
Patience and Son	1,988 0 0
H. W. Goodwin*	1,909 0 0

Heating.

Callas, Son, and May ...	£75 0 0
H. W. Godwin*	1,909 0 0
J. T. Spencer*	56 10 0

*Recommended for acceptance.
All of Reading.

Rugby.—For the erection of a skating rink in Railway Terrace, for Mr. George Duxbury, Leicester. Mr. A. Hall, architect, 8, St. Martin's, Leicester.

E. Moore	£3,650 0 0
Foster and Dicksee	3,555 0 0
Hollowell	3,520 0 0
T. Parnell and Son	3,491 10 0
Clark and Garrett	3,430 0 0
Cockerell	3,395 0 0
A. Harris	3,355 0 0
F. Elliott	3,118 0 0
Bowles and Son	3,111 0 0

Radyr, near Cardiff.—For erection of the tower, chancel, and vestries at Christ Church, Radyr, near Cardiff, for the Rev. David Phillips, M.A., and Committee. Mr. Geo. E. Halliday, F.R.I.B.A., architect, 19, Castle Street, Cardiff.

J. Harry, Radyr	£2,935 18 0
Barnsley and Sons, Birmingham	2,854 0 0
Stephens, Bastow and Co., Bristol	2,596 0 0
Symonds and Sons	2,562 0 0
Blacker Bros.	2,530 0 0
J. Allen	2,515 0 0
H. Smith, Kidderminster ...	2,505 10 0
Cox and Bardo	2,481 0 0
G. Hallet	2,444 13 3
D. Davies and Sons	2,430 0 0
Knox and Wells	2,415 0 0
Britton, Barry Dock	2,347 9 6
E. D. W. Evans	2,316 11 0
D. Davies	2,241 10 0
E. Turner and Sons* ...	2,353 0 0

Rest of Cardiff.
*Accepted.

Salford.—Accepted for building an annexe to the Town Hall and other alterations, for the Corporation:—
Wilson and Toft, Manchester, £13,365.

Stoke-upon-Trent.—Accepted for proposed Town Hall extension, for the Town Council:—
Willcock and Co., Wolverhampton, £25,371.

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The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Feb. 3—15. **ERDINGTON.**—Erection of a house for the Master of the Workhouse at Erdington, for Aston Union. Persons desirous to tender are invited to send their names and addresses by 3rd instant to John North, Clerk to the Guardians, Union Offices, Vauxhall Road, Birmingham, to whom tenders are to be sent. Drawings and specification can be inspected at the office of Whitwell and Son, Architects, 3, Newhall Street, Birmingham. Copies of quantities and forms of tender will be sent to applicants on deposit of £5 with the Architects. Fair wages clause.

Feb. 4—25. **BELLSHILL (Lanark).**—Erection of buildings to contain refuse destructor; also steel chimney stack; provision of water supply and drainage, and formation of access road and other relative works at Boggs Brae, near Bellshill, for the C.C. Plans may be seen, and copies of specification and schedule of measurement obtained at the office of W. L. Douglass, C.E., District Engineer, District Offices, Hamilton, on deposit of £1. An assistant engineer will meet intending contractors at Bothwell Bridge at 10.20 a.m., on Feb. 4. Tenders must be lodged with the Clerk to the Local Sub-Committee, James Forsyth, the Cross, Bellshill.

Feb. 9. **WAKEFIELD.**—Erection of a lodge on the St. John's Estate, for the Governors of the Wakefield Charities. Names of those desirous of tendering should be sent to W. Wrigley, A.R.I.B.A., Architect, 2, King Street, Wakefield, when quantities will be supplied.

Feb. 14. **YARMOUTH.**—Erection of fishing premises, South Denes. Plans and specifications may be seen, and bills of quantities obtained, upon application to Chas. G. Baker, Architect, Town Hall Chambers, to whom tenders are to be sent.

Feb. 14. **PORTHCAWL.**—Erection of a new post office, at Porthcawl. Plans, etc., can be seen, and quantities obtained by deposit of £1 1s., of John H. Phillips, F.R.I.B.A., 7, Pembroke Terrace, Cardiff, to whom tenders are to be sent.

Feb. 14. **ROYAL LEAMINGTON SPA.**—Pulling down existing cooling room, clearing site, and erecting new annexe to the pump room, with basement, for the Corporation. Drawings, specifications, and conditions may be seen at the office of the Architects, Quick and Lee, The Parade. Tenders must reach Leo. Rawlinson, Town Clerk.

Feb. 14. **COVENTRY.**—Alterations and additions to workshops at City Works, comprising one-storey workshop, 95ft. long by 33ft. wide, for the Corporation. Drawings may be seen and specification, with form of tender and bill of quantities obtained on deposit of £1 1s. Tenders to be addressed to the Chairman of the Gas Committee, Gas Works, Coventry.

Feb. 14. **SOUTH SHIELDS.**—Formation of the forecourt of the municipal buildings, for the Corporation. A copy of the quantities and specifications and form of tender may be obtained on application to the undersigned, also drawings and form of contract inspected, at the office of the Architect, E. E. Fetch, A.R.I.B.A., 20, St. John Street, Adelphi, London, W.C. Tenders to be delivered to Moore Hayton, Town Clerk, Court Buildings, South Shields.

Feb. 15. **GOLCAR.**—Persons desirous of tendering for the various trades required in the erection of two semi-detached residences in Scarhouse Lane, Golcar, can inspect plans and obtain quantities of Arthur Shaw, Architect, Golcar.

Feb. 15. **MARSH.**—Erection of one dwelling-house, Luck Lane, Marsh (all works except mason's). Plans may be seen and quantities obtained of Lunn and Kaye, Architects and Surveyors, Milnsbridge and Huddersfield, to whom tenders are to be sent.

Feb. 15. **BURTON-UPON-TRENT.**—Erection of new water closets and alterations at Grange Street school, for the Corporation. Plans may be seen and bills of quantities obtained at the Education Offices, Guild Street. Tenders must be sent to H. Bence, Secretary and Director of Education, Education Offices. Fair wages clause.

Feb. 15. **KINSALE.**—Erection of cottages in accordance with the plan and specification to be seen at the Council office, for the R.D.C. A deposit of £2 per cottage must be lodged with each tender, and a receipt obtained from the Clerk. Tenders for fencing plots, and for additions to and repair of existing cottages will also be considered. Schedules of cottages and plots, conditions of contract, and any other particulars, can be had on application to John Murphy, Clerk of Council, Council Office, Kinsale Workhouse.

Feb. 15. **DURHAM.**—Erection of new Council schools at Usworth Colliery, Castletown, and New Lambton (Fence Houses); extensions at Eldon Lane Council school, for the C.C. Plans, specifications, and general conditions of contract may be seen, and bills of quantities obtained as follows:—1, Usworth Colliery, Castletown, and New Lambton schools, at the office of W. Rushworth, Shire Hall, Durham; 2, extensions at Eldon Lane school, at the office of F. E. Coates, Shire Hall, Durham. Tenders to be sent to J. Dawson, Clerk to the Education Committee, Shire Hall, Durham.

Feb. 16. **HOMERTON, N.E.**—Erection of pavilion "C" at the Infirmary at Homerton, N.E., for the Hackney Union. Applications for bills of quantities and forms of tender should be made, accompanied by a deposit of £5, before Jan. 31, to Frank R. Coles, Clerk to the Guardians, to whom tenders are to be sent. The contractor will be required to give approved security. The form of bond and plans may be seen at the Guardians' Office, Sidney Road, Homerton, N.E.

Feb. 16. **BOCKING.**—Erection of a new boiler house, sorting room, and other alterations to the laundry and kitchen at the Union Workhouse, Bocking, for the Braintree Union. Names to be sent to J. W. Start, F.S.I., Architect, Colchester, enclosing deposit of £2 2s. Bills of quantities will be forwarded. Drawings can be inspected at the Union Workhouse, Bocking, or at the office of the architect. Tenders must be sent to Alfred Hills, Clerk, Union Offices, Bocking.

Feb. 16. **GWAUNCAEGURWEN.**—Completing the erection of the Siloh Methodist Chapel, Gwauncaegurwen. Plans and specification can be seen with W. J. Hadley, Frondeg, Coelbren Road, Gwauncaegurwen. Tenders to be sent to D. T. Sims, J.P., Rock-Field, Neath. Further particulars may be obtained from the Architect, Arthur S. Williams, M.S.A., Llandilo.

Feb. 16. **NEWPORT (Mon.).**—Re-covering with zinc or copper part of the roof of the general markets, for the Corporation. The portion to be dealt with has an area of about 8,200 superficial feet. A sectional drawing of the roof, together with general specification, may be obtained from R. H. Haynes, Borough Engineer, on production of a receipt from the Borough Treasurer for £1 1s. Tenders to be forwarded to the Town Clerk, Town Hall, Newport. Fair wages clause.

Feb. 18. **LINTHWAITE.**—Erection of twelve dwelling-houses, Manchester Road, Linthwaite. Plans may be seen and quantities obtained of Lunn and Kaye, Architects and Surveyors, Milnsbridge and Huddersfield, to whom tenders are to be sent.

Feb. 18. **PUTNEY.**—Erection of Putney telephone exchange, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to J. Rutherford, H.M. Office of Works, Carlisle Place, S.W. Bills of quantities and forms of tender may be obtained at the undermentioned address on deposit of £1 1s. Tenders must be delivered to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

Feb. 18. **BINGLEY.**—Alterations and additions to Wilsden Provided School, for the West Riding Education Committee (builder, joiner, slater, plumber, plasterer, and painter). Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. £1 deposit must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders to be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

Feb. 18. **BIRMINGHAM.**—Erection of Hockley Hill new branch post office, Birmingham, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and conditions, and form of contract may be seen on application to J. Tosh, H.M. Office of Works, General Post Office, Birmingham. Bills of quantities and forms of tender may be obtained at the undermentioned address on deposit of £1 1s. Tenders must be delivered to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

Feb. 18. **BRADFIELD.**—Execution of the following works for the West Riding Education Committee:—Bradfield: Loxley New School—builder, joiner, slater, plumber, plasterer, and painter. Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders to be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

Feb. 19. **LONDONDERRY.**—Separate tenders will be received by Rev. W. B. MacFeely, B.D., Adm., St. Eugene's Presbytery, Londonderry, for erection of St. Eugene's Boys' National School, Rosemount, Londonderry, and for plumbing, heating (by low pressure hot water), and electric light fitting at same, according to plans and specifications to be seen at the office of Edward J. Toye, Architect, Northern Gate, Londonderry, where quantities, also plans and particulars of plumbing, heating, and electric work, may be obtained on deposit of £1 each.

Feb. 21. **WATERLOO WITH SEAFORTH.**—Erection of the Rawson Road Council School, Seaforth, near Liverpool, for the U.D.C. Bills of quantities may be obtained from the undersigned upon deposit of £1 1s. Drawings and specifications may be seen at the office of Appleyard and Quiggin, Architects, No. 67, Lord Street, Liverpool. Tenders must be delivered to John I. Thompson, Clerk to the Council, Town Hall, Waterloo, near Liverpool.

Feb. 22. **EDINBURGH.**—Raising existing car sheds, roofs, etc., at Henderson Row Cable Power Station for the Corporation. Specification and form of tender may be obtained from J. Walker Smith, Burgh Engineer, on deposit of £2 2s. by crossed cheque payable to Town Clerk. Tenders must be lodged with Thomas Hunter, W.S., Town Clerk, City Chambers, Edinburgh.

Feb. 22. **HANDSWORTH (Birmingham).**—Erection of a new station at Handsworth, Birmingham, for the Great Western Railway. Plans and specification may be seen and forms of tender and bills of quantities obtained at the office of the New Works Engineer, at Paddington Station. Tenders to be sent to G. K. Mills, Secretary, Paddington Station, London.

Feb. 22. **KELSO.**—Erection of a new post office at Kelso, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and conditions and form of contract, may be seen on application to the Postmaster of Kelso. Sketch plans may be seen and bills of quantities and forms of tender obtained at H.M. Office of Works, Parliament Square, Edinburgh, on deposit of £1 1s. Tenders must be delivered to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

Feb. 23. **CLIFFORD (near Hay).**—Additions and alterations to the Council School, at Clifford, near Hay, for the Herefordshire County Council. Plans and specifications may be seen and bills of quantities and form of tender obtained at the office of the County Surveyor, Shirehall, Hereford, on deposit of £1 1s. Tenders to be delivered to John Wiltshire, County Education Secretary, Education Office, Shirehall, Hereford.

Feb. 23. **CARDIFF.**—Erection of (1) proposed gun sheds and stores in Dumfries Place, Cardiff, for the Royal Field Artillery, and (2) carrying out extensive repairs and renovations to the drill hall buildings, Dumfries Place, Cardiff. Plans and specification may be inspected at the office of the Architect, W. H. Dashwood Caple, F.R.I.B.A., 2, Church Street, Cardiff, who will supply copies of the bills of quantities and schedules of dilapidations on deposit of £1 1s. each. Application for quantities and schedules to be made by 9th inst. Tenders to be delivered to Capt. C. Wilkie, Secretary, 20, Dumfries Place, Cardiff.

Feb. 25. **ST. DENNIS (Cornwall).**—Erection of a dwelling-house and shops at Fore Street, St. Dennis, for T. Varcoe. Drawings and specification may be seen at the office of B. C. Andrew, M.S.A., Architect, Biddock's Court, St. Austell, to whom tenders are to be sent.

Feb. 28.— **MERTHYR TYDFIL.**—Erection of twenty-two terrace houses in three blocks and six pairs of semi-detached villas, together with the construction of roads, sewers, and surface water drains, on the Meyrick Estate, Gwaelodygarth Field, Merthyr Tydfil, for the Grove Building Club. Drawings and specifications can be seen and forms of tender obtained at the office of T. Edmund Rees, Architect and Surveyor, Merthyr Tydfil. Tenders to be sent to Martin Evans, Solicitor, High Street, Merthyr Tydfil.

Feb. 28. **DARTFORD.**—Construction of an open-air swimming bath, for the U.D.C., in accordance with plans and specification, which may be seen at the office of the Surveyor, Council Offices, Dartford. Tenders must be delivered to W. Kay, clerk, Council Offices, Dartford.

March 5. **NEW ROSS.**—Sanitation and alteration to Workhouse, comprising:—1, drainage and water supply; 2, erection and completion of sanitary annexes, etc.; 3, plumbing and hot water circulation; 4, erection of a new kitchen and annexe at the fever hospital, for the Union. Plans and specifications may be seen at the Boardroom, New Ross, and at the office of the Architect, J. A. Ryan, 33, Catherine Street, Waterford. Forms of tender are to be obtained from P. A. Pope, Clerk of the Union, New Ross, to whom tenders are to be sent.

No date. **EAST HAM.**—Execution of building and decorative repairs to the schools, for the Corporation. Specifications will be supplied to the persons or firms approved by the Committee, who furnish their names and addresses to H. C. Padgett, Secretary, Education Office, East Ham, E.

No date. **BRADFORD.**—Persons desirous of tendering for the whole or part of works, pulling down excavating, and foundation work to premises, market street, and Booth Street, Bradford, for the Bradford District Bank, Ltd. (first contract), are requested to forward their names, together with deposit of £1 1s., to the Architects, Carby Hall and Dalby, Prudential Buildings, Park Row, Leeds.

ENGINEERING

Feb. 15. **WITHAM (Essex).**—Installation of a new vertical steam boiler and shed at the Bridge Industrial Home, Witham, Essex, for the Metropolitan Asylums Board. Drawings, conditions of contract, specification, and form of tender may be inspected at the office of the Board, Embankment, London, E.C., can be obtained upon deposit of £1. Tenders must be delivered at the office of the Board.

Feb. 15. **TORONTO, CANADA.**—Execution of the following work and supply of materials:—3, laying sewer outlet; 4, building sewage tanks; 5, supply of iron castings; 7, supply of structural steel; 7, supply of sludge valves, penstocks, and pedestals; 8, supply of cast-iron pipe; 9, supply of cranes; 10, supply of special tile. Plans may be seen and specifications obtained at the Office of the City Engineer, Toronto, and at the office of the Commercial Intelligence Branch of His Majesty's Board of Trade, 73, Basinghall Street, London, E.C. Specifications may also be seen at the office of Mr. Farnell, 11, Charing Cross Mansions, Glasgow. Tenders by registered post to be sent to Joseph Oliver (Mayor), Chairman, Board of Control, City Hall, Toronto.

Feb. 16. **SHEERNESS.**—Supplying and fitting heating arrangements, for the Sheppey Union. A committee will meet intending contractors at the workhouse by appointment. Letters to be sent to the Master, Sheppey Union, Minster, near Sheerness.

Feb. 16. **OLDHAM.**—Supply, delivery, and erection, at the Hollinwood Depot, for the Corporation:—1, electric lighting, etc., installation; 2, switchboard and accessories; 3, testing panel and accessories; 4, workshop motors, with starting panels; pulleys, and slide-rails, etc., complete. Specifications, forms of tender, and drawings may be obtained from Lewis Slattery, general manager of tramways, Wallshaw, Oldham, on deposit of £1 1s. for each section. Duplicate copies may be had on payment of 10s. 6d., which will not be returned. Tenders must be delivered at the offices of the above-named. J. H. Hallsworth, Town Clerk. Fair wages clause.

Feb. 18. **CELBRIDGE NO. 2.**—Sinking and walling a well and erection of a pump at Brittas, Co. Dublin, in accordance with specification prepared by J. J. Inglis, C.E., a copy of which will be forwarded, on application to F. Shortt, Clerk of the Council, Council Office.

Feb. 18. **TORQUAY.**—Heating and ventilating the pavilion proposed to be erected in the Princess Gardens, Torquay, for the Corporation. Heating and ventilating engineers can obtain full particulars of Henry A. Garrett, Assoc.M.Inst.C.E., Engineer, Market Street Chambers, Torquay, to whom tenders and schemes are to be sent. Heating on the low-pressure hot-water system and ventilating on the inlet and outlet system preferred.

Feb. 19. **PADDOCK WOOD, KENT.**—Construction of a heating chamber and the installation of heating apparatus, at the girls' and infants' school, for the Kent Education Committee. Specifications can be seen and further information obtained at the offices of W. H. Tompsett, Barham House, Capel, Tonbridge, Kent, to whom tenders are to be sent.

Feb. 22. **LONDON.**—Road work and platelaying required for the construction on the underground conduit system of the Council's tramways in Mitcham Lane and Southcroft Road, and in Wimbledon Road, and paving works for street widenings, for the L.C.C. The route is equivalent to about 3.63 miles of single track. The contractor will be required to use the track rails with fastenings, slot rails, and conductor rails, and the special work for the crossovers, etc., which will be provided by the Council under other contracts, but all the remaining metal work and other materials will be included in the contract. Persons desiring to submit tenders may obtain specification, bills of quantities, form of tender, and other particulars on application to the Chief Engineer of the Council, Maurice Fitzmaurice, C.M.G., at the County Hall, Spring Gardens, S.W., upon payment to the cashier of the Council of £5 deposit. Full particulars may be obtained on application at the County Hall before payment of fee. Tenders to be delivered at the County Hall, addressed to the Clerk of the London County Council, Spring Gardens, S.W. Fair wages clause.

IRON AND STEEL.

Feb. 14. **NELSON (Lancs.).**—Supply of general ironmongery during twelve months ending March 31, 1911, for the Gas Committee. Form of tender, together with full particulars, may be obtained on application to A. J. Hope, Engineer and Manager, Gasworks, Nelson. Tenders must be sent to J. H. Baldwick, Town Clerk, Town Hall, Nelson.

Feb. 14. **LONDON, W.C. (for Australia).**—Supply and delivery at one of the railway piers at Williamstown, Melbourne, of the following rails and (or) fishplates, for the Agent-General for Victoria, Australia:—A, 17,089 tons of 80lb. steel rails; B, 1,525 tons of steel fish-plates for 80lb. rails. Specification, conditions of contract, and forms of tender may be obtained at the office of the Agent-General for Victoria, Melbourne Place, Strand, London, W.C., to whom tenders are to be sent. £500 deposit must accompany each tender.

Feb. 15. **MANCHESTER.**—Supply of permanent-way points, tongues, and hardened steel centres, for the Corporation. Specifications and forms of tender may be obtained on application to J. M. M'Elroy, general manager, Corporation Tramways, 55, Piccadilly, Manchester, on deposit of £1 1s. Tenders are to be addressed to the Chairman of the Tramways Committee, 55, Piccadilly, Manchester.

March 15. **MANCHESTER.**—Supply of:—Manual valves, 40ins. and 36ins. diameter; automatic valves, 36ins. diameter; reflux valves, 40ins. diameter; sluice valves from 18ins. to 3ins. diameter; air valves; and miscellaneous ironwork, for the Corporation. Specification and form of tender may be obtained on application to G. H. Hill and Sons, Civil Engineers, Albert Chambers, Albert Square, Manchester, and 3, Victoria Street, Westminster, upon receipt of cheque deposit £2 2s. Tenders addressed to the Chairman of the Waterworks Committee, must be forwarded to the Secretary, Waterworks Offices, Town Hall, Manchester.

PAINTING.

Feb. 16. **GOOLE.**—Execution of certain painting work at the Council's smallpox hospital, Dutch River Side. Specification, form of tender, and other particulars may be obtained on application to the Town Surveyor. Tenders to be delivered to Robert Tyson, Clerk to the Council, Council Office.

Feb. 16. **PORTSMOUTH.**—Painting, repairs, and renovations at the Children's Home, St. Mary's Road, Milton, for the Corporation. Specifications and forms of tender and full particulars may be obtained upon application to the Architect, G. E. Smith, of 145, Victoria Road North. Tenders, addressed to the Chairman, Board of Guardians, must be delivered at the Workhouse. Fair wages clause.

Feb. 17. **SALFORD.**—Decorating the Assembly Room and Ante-Rooms at the Salford Town Hall, for the Corporation. Specification and form of tender may be obtained at the Borough Engineer's Office, Town Hall, Salford. Tenders addressed to the Chairman of the Town Halls Committee, must be delivered to L. C. Evans, Town Clerk, Town Hall, Salford.

March 1. **LARBERT.**—Painting and decorating the Dobbie Hall, Larbert, for the Council. Specifications may be had on deposit of 10s., from Alex Smith, Clerk, Larbert, to whom tenders are to be sent.

PLUMBING AND SAINTARY

Feb. 15. **WELLS.**—Providing and laying 1,300 yards of two-inch cast-iron water main in Sharpham Drove, with sundry contingent works, in accordance with plans and specification prepared by the Engineer, William Phelps, C.E., of Shepton Mallet, for the R.D.C. Plans and specification are deposited at the office of the Engineer, Charlton Road, Shepton Mallet, where a copy of the schedule may also be obtained. Tenders are to be delivered to Alfred E. Russ, Acting Clerk, Poor Law Offices, High Street, Wells.

Feb. 16. **LLANDAFF AND DINAS POWIS.**—Construction of sewage and storm water tanks, bacteriological filter beds, automatic mechanical distributors of the sewage over the beds, pumping station, and works incidental thereto, supplying and erection of gas engines and pumps, and the laying out of land for dealing with the sludge, in connection with the Ely (near Cardiff) sewage disposal works, for the R.D.D. Plans and specifications may be seen and form of tender obtained at the office of Baldwin Latham, M.Inst.C.E., etc., Parliament Mansions, Victoria Street, Westminster, or at the office of James Holden, A.M.Inst.C.E., Engineer of the Council, Park House, Park Place, Cardiff. Quantities of works may be had on application to either, on deposit of £10. Tenders to be delivered to M. Warren, Clerk to the Council, Park House, Park Place, Cardiff.

(*Continued on next page.*)

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Feb. 24. **FARNHAM.**—Provision, laying, and jointing of about 7,000 yards of 9in. stoneware pipe sewers, together with manholes, lampholes, and flushing chambers; also construction of liquefying tanks, four circular bacteria beds, sedimentation tank, sludge well, pump house, and other works, for the R.D.C. Drawings and specification may be seen, and bills of quantities obtained of the engineers, Willcox and Raikes, 63, Temple Row, Birmingham, on deposit of £3 3s. Contractors can also see copies of drawings and specification at 15, Victoria Street, Westminster, S.W. Tenders to be delivered at the office of Ernest Crundwell, Clerk, Farnham, Surrey.

Feb. 25. **WALLINGFORD.**—Extension of the Didcot Sewage Farm, including the construction of a concrete carrier, together with valves, etc., for the R.D.C. Plan and details may be seen, and copies of specification, bill of quantities, and form of tender obtained at 7, St. Martin's Street, Wallingford, Berks, upon deposit of £1 1s. Tenders to be delivered to G. F. Slade, Clerk to the R.D.C., 7, St. Martin's Street, Wallingford.

Feb. 25. **BANFF.**—Supplying, laying, and jointing about 430 lineal yards of fire-clay sewer pipes, with manholes, gully tanks, and about 425 lineal yards of cast-iron water pipes, with fire hydrants, and street wells, for the District Committee. Plans and specifications may be seen with the subscriber, or with James Barron, M.Inst.C.E., 216, Union Street, Aberdeen, from whom schedules of quantities can be obtained on deposit of £1. Offers to be lodged with James Grant, District Clerk, 23, Castle Street, Banff.

Feb. 28. **ALWICK.**—Execution of the following works, for the R.D.C.:—1, providing and laying about 1,800 yards of 4in. sanitary pipes, in 3ft. lengths, and construction of open reservoir to hold 50,000 gallons, near Shilbottle Wood House; 2, furnishing and laying about 1,006 yards 3in. cast-iron socket pipes and fittings from Heather Leazes to Warkworth. Plans and specifications may be seen at the office of the Rural District Council, Alnwick, and copies at 94, Queen Street, Amble. Tenders to be delivered to the Clerk, H. W. Walton, Alnwick.

March 19. **HALIFAX.**—Construction of fourteen percolating filters (8 90ft. and 6 85ft. diameter), at the sewage disposal works, for the Corporation:—22, excavators', masons', and bricklayers' work; 23, cast-iron pipes and sluice valves; 24, distributors (revolving); 25, filtering medium; 26, unloading and filling filtering medium. Plans and specifications may be seen and forms of tender obtained on application to James Lord, M.I.C.E., Borough Engineer, Town Hall, Halifax, upon deposit of £10 for each set of quantities. Tenders must be sent to Herbert Ashling, Town Clerk. Fair wages clause.

ROADS AND CARTAGE.

Feb. 14. **SELBY.**—Supply of whinstone, from April 1, 1910, until March 31, 1911, in such quantities as required for the U.D.C. Tenders to be sent to Bruce McG. Bray, A.M.I.C.E., Engineer and Surveyor, Council Offices.

Feb. 14. **LONDON, S.W.**—Executing necessary works of repair upon Victoria Road, Southfield, for the Corporation of Wandsworth. Specification and drawings may be seen, and forms of tender obtained, at the Borough Engineer's Office, New Streets Department, 56, East Hill, Wandsworth, S.W. Tenders must be delivered at the Council House, East Hill, Wandsworth, S.W. Fair wages clause.

Feb. 14. **BEVERLEY.**—Supply of about 3,000 to 4,000 tons of stone for macadamising roads, to be delivered at various railway stations and wharves, in the district, for the D.C. Particulars, forms of tender, etc., may be obtained on application to E. Picker, C.E., Surveyor, Beverley. Tenders are to be sent to F. G. Hobson, Clerk to the Council, Newbiggin, Beverley.

Feb. 14. **KNOTTINGLEY.**—Excavating, levelling, macadamising, asphalting, and channelling, etc., the following, for the U.D.C.:—Holes Road, School Road, and Fisher Street, The Holes, Knottingley. Plans, sections, specifications, and full particulars (prepared by Arthur Hartley, Surveyor, Castleford), may be seen at the Council Offices, Town Hall, Knottinglev. Tenders to be delivered at the above offices. Forms to be obtained from Walter Swaine, Clerk to the Council, Council Offices, Town Hall, Knottingley.

Feb. 16. **GLOUCESTER.**—Supply of stone for use on main roads, for the year beginning April 1, 1910, and ending March 31, 1911, for the C.C. Forms of tender can be obtained from the County Surveyor on and after Jan. 22. Tenders must be sent to E. S. Sinnott, M.Inst.C.E., County Surveyor, Shire Hall, Gloucester.

Feb. 16. **HERNE BAY.**—Making up Stanley Road, for the U.D.C. Plans, sections, and specifications can be seen and forms of tender obtained from F. W. J. Palmer, Surveyor to the Council, Town Hall, Herne Bay. Tenders to be addressed to Joseph Jubb, Clerk to the Council, Town Hall, Herne Bay.

Feb. 16. **CLACTON.**—Making-up Pier Gap, for the U.D.C. Drawings, specification, and conditions may be seen, and form of tender obtained, upon application to D. J. Bowe, Surveyor to the Council, Town Hall, Clacton-on-Sea. Tenders must be delivered to Geo. T. Lewis, Clerk to the Council, Town Hall Buildings Clacton-on-Sea.

Feb. 16. **BOURNEMOUTH.**—Making up St. Winifred's Road, St. Anthony's Road, St. Augustine's Road, for the Corporation. Full particulars, forms of tender, specification and schedule, may be obtained of the Borough Engineer, F. W. Lacey, Municipal Offices, Bournemouth, at whose office drawings can be seen, provided that £1 1s. has been previously deposited. Tenders to be sent to Geo. Wm. Bailey, Town Clerk.

Feb. 16. **HARTISMERE.**—Supply of about 2,300 tons of 1¾in. granite, and 2,950 tons of pit stones, to be delivered as required at the following stations, for the R.D.C.:—Diss, Eye, Mellis, and Finningham, on the Great Eastern Railway; Aspall, Mendlesham, and Wetheringsett, on the Mid-Suffolk Light Railway. Samples of materials to be sent, carriage paid, to the Master of the Workhouse, Eye. Tenders to be sent to Harold Warnes, Solicitor, Clerk to the Council, Eye, Suffolk. No form of tender will be issued.

Feb. 19. **BILSTON.**—Execution of private street works, Lewis Street, for the U.D.C. Plans and specifications may be seen and bill of quantities and form of tender obtained on application to Vincent Turner, Assoc.M.Inst.C.E., Engineer and Surveyor, Town Hall, Bilston.

Feb. 21. **CHERTSEY.**—Construction of a new road at Fowler's Well, Burrowhill, in the parish of Chobham, about 150 yards in length and 36ft. in width, including drainage, kerbing and paving complete, for the R.D.C. Plan, specification, and conditions of contract may be seen by appointment at the Surveyor's Office, Chobham. Tenders must be delivered to 80, Guildford Street, Chertsey.

Feb. 22. **DONCASTER.**—Supply of dross and granite, with samples, for the whole or part of the roads in the district, for twelve months, from April 1, 1910, for the R.D.C. Specifications, schedules, and forms of tenders may be obtained on applying to W. R. Crabtree, Highway Surveyor of the Council, Union Offices, High Street, Doncaster. Tenders to be sent to F. E. Nicholson, Solicitor, Union Offices, Doncaster, Clerk to the Council.

Feb. 24. **FLAXTON.**—Supply of whinstone, broken and unbroken, also for broken annealed and common slag, to be delivered, carriage paid, to the following stations, for the R.D.C.: — York, Foss Islands, Benningbrough, Haxby, Strensall, Flaxton, Barton Hill, Earswick, Warthill, Holtby, and Stamford Bridge. Forms of tender can be obtained from Joseph Peters, Clerk to the above Council, 4, New Street, York, to whom tenders, with samples, are to be sent.

(Continued on next page.)

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Feb. 28. **LITTLE HULTON.**—Supply of broken granite, grit setts, granite and limestone chippings, grit kerbs, artificial flags, stoneware pipes, and gullies, cement, steam road rolling, and scarifying, disinfectants, pitch, and oil, for the U.D.C. Forms of tender and particulars can be obtained from the undersigned. Tenders are to be delivered to James H. H. Heyes, Clerk, Council Offices.

March 4. **ROTHERHAM.**—Supply of granite and slag, to be delivered at the various railway stations within the district, from April 1, 1910, to March 31, 1911, for the R.D.C. Also for carting necessary in removing the above to the roads where required during the same period. Specifications and forms of tender may be obtained from R. Bradbury, District Surveyor, Imperial Buildings, Rotherham. Tenders to be delivered to Oxley and Coward, Clerks to the Council, 6, Westgate, Rotherham.

March 15. **BRISTOL.**—Construction of a new road, about 800 yards in length, in the parishes of Nempnett and Winford, for the Clutton R.D.C. Specification on application to the Council's Surveyor (T. Orchard, The Grange, Haliatrow, near Bristol), by deposit of £1 1s. Tenders must be sent to J. Sumner Dury, the Clerk to the Council, Temple Cloud, near Bristol. For further information apply to the Surveyor.

MISCELLANEOUS.

Feb. 14. **LONDON.**—Supply of the undermentioned works and materials, among others, for one year commencing April 1, 1910, for the Corporation of St. Marylebone:—Timber, wood troughing, meter boards, etc.: Portland cement; broken granite, lime, bricks, fire-bricks, and fire-clay; footway kerb and granite pitching; Yorkshire and artificial paving; Thames ballast and sand; glazed stoneware and sewer pipes; pit flints, gravel, and hoggin; tools and ironmongery; ironwork for sewers and iron castings; plumbers' work and materials; wood blocks for repairs; painting street names. Tenders, in accordance with the printed forms, which, together with further particulars, may be obtained on application at the Town Hall, Marylebone Lane, Oxford Street, W., to be delivered to James Wilson, Town Clerk, Town Hall, St. Marylebone, W.

Feb. 14. **BELFAST.**—Supply of the undermentioned stores for twelve months, from March 1, for the Belfast and County Down Railway.:—1, iron; 2, iron castings; 3, tinware; 4, bolts, spikes, etc.; 6, springs, steel, and files; 7, nails, screws, etc.; 8, carriage fittings; 11, glass; 12, ropes, twine, and flax; 14, carriage trimmings; 16, oils and tallow; 17, varnishes; 18, colours; 19, waste; 20, fireclay goods; 21, cement and alabaster; 22, stone and brick; 23, lime and sand; 25, switches and crossings; 26, timber and slates. Samples and patterns can be seen on application to the Storekeeper, Belfast Terminus. Tenders must be sent to Thomas J. Brittain, Secretary, Queen's Quay Terminus, Belfast.

Feb. 14. **LONDON, S.W.**—Supply of the following materials (among others), for the Battersea Borough Council:—7, disinfectants; 8, bricks, cement, lime, slates, etc.; 9, material for cart and van covers; 10, granite and macadam; 12, iron bars and other materials for blacksmiths' work; 13, iron castings; 14, ironmongery, etc.; 15, paints, etc.; 16, painters' sundries; 17, varnish, etc.; 19, stoneware pipes; 20, tarred slag, macadam and limestone tarred paving, etc.; 21, Thames ballast, sand, etc.; 22, timber and other materials for carpenter's and joiner's work; 23, timber and other materials for wheelwrights' work; 25, tools, etc.; 26, York paving, etc. Forms of tender, containing full particulars, may be obtained at the Town Hall. Tenders must be delivered to W. Marcus Wilkins, Town Clerk, Town Hall, Battersea.

Feb. 15. **BROMLEY.**—Supply of timber, ironmongery, builders' materials, tools, oils, paints, etc., ironfounders' work, tar paving materials, steam road rolling, for the Corporation. Particulars and conditions may be obtained at the Municipal Buildings on deposit of 10s. Tenders must be delivered to Fred. H. Norman, Town Clerk, Municipal Offices, Bromley, Kent.

Feb. 15. **LEIGH.**—Supply of the following materials during year ending March 31, 1911, for the Corporation:—Grit setts, barns flags, kerbstones, channel stones, macadam, chippings, sewerage pipes, castings, copper sheets, pitch, cement, sheet glass. Specifications, forms of tender, and all information may be obtained from Tom Hunter, Borough Surveyor, Leigh. Tenders to be delivered to Stanley Wilson, Town Clerk, Town Hall, Leigh, Lancs.

Feb. 16. **LONDON (for India).**—Supply and delivery of Portland cement, for the East Indian Railway, as per specification to be seen at the Company's Offices. Tenders are to be sent to C. W. Young, Secretary, Nicholas Lane, London, E.C. For each specification a fee of £1 1s. is charged, which cannot be returned.

Feb. 16. **SOUTHWARK.**—Supply of the following materials (among others), for the Corporation, from April 1, 1910, to March 31, 1911:—1, asphalte, bitumen, pitch, etc.; 2, ballast, sand, etc.; 7, drain pipes; 9, English timber and hard wood; 10, foreign timber; 13, lime, cement, and bricks; 16, oils and colours; 18, paving; 20, sewer ironwork; 23, wheels, tyres, etc.; 27, wood blocks. Specifications to be seen at the Town Hall, Walworth Road, S.E. Tenders must be sent to J. A. Johnson, Town Clerk, Southwark Town Hall, Walworth Road, S.E.

Feb. 16. **BACUP.**—Supply of the following materials, as required by the various departments during the year ended March 31, 1911, for the Corporation:—1, pitch and creosote oil; 2, flags, kerbs, channels, and setts (local stone); 3, granite, macadam, granite chippings, and limestone chippings; 4, earthenware pipes, etc., waste water closets; 5, bricks (red); 6, ironmongery, tools, and brushes; 8, iron castings; 10, covers, flags, bricks, for the cemetery. Further particulars and forms of tender can be had on application at the Borough Surveyor's Office. Tenders must be delivered to Joseph Entwistle, Town Clerk, Bacup.

Feb. 17. **WALSALL.**—Supply and delivery of the following materials, for the Corporation:—About 400,000 blue and brindled Staffordshire bricks, copings, etc.; about 800 tons best Portland cement. Specifications and forms of tender may be obtained at the office of the Borough Surveyor, Council House, Walsall. Tenders to be sent to John R. Cooper, Town Clerk, Town Clerk's Office, Walsall. Fair wages clause.

Feb. 17. **ASTON MANOR.**—Supply of the undermentioned materials and stores during the period ending March 31, 1911, for the Corporation:—Broken and unbroken stone, paving and common bricks, hardware (picks and shovels), etc., iron castings, coal and slack, drysaltery, mantles for street gas lamps, disinfectants, glass, cement, pitch, creosote oil. Forms of tender and any other information may be obtained of F. W. Richardson, Borough Surveyor, Council House, Aston Manor. Tenders must be sent, with samples, addressed to the Chairman of the Public Works Sub-Committee, Council House, Aston Manor.

Feb. 18. **LEEDS.**—Supply of the undermentioned goods, among others, during the year ended March 31 1911, for the Corporation:—Small iron castings; oils; stop cocks, 3in. to 12in.; fire hydrants; cast-iron pipes and specials; ironmongery. Tenders to be addressed to "The Waterworks Committee, Town Clerk's Office, Leeds."

Feb. 19. **HORNSEY.**—Supply of 1, meters; 2, cables, troughing, blue tiles, bricks, pitch, etc., for the Corporation. Forms of tender, etc., may be obtained on deposit of 10s. 6d. with the Borough Treasurer, of the Borough Electrical Engineer, at the Electricity Works, Tottenham Lane, Hornsey, where samples may be seen. Tenders to be delivered to F. D. Askey, Town Clerk, 99, Southwood Lane, Highgate, N.

Feb. 19. **NEW MALDEN (Surrey).**—Supply of materials for one year, as from April 1, 1910, and in accordance with form and conditions governing sectional items, for the U.D.C.:—Broken flints, granite, and fine gravel; stoneware goods; tar macadam and tar paving; coal and coke; Portland cement; ironmongery. Forms of tender and full particulars will be furnished upon application at the Clerk's Department, Council Offices, New Malden, and after deposit of £1 1s. Tenders together with samples, to be delivered to James Wm. Johnson, Clerk to the Council, Council Offices, New Malden, Surrey.

Feb. 19. **SALE.**—Supply during the period ending March 31, 1911, of flags (including concrete), kerbs, gritt setts, macadam, granite chippings, limestone chippings and cubes, earthenware pipes, bends, junctions, and gullies, manhole covers and other ironwork, blue bricks, sulphuric acid, nitrate of soda, limestone asphalting of footpaths, for the U.D.C. Materials to be delivered free at the railway station or alongside any of the Council's Wharves on the Bridgewater Canal. Forms of tender and all particulars may be obtained at the office of William Holt, A.M.I.C.E., Engineer and Surveyor, Council Offices, Sale. Tenders must be delivered to D. Hallewell, Clerk to the Council, Council Offices, 4, School Road, Sale.

Feb. 21. **BECKENHAM.**—Supply of the following, among other, materials:—Cement and lime; disinfectants; flints, field; flints, pit, gravel, and sand; granite, Guernsey; ironwork; oils and colours; oils: crank, chamber, and cylinder; pitch; stoneware goods; stores: general; tar paving. Particulars and conditions and forms of tender may be obtained on application at the Council Offices. Tenders to be sent to F. Stevens, Clerk of the Council. Fair wages clause.

Feb. 22. **YORK.**—Supply of the following articles during year ending March 31, 1911, for the Corporation: — Portland cement; building lime; sewage lime; pipes (stoneware); pitch and creosote oil; sludge press cloth; stone flags, landings, and setts; kerbing, edging, and channelling; whinstone (broken and rough), slag, (broken and rough), and limestone chippings. Forms of tender will be supplied upon application to F. W. Spurr, City Engineer, Guildhall, York, to whom tenders are to be sent.

Feb. 25. **WALTHAMSTOW.**—Supply of the following for the twelve months ending March 31, 1911, for the U.D.C.:—1, broken granite for macadam; 2, granite kerb and setts; 3, granite chippings for manufacture of paving; 4, tools; 5, ironmongery, etc.; 6, wheelwrights' and blacksmiths' goods; 7, blue lias lime; 8, lime for sludge pressing; 9, Portland cement; 10, illuminating oils; 11, glass, colour, etc.; 12, stoneware pipes, etc.; 17, pitch, etc.; 19, engine room stores; 20, alumino ferric for sewage precipitation; 24, castings. Forms of tender and further particulars may be obtained at the Surveyor's Office, Town Hall, Walthamstow. Tenders to be delivered, by post only, to C. Sydney Watson, Clerk to the Council, Town Hall, Walthamstow. Fair wages clause.

(*Continued on next page.*)



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Feb. 26. **NEWTON-IN-MAKERFIELD.**—Supply of the following materials, among others, for one year, commencing April 1, 1910, for the U.D.C.:—1, 2, and 3, wrought-iron steam tubes and fittings; 4, main cocks, ferrules, plug stopcocks, ingot tin, pig lead, lead gas and water pipe, yard brushes and shovels; 5, round, flat, square, and sheet iron; 6, oxide of iron, brown vitriol; 8 and 9, cast-iron main pipes, special pipes and castings, sluice valves, water meters, cast-iron hydrants, valves, meters, and stop-tap boxes; 11, fire-clay, Buxton lime, and Portland cement; 13, granite, macadam (2ins. and 1½ins). ¾in. granite chippings, 4in. granite paving setts, grit paving setts (4in. and 6in), concrete flags (straight and radius), kerbstones (straight and circular), stoneware pipes, and scavengers' brooms. Forms of tender may be obtained from the Stores Clerk, Gasworks, Earlestown. Tenders to be delivered to C. Cole, Clerk to the Council, Town Hall, Earlestown, Lancs.

March 5. **WARRINGTON.**—Supply of the following materials for a period of twelve months, from April 1, for the Corporation:—1, cast-iron pipes, valves, and cast-iron surface boxes; 2, bib, stop and ball cocks, and ferrule couplings; 3, cylinder and engine oils; 4, carting. Deposit of 10s. per section is required. Further particulars may be obtained from James Gray, Engineer, Municipal Offices, Warrington.

Late Tenders.

Semley, Wilts.—Accepted for alterations and additions to "Broad Oak" House, Semley, Wiltshire. Mr. W. J. M. Morrish, architect, Gillingham, Dorset.
W. Forbes, East Stour, Gillingham, £400.

Truro.—For erection of County offices, etc., for the Cornwall County Council. Messrs. Silcock and Reay, architects, Bath.

Nicholls Bros., Launcester	£17,948 10 3
Hodge, Mitchell, and Bond, Redruth and Camborne	16,810 6 0
J. Berryman, Camborne	16,700 0 0
H. Willcock and Co., Wolverhampton	15,825 0 0
S. Roberts, Ltd.	15,351 0 0
H. Lovatt, Ltd., Wolverhampton	15,232 0 0...
A. Wills and Sons, Bath	15,130 0 0
J. Long and Sons, Ltd., Bath	14,742 0 0...
A. N. Coles, Plymouth	14,550 0 0
Haywards and Wooston, Bath	14,500 0 0
W. E. Bennett, Bodmin	14,488 11 0
G. Shellabear and Son	14,340 0 0
J. Crockerwell, Devonport	14,229 14 3
J. Colliver, Truro	14,072 3 8
W. E. Blake	13,925 0 0
G. Miners, Marazion	13,876 16 0
Lapthorne and Co.	13,870 0 0
A. F. Colbourne, Swindon	13,570 7 9
Wakeham Bros.	13,415 0 0
Pethick Bros., Ltd.	13,377 0 0
F. J. Stanbury,* Devonport	12,799 0 0

Rest of Plymouth.
*Accepted.

Upminster, Essex.—Accepted for a cottage, King's Gardens, Cranham Park Estate, Upminster, Essex. J. Wornell, architect, 68, Cheapside, E.C.
F. W. Burtwell, Brentwood, £215.

Wellingborough.—For erecting girls' secondary school, for the Northamptonshire County Council Education Committee. Messrs. Sharman and Archer, architects, Wellingborough.

R. Marriott	£9,460 0 0
W. Stevens	9,320 0 0
A. Lewin and Son	8,997 10 0
E. Archer and Sons, Ltd.	8,532 0 0
T. Hickman	8,463 2 6
Goodman and Murkett	8,418 0 0
E. Brown and Son, Ltd.	8,405 0 0
Hacksley Bros.,* Wellingborough	8,353 0 0

*Accepted

Wickford.—Accepted for a detached cottage, Jersey Gardens, Wickford. J. Wornell, architect, 68, Cheapside, E.C.
W. H. Cuming, Hornsey Rise, £200.

Wickford, Essex.—Accepted for a cottage, Station Avenue, Wickford, Essex. J. Wornell, architect, 68, Cheapside, E.C.
F. W. Burtwell, Brentwood, £165.

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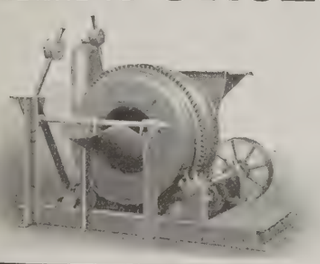
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Sealed tenders endorsed "Tender for Rawson Road Council School," must be delivered to the undersigned not later than 12 noon on Monday, the 21st February, 1910.

The Council does not bind itself to accept the lowest or any tender.

By order,
JOHN I. THOMPSON,
Clerk to the Council.

Town Hall, Waterloo, near Liverpool.
1st February, 1910. 5509

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Builders desirous of tendering should, before the 31st inst., send their names to the Rev. S. Hebert, The Vicarage, Paulton. Plans and specifications may be seen at the Rev. S. Hebert's or Messrs. Melhuish and Sons, Paulton, on and after February 4th. Bills of quantities may be obtained, on payment of a fee of One Guinea (which will be returned to persons sending in a bona-fide tender in accordance with the conditions). Sealed tenders, duly endorsed, are to be delivered to the Rev. S. Hebert before twelve noon, February 19. The Committee give no pledge to accept the lowest or any tender, and in the event of the number of applications being numerous, eleven will be selected from among them.

Paulton, January 15, 1910.

February 16, 1910. Volume 31, No. 785.

THE BUILDERS' JOURNAL

AND ARCHITECTURAL ENGINEER.

This issue contains Articles on Fire Prevention and Fire-resisting Construction.

Caxton House, **Westminster.**

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"Beautiful Sheffield."

Although Sheffield can never become one of England's beauty spots, this consideration should not, and will not, daunt those of its inhabitants who are just now expressing an almost passionate desire for its improvement æsthetically. A voluminous discussion on the subject has arisen on a scheme submitted by the Sheffield Society of Architects for the improvement of Fitzalan Square. Controversy has been provoked by the proposal to erect a statue there; and it is perhaps instructive to note the tendency of the public mind to concentrate itself on this special point, to the obscuration of the larger question. It is to be feared that this inveterate habit may prove a stone of stumbling in applications of the Town Planning Act. Minor points will divert attention from the larger issues, and, in spite of the huntsmen, the pack will follow the scent of the red herring that, whether accidentally or intentionally, is drawn across the trail. It is isolation of interest that has been the cause of most of the mischief that the Town Planning Act is expected to undo. The operation of the Act may possibly be hampered by a form of obstruction that has often been employed with deadly effect. It has been found, for instance, that given the funds for a town hall, and the decision to build it, the consummation may be delayed for years—and perhaps indefinitely—on the question of site, or of whether or not it shall have a tower; or of whether or not it shall be designed by a local architect, or built by local contractors; or of whether the materials shall be native or imported, and so on with almost inexhaustible ingenuity on the part of clever and bitter opponents of the scheme. All this, however, is by the way. It has no particular application to Sheffield; where, while the general public seem disposed to narrow the issue to the simple question of whether or not to put up a statue in Fitzalan Square, the architects and the Press have insisted on the larger view. Mr. E. M. Gibbs, for example, supports the proposal that the Corporation should have a definite policy and plan, and that the work shall be carried out under the direction of one committee. "I sigh to think," that gentleman said to a newspaper representative, "of what Sheffield is, and what it might have been had our forerunners foreseen the great growth of the city, and had they possessed the necessary powers." The success of the Act, in Sheffield or anywhere else, will largely depend upon the spirit in which those powers are exercised. It is particularly desirable to get rid of the odium that attaches to the idea of compulsion. Inducement, it must be realised, was really all that was necessary, in the majority of cases, to render private interests subservient to public polity. Stress should be laid on the important point that formerly a man was apt to build to suit himself alone, not because he was indifferent to the public weal, but because he probably had no option. There was no means of compensating him for loss in the public interest. Under the new system, he need sacrifice nothing—not even his dignity; for he will be called into conference with respect to projected improvements, in which he should be proud to assist. For the town-planning movement is essentially a co-operative concern; and the less one hears about compulsion in it, the more successfully will it work. It is very gratifying to find that Sheffield is thus early bestirring itself, and that the advocates of a "beautiful Sheffield" are so optimistic. We think that they are justified in the belief that Sheffield, or any other industrial city, may, by a judicious administration of the new powers in the new spirit, be at all events converted to comeliness. Sheffield architects are not only an intensely loyal, but a particularly capable body of men; and if their counsels are allowed due weight, the regeneration of Sheffield is assured, and the example to other industrial centres will be invaluable.

The Engineer and the Architect.

Liverpool is no laggard in town planning. Mr. John A. Brodie, the City Engineer, in a paper read last week before a local society, mentioned that, so far back as 1853, a masterly report on street requirements was published, which contained a suggestion for constructing a circular boulevard, sixty yards wide, to traverse the outskirts of the borough. The scheme fell through because of the lack of such powers as are now provided under the Town Planning Act. Mr. Brodie outlined a very alluring scheme of his own, and we are glad to notice that he advocated strongly the provision of wide belts of planted open spaces, leading out into the country. "It is difficult to estimate," he said, "what the benefit to Liverpool might be to have a few wide avenues leading out from the neighbourhood of the existing parks to the open country. Such avenues," he supposes, "by providing exceptionally good sites for large houses on their frontage, might also help to induce the more moneyed classes to remain within the town area." The advantage of this diversion is not very obvious to an outsider. For our part, we prefer the ideal set before us by M. Benoit-Lévy in the current issue of the "Architectural Review." He would like to see Paris surrounded by a girdle of green parks and fringed with small and picturesque houses, which would not interrupt the view of the city from the country, nor of the country from the city, and the idea seems to us to be very reasonable, although it might not be wholly applicable to the situation of Bristol. We naturally prefer the æsthetic to the purely utilitarian point of view; and here it seems necessary to remind architects that it is their positive duty to insist that architectural considerations shall not be unduly neglected in giving effect to the Town Planning Act. There is doubtless room for the engineer as well as for the architect, but the latter must be careful not to allow himself to be elbowed into the background.

An Aspersion on the Building Trade.

Sir John Benn's manifesto on the L.C.C. election as published in the "Daily Chronicle" of the 7th inst. contains a reference to and an apology for the former Works Department of the L.C.C. We do not wish to discuss now the question of the Works Department, nor to express any opinion upon the issues raised by the manifesto, and should not refer to it but for the following paragraphs which appear to reflect on the building trade in an entirely unfair and unwarranted manner. Sir John Benn is reported as saying: "For years a fierce battle raged round the Works Department. It has been the *bête noir* of some of the contractors of London, and at last it is sold up. May I briefly state its object and history? The Progressives, while giving two-thirds of the orders of this vast city to contractors, who deserve all credit for the good work they have done, reserved one-third for a Works Department of their own. Why? First, to protect the ratepayers against ring prices, and second, to secure proper wages and conditions for those who worked for the Council." Sir

John continues his argument, but we need only quote the concluding paragraph: "The Government keeps several great Works Departments going for precisely the same reason. The great railway companies do the same. It is impossible, as recent figures show, to protect the ratepayer without some such check. The contractors can now combine, do as they please, and charge what they like." The Works Department devoted itself chiefly to carrying out building work, hence it is obviously at the building contractors of London that the implications contained in the statements quoted are aimed; and it is alleged, not for the first time, if we remember rightly, that ring prices existed prior to the starting of a Works Department; that the ratepayers have no protection against them; that the contractors can now combine, do as they please, and charge what they like; and that improper wages and conditions existed among those who worked for the Council, prior to the inauguration of a Works Department. On the former occasion when these charges were made, they were challenged by representatives of the building contractors of the London district, and effectually shown to be false and unfounded charges, and no doubt will be again; but we wish to protest against public statements of so obviously unfounded a kind being made by gentlemen who aspire to lead a great party in the L.C.C., and feel sure that on reflection their author will regret them. It is absurd to say the ratepayers have no protection against ring prices and improper charges when there are several thousand contractors in the London district eager and willing to compete for the Council's work, not to speak of the thousands of contractors from provincial towns, many of whom regularly compete for works in London, and most of whom would be only too glad of the chance to do so. To talk about "ring prices" and about contractors "doing what they please and charging as they like," when the Council has thousands of competing contractors to choose from, is sheer nonsense. It is equally absurd and untrue, so far at all events as the building trade is concerned, to say that improper wages and conditions existed among those who worked for the Council prior to the inauguration of a Works Department. The organised builders of London had agreed to working rules with the organised workmen of London long before the Works Department was dreamed of, and the rules remain substantially the same, although the Works Department has passed away. We trust that Sir John Benn will promptly withdraw the unjust aspersion.

Square Chancels and Round Visits.

A small point, that is nevertheless of considerable interest to students of architectural history, was brought out by Mr. Frederick Batchelor, President of the Royal Institute of Architects of Ireland, in a lecture he delivered last week to the Liverpool Architectural Society. He is said to be the first Irish architect who has lectured to this society, which seems almost incredible, not to say deplorable, seeing how fine a taste the Irish have in the arts, how great is their natural gift of eloquence, and how much advantage is to be gained by close communion between the several races of which the United Kingdom is so fortunately made up. That, however, is not the point to which reference is made in the opening sentence of this note. Mr. Batchelor, with "Architecture in Ireland" as his subject, traced the development from primitive cromlechs to round towers, castles, and cathedrals; and Professor Reilly agreed with his statement that England owes its square chancels to Ireland, where they are the rule. We should like to see more of this interchange of visits and ideas between those who are sundered by distance, but who are one in their devotion to the Mistress Art. Distance is no doubt a great obstacle; but we should like to see more effort to overcome it. Why should not the R.I.B.A. hold meetings in various important centres of the United Kingdom? Less important bodies have realised the very considerable advantages attendant on "movable conventions."

Grouped Shops.

Some time ago we were able to give an illustrated account of an interesting experiment in co-operative planning in Berlin. It seemed to us to represent a development of the bazaar or arcade system, the vital difference being that common services were shared and common expenses pooled by the various shopkeepers, who otherwise traded independently. This system, properly conducted, would go far towards placing the small shopkeeper on an equality with the great stores. The system is about to be tried in London, whether as a direct result of the article which appeared in our pages we are not aware. Mr. F. E. Boulting, the architect, has stated to certain newspaper correspondents that a site has been secured in the West End, upon which it is proposed to erect a large building on the lines of the great stores. It will be, like them, replete with every convenience for the public, such as refreshment rooms, reading rooms, and all other facilities; and the tradesmen who occupy the shops will have the expenses of rent, heating, lighting, insurance, and advertising covered by an inclusive charge, which will be considerably less than would have to be paid independently; and the delivery of goods will be undertaken on special terms. If the system is found to be successful, we shall get something new in planning, and perhaps in style; while the small shops will rapidly disappear from the streets of our great towns, giving place to buildings on the scale of the stores. The experiment will therefore be watched with considerable interest by architects and builders.

Obituary.

We regret to announce the death of Mr. Edward Shewbrooks, of the firm of Shewbrooks and Hodges, architects, Newcastle, which took place very suddenly on Saturday, February 5th, at his residence in St. George's Terrace, Jesmond. Mr. Shewbrooks, who was about 60, designed Baltic Chambers, offices at the Quayside and Guildhall Chambers, all in Newcastle, and stables and carsheds at Newcastle and Gosforth, for the local tram service. He also designed the Central Co-operative Stores, Newgate Street, branch stores at Benwell and Jesmond, etc., and the Home for Incurables at Spital Tongues.

Obiter Dicta.

A Great Sculptor.

The qualities of his work, like all things classic in spirit and form, were those that would survive all fashions, all peculiarities of time and place. His art would survive those because its principles were inherent in humanity as a whole, and in the very nature or art—principles that strive to embody the greatest common beauty and character free from what was excessive, peculiar, eccentric, or the result of personal bias.—*Mr. Henry F. David, on Alfred Stevens: his life and work.*

Town versus Country.

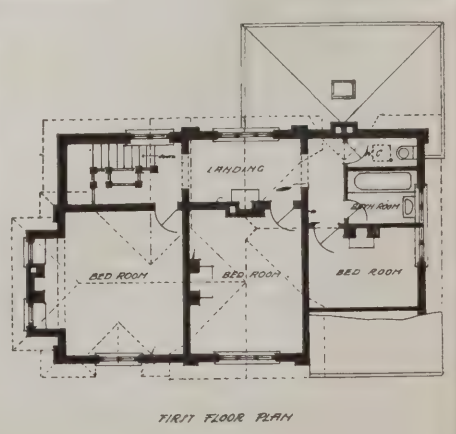
What is wanted is a oneness of human and social life. Our modern cities are far from what they ought to be, and their existence is not likely to be so significant to posterity as was that of Athens, Jerusalem, Rome or Florence. If there was anything destroying and retarding the progress of social science to-day it was that townsfolk and countryfolk had been so separated and so unable to understand one another.—*Professor Geddes at the Liverpool City Guild.*

Provision for Town Extension.

We still live in towns which were, perhaps, better suited to the needs and conditions of our ancestors—towns that have been long outgrown, and that in too many instances have become grossly overpopulated; and it is a still more curious reflection that the industries which have brought us so much material prosperity should have been the direct means of producing so much misery and discomfort in the form of unhealthy fumes, ugly buildings, and squalid and congested areas. . . It is clear that the many evils consequent upon overcrowding arise from the want of foresight which is specially characteristic of France and England—the failure to plan and provide for future extensions.—*G. Benoit Lévy, in Town Planning and Housing Supplement to "The Architectural Review," February*

The Chelsea Arts Club gave a complimentary dinner to Mr. Stanhope Forbes, the new R.A., and Messrs. Ernest George, F. Derwent Wood, and William Orpen, the new Associates of the Royal Academy. There was a record attendance. The President, Mr. J. J. Shannon, R.A., in the course of a witty speech proposing the toast of the guests, said: "We know something of the politics of this club and I have frequently had to remonstrate with you about it. But the George we have with us to-night is *Ernest*. It is his mission in life to provide us with homes!" (Great laughter.)





COTTAGE AT THORNER, YORKS. CECIL T. MITCHELL, ARCHITECT

RENAISSANCE CHURCHES IN FRANCE.*

By W. H. Ward, A.R.I.B.A.

France in the sixteenth century offers the picture of the union of two architectures, so different in their aims and in their forms as to seem irreconcilable. Yet the union was not unhappy in its results. The products of the combination are so rich, so vigorous, so varied, and their development, though so often balked by events, is so rapid, that few more fascinating studies can be found in the history of architecture.

Religion and Architecture.

It is a commonplace that the history of architecture is in most countries and ages the history of religious architecture. In the Middle Ages if church architecture were eliminated nothing coherent, or indeed very important, would be left. But, at the time of the Renaissance, western Europe had largely outgrown the tutelage of the Church. The idea of nationality was developing, and in England, Spain, and France the focus of national life was becoming a strong centralised monarchy. The architectural expression of this state of affairs is to be found, therefore, in secular building, and more particularly in the dwellings of the Sovereign and his Court. The architecture of France in the sixteenth century is essentially an architecture of châteaux, of the pleasure-houses of a still half-feudal aristocracy. Church architecture is thus a by-path, but a pleasant and withal an instructive path to trace out.

Mediæval Methods Die Hard.

It has often been remarked that men are most conservative in matters of religion; in this respect architecture is no exception, and mediæval methods died hard in France. On general grounds it was to be expected that the resistance to a classic revival would be strongest in the cradle of Gothic art. More especially would French church architecture, whose development had been the inspiring idea of Gothic art, be its last stronghold. Accordingly, we find that side by side with the new tendencies pure, or all but pure, Gothic designs persisted in much church work of the first half of the sixteenth century. Some parish churches and large portions of several of the cathedrals commenced under Louis XII., and not finished till the reign of Henry II., are cases in point. Even beyond this period, when Renaissance forms had become as firmly established in religious architecture as elsewhere, sporadic instances of Gothic design are by no means rare. St. Merry in Paris (1520-1612) shows hardly a trace of them. The Gothic cathedral of Orleans was only begun under Henry IV., and its pseudo-Gothic west front not built till the reign of Louis XV.

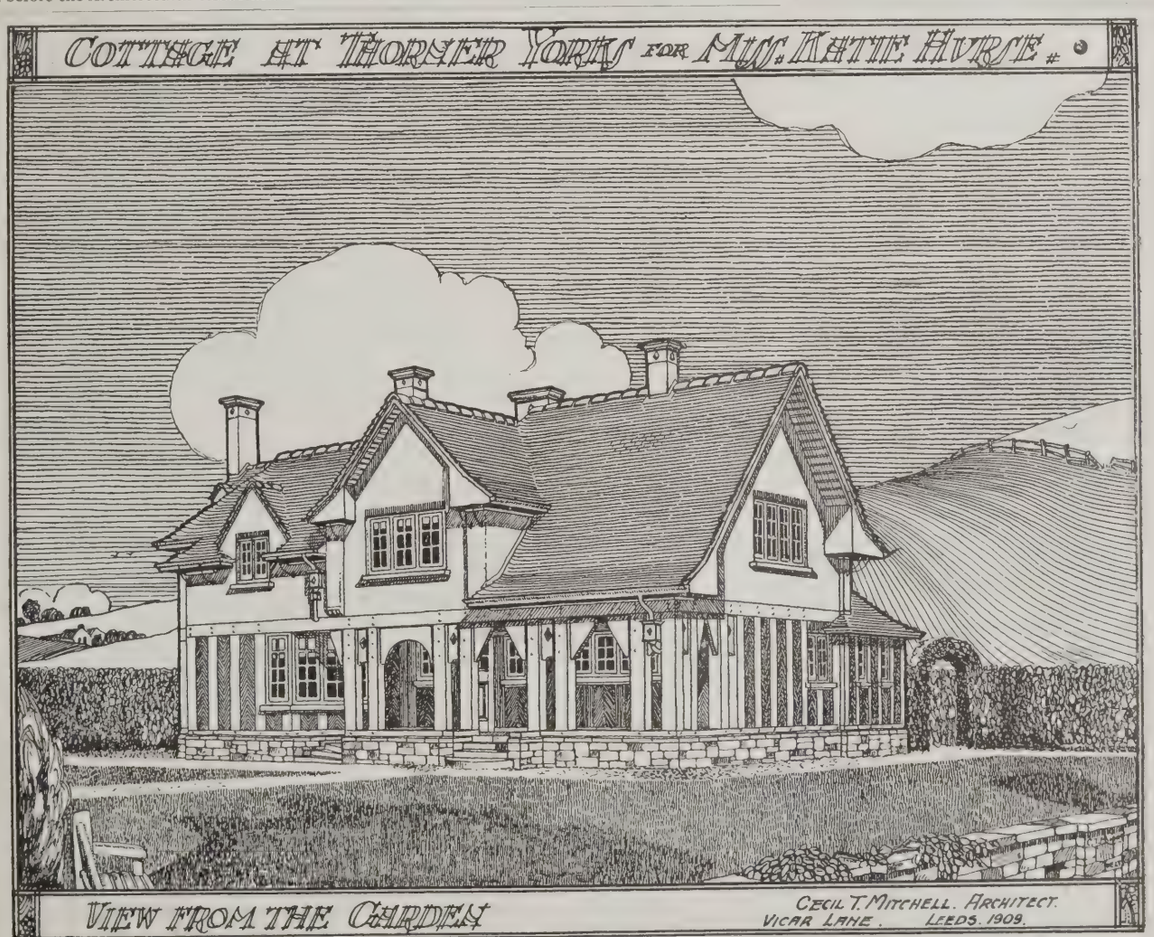
Conservative Craftsmen.

As in secular architecture, the Renaissance movement spread from the top downward. The most strenuous opposition to innovation would seem to have come from the conservatism of the craftsmen specially attached to the service of the Church and trained by hereditary traditions of construction and technique, and from the lower clergy, often poor, ignorant, and superstitious. On the other hand, the heads of the profession, the great master masons of the cathedrals, seem to have been ready to accept hints from Italy. French clerics of standing usually journeyed at least once to Rome, and great political churchmen, such as the Cardinal of Amboise, the builder of Gaillon, and his nephew, or Cardinal Ippolito of Este, passed continually to and fro. Again, French benefices were a convenient provision for Italian younger sons and "nephews" of popes and cardinals; these prelates often considered their duties discharged when they had drawn the revenues, but the personal belongings and church paraphernalia of those who did reside would be a revelation to their French neighbours, even when they did not directly introduce Italian artists or architects. The field of possible Renaissance influence in church architecture is thus confined to the relatively small amount of work undertaken by Catholics, and a portion only of that.

Christian and Pagan Conception.

All Christian architecture derives ultimately from a classical source, and that the nearer it is to the age of primitive Christianity the more classical it is. At a period when the subtlest minds were striving to harmonise ecclesiastical and pagan conceptions of the universe—a task with which Dante had busied himself two centuries earlier—when Marsilio Ficino was attempting to reconcile the philosophy of Plato with the teachings of Our Lord, when Lionardo da Vinci was painting John the Baptist with the attributes of Dionysus, these heathen allusions did not shock the faithful. All antiquity was in their eyes a part of the divine plan of the world's government, and equally available with the Scriptures and the lives of the saints for the illustration of moral and theological truths. Parallels were found without difficulty—Hercules with his club figured side by side with Samson and the ass's jaw, amorini were hard to distinguish from cherubs, satyrs from devils, or the queen of the gods from the Queen of Heaven. The

*Paper read by W. H. Ward, A.R.I.B.A., on February 4th, before the Architectural Association.



The Walls are to have a stone plinth to ground floor level, with half timbering (filled in with old roofing tiles, laid herring-bone pattern in cement) up to the first floor, and above this they will be finished in sand-faced stucco, on stock bricks. The first floor cills and the chimney caps will be of local stone. All external woodwork is to be of oak, including the ground-floor window cills which will be covered with lead. The roof will be covered with old hand-made roofing tiles. The internal woodwork is to be of deal throughout treated with dark brown preservative. The ground floor will be solid concrete covered with 2in. pitch pine wood blocks. The floors of the scullery, pantry, back w.c. and the verandah will be tiled, also the floors of the bath-room and w.c. on the first floor with 12in. hand-made red quarry tiles, the latter floors being carried on steel joists in the kitchen ceiling. The whole of the windows will be glazed with crown glass.

ancients might have been pagans, but it was quite possible, "*avec un peu de bonne volonté*," to believe that their mythology was but an imperfect foreshadowing of Christian doctrine, and since in other things there was so much to be learnt from them, allowance might be made for the moral shortcomings of their divinities. The Renaissance sculptor may have been pedantic when he represented God the Father with the attributes of Jove the Thunderer, but he was conscious of no more incongruity in doing so than the artists of the catacombs who portrayed the Saviour in the guise of Orpheus. It must not, however, be supposed that pagan elements, as distinct from definitely architectural forms, played a leading part in the decoration of churches. Everywhere Scriptural and hagiological subjects predominated, together with emblems illustrative of theology and worship; they were merely expressed in a new manner.

Reimportation of Classical Form.

Whatever view may be taken of the reimportation of classical forms into church architecture, there can be no question that it was inevitable. No institution forming a vital part of national life can remain unaffected by its intellectual environment, and church builders had to assimilate the humanistic tastes which were permeating the whole of educated society. In doing this they were confronted with the same problems as the castle-builders—the clothing of a mediæval framework in a modern dress; but there was this difference, that, whereas in the castle the reason of its being—its fortification—was growing obsolete, and some semblance of it was retained only from habit and for sentimental reasons, in the church the functions were unaltered, and no change in essential arrangements was tolerated.

French and Italian Methods.

The architecture of the church was thus, like all contemporary architecture, a compromise between French and Italian methods. It differed in retaining throughout a larger proportion of the essentially native element. The great interest in studying it is to trace out the way in which the builders set to work to translate traditional details, features, and types of composition into a new form-language as fast as they learnt it. It is curious to observe to what different results these attempts led; not only how they differed from decade to decade, but how simultaneous attempts differed from each other. This is due to differences not so much in the taste as in the cast of intellect of the designer. A man with an aptitude for grasping the grammatical principles of a language, but a poor head for vocabulary, will soon know how to construct sentences in a foreign tongue, but will have to fall back on his own for words. He is, however, a less common type than the man who can pick up words parrot-like and learn to speak a foreign language, fluently perhaps, but ungrammatically. Thus, in architecture we see more examples of rapid advance in forms keeping pace with the changes in fashion, but employed to express old types of design, than of a quick grasp of new general principles of design; and when the latter occur they are not always up to date in detail.

After my remarks on the conservative tendencies of religious architecture it may appear somewhat contradictory to state that the earliest known Renaissance structure in France is a chapel, that of St. Lazarus, built in the old Cathedral of Marseilles (1479-81) by Francesco Laurana. It is, however, an isolated phenomenon without immediate results in a province far removed from the centre of national life, and not even immediately ruled by the French King. It was designed in the Italian manner by an Italian for a prince connected by blood with an Italian dynasty.

Some Noteworthy Examples.

In a screen from St. Jacques at Dieppe the tracery, the bases and sections of the mouldings, and the spiral shaft are all in accordance with flamboyant Gothic usage, but the shell panel-heads, the capitals, the entablatures, and the round arch speak of the Renaissance.

Similarly in a door from the Cathedral of Aix, in Provence, there is a complete mingling of pilasters and arabesques with crocketed pinnacles. It looks as if the work was done by a Frenchman much more at ease in the contorted naturalism of the contemporary Gothic foliage than in the calmer conventional flowers and fruit of the friezes and panels of the Italian type.

In a pier from the front of St. Michel, at Dijon, the Gothic element in the detail has been reduced, but the niches are still composed of alternately Gothic and Renaissance elements, but the Renaissance elements are more thoroughly assimilated.

The upper part of the northern of the two towers at the west end of Tours Cathedral is one of the earliest transitional ecclesiastical structures whose date is known. It was finished in 1507, probably by the brothers Martin and Bastian François. The southern tower finished forty years later, probably by Martin's son, Gatien, is virtually a copy of it. The two elements are better blended in this example than in most of the previous ones, but still without definite system.

In the font canopy at Bretagnolles, near Evreux, all the detail except the shaft bases is Renaissance, but the shafts themselves and their caps have a fifteenth century outline. The tendency to turn the cusping of the tracery into foliage is one which was much developed later.

A wooden rood-screen from Villemaur, a village near Troyes, seems to have reached exactly the same stage of development as the last example, though not finished till 1521. It belongs to a neighbourhood which was for many years an important centre of Renaissance church work. The churches of Troyes itself are rich in examples.

When we turn from single features to a complete composition, we find that the task of amalgamation proved rather more than the architects of the day could cope with. Nothing more awkward can be imagined than the front of the church of St. Calais, near Chateaudun, as a whole. Almost all the features are translated into Renaissance forms; some of them are individually beautiful, as for instance the central doorway with the scrollwork tracery in the fanlight. But in composing the entire elevation the architect floundered hopelessly. He got a certain amount of horizontality into it, but felt bound to keep the traditional vertical division by using clumsy buttresses, and then made a futile attempt to connect them up with the upper window by a flamboyant Gothic label with a pediment on the top of it.

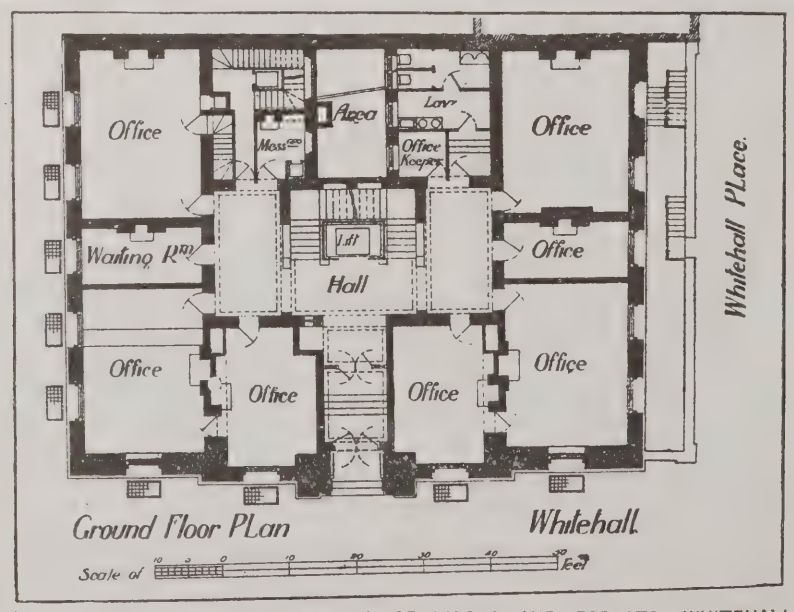
In the front of the castle chapel at Ussé, the designer has succeeded in fusing the two styles into a harmonious blend. While almost every detail is Renaissance, the general effect of the elevation is distinctly mediæval, so completely does it retain the vertical aspiring character, an effect emphasised by the grouping of the door and window into a single feature under a pointed arch and a canopy of flamboyant outline. The pinnacles have no crockets or gablets, but are represented by a feature of approximately similar silhouette—a tapering candelabrum motive.

The Church of St. Eustache.

St. Eustache, in Paris, begun in 1532, is the largest and completest Renaissance church of the century in France. It was designed as a whole from the first as a Renaissance building, and, with the exception of the west end, carried out in accordance with the original design. The architect is not certainly known. The ultra-patriotic writer, M. Léon Palustre, invented a beautiful theory that it was the work of three generations of a family of master masons named Lemercier, and therefore owed nothing to Italian influence. But this theory will not bear investigation. There is nothing to show that either the first or third had any connection with St. Eustache or that they were related, or that the second ever existed. On the other hand, there is nothing improbable in the suggestion that the design was due at least in a measure to Dominic, of Cortona, known in France as Boccador, who, after living for many years at Blois, where he worked for Louis XII. and Francis I., and was the probable inspirer of much of the work in the Loire valley, removed, at Francis I.'s order, to Paris in 1531, to act as architect to the new Hôtel de Ville. The work was carried on slowly till 1589, and resumed from 1624 to 1654, when it was complete with the exception of the upper part of the west front.

In plan St. Eustache is practically identical with Notre Dame, the principal difference being that whereas Notre Dame has five bays in the choir and eight in the nave, St. Eustache has three and five respectively. In other respects the dimensions are nearly equal. The internal width of the transepts is about 148ft., and the internal length about 280ft. (not counting the Lady chapel). The circular form of the apse is not in this case a Renaissance innovation, but borrowed from the Gothic model.

In section the likeness is less striking. Though the height of the nave (107ft.) is about equal, it is flanked by double aisles,



NEW OFFICES FOR H.M. COMMISSIONERS OF WOODS AND FORESTS, WHITEHALL, S.W.
JOHN MURRAY, F.R.I.B.A., ARCHITECT.



NEW OFFICES FOR H.M. COMMISSIONERS OF WOODS AND FORESTS, WHITEHALL. JOHN MURRAY, F.R.I.B.A., ARCHITECT.

These new offices are now practically completed. Portland stone from the Wakeham Quarries has been used for the three street frontages, and the general levels of the new frontage have been kept to range with the War Office buildings. The building is supported by a raft of concrete, and the basements are enclosed with concrete retaining-walls. As will be seen from the plan, the offices on each floor are grouped round a central hall, in which is the principal staircase, constructed in reinforced concrete covered with Silex stone. An electric lift is fitted in the staircase well, and electric light and telephone are installed throughout. Upon the site stood old buildings erected at the end of the 18th century, and formerly the land was part of the garden of old Whitehall Palace. During the excavations numerous larch and fir piles which supported the old buildings were removed, and many of them were found to be as sound as new timber. The builders are Messrs. John Mowlem and Co., and the following are some of the sub-contractors:—Bromsgrove Guild, Bromsgrove, lift enclosure in heavy wrought-iron with cast-iron enrichments; also special bronze electric light fittings; R. Waygood and Co., London, lift; A. Simpson and Co., Ltd., London, mosaic; Hopton Wood Stone Firms, London, stone wall linings, newels for staircase, and dado plinth; S. Wright and Co., London, plaster cornices, etc.; J. and R. Corker, London, grates; Rosser and Russell, London, heating, hot water supply, and ventilation; Crittall Manufacturing Co., Braintree; C. H. Mabey, London, Sculptor; Sissons Bros., and Co., Hull, and Silicate Paint Co., London, decorative materials; British Luxfer Prism Co., London; James Annan, Ltd., London, plain plasterwork.

both of great and equal height, instead of the low inner and lower outer aisles at Notre Dame. In consequence the air of spaciousness is greatly increased, and, a much loftier nave arcade being possible, the effect of verticality is also greater though counterbalanced by round instead of pointed arches and vaults, as may be judged from a view of the interior.

A pier between the outer and inner aisles is of the compound type with pseudo-orders performing the various functions required. On the angles are members composed of a series of superposed pilasters and engaged shafts taking the relatively thin and unimportant diagonal ribs, their entablatures, which correspond with the springing of the chapel vaults and arches, etc., introducing a welcome horizontal element. On the faces of the piers, on the other hand, are unbroken panelled pilasters carrying the heavier cross vaulting ribs and arches of the arcades. They supply the strongly-marked vertical line, yet further emphasised at the crossing piers, which is the dominant note of the interior.

At St. Pierre, at Tonnerre.

Compound piers with no horizontal element introduced are used at the section with similar responds for the choir arcade, but the remaining choir piers make a return to the single shaft, and are treated as Doric columns, with the cylinder carried above the cap for the arch moulds to die into. The treatment of the latter as a panelled splay is effective, and seems intermediate between the receding mouldings of Gothic tradition and the architraved treatment of the later Renaissance.

Other Churches.

St. Etienne du Mont, in Paris, is contemporary with St. Eustache, and of similar plan, but it is on a smaller scale, and shows a gradual growth in style from east to west. The choir (1517-37) is almost pure flamboyant Gothic; some Renaissance elements appear in the crossing and transepts, and they become more pronounced in the nave (1538-60). The west end and rood-loft belong to the reign of Henry IV. The balustrated gallery half-way up the piers is a pretty and almost unique feature, whose use is to steady and give an appearance of solidity to the tall plain shafts. It is curious that the tower arches should be of more advanced type of design than the upper. The capitals are unnecessary and unsightly.

Though adorned with clumsy sculpture, the nave-pier from Notre Dame de Bon Secours, at Guingamp, is an interesting one. The heavily-moulded arches die into a cylindrical shaft, which lower down becomes octagonal and stands on a square base. A slender circular vaulting-shaft is carried up the face from the floor. The arches are pointed, but have a key-block. The triforium is prettily designed, but carried out in the clumsy detail usual in Brittany, and due partly to the distance from more civilised centres and partly to the hardness of the local stone.

Unmoulded Tracery.

After about 1530 unmoulded tracery came into fashion, and was largely used in a new type of design which altogether avoids the flowing lines, and to some extent the geometrical patterns hitherto in use, and simulates slender skeleton edifices. The mullions become shafts, and sometimes have capitals, the transomes become entablatures; the tracery takes the form of arches, pediments, circles, and scrolls, all of which is sometimes plain, sometimes carved. The left-hand window in the church of Notre Dame des Marais at La Ferté-Bernard shows an example.

Advanced Renaissance Examples.

Having run through a number of examples of translations of more or less Gothic motives into Renaissance language, and of isolated Renaissance features applied to half or wholly mediæval churches, the author came to those churches of the advanced Renaissance which were designed as a whole in plan and section as well as elevation on classic lines. No church of any size was designed, still less executed in this style, however, and the only examples consist of half-a-dozen private or mausoleum chapels, of which only the two at Anet are still standing. The only non-domical one of the group was built at Anet, probably about 1560 for Diane de Poitiers outside the château, to contain her tomb, by an unknown architect. It does not seem to have been designed by Philibert de l'Orme, but may possibly be the work of Jean Bullant. It is a simple form of basilica, consisting of a rectangular nave with a barrel vault, two square sacristies, and an apse with a semi-dome, and thus forming a rough cross. Its façade is one of the most classical fronts of the century, and decidedly monumental in effect.

The domical chapels all differ from the previous examples of domes in that their plans are entirely conditioned by the dome. One of the earliest was a so-called temple in the park at Villers-Cotterets by Philibert de l'Orme, no longer existing. A circular chamber with hemispherical dome was surrounded by three rather more than semicircular apses, whose domical roofs of corresponding form butted against the walls of the central chamber. The entrance of the fourth side was through a pedimented portico. It was for this portico that de l'Orme invented his so-called French order of banded columns. On the death of Henry II. (1557) Catherine de'Medici instructed her architect, Primaticcio, to design a mausoleum for her husband, her children, and herself. This resulted in one of the purest and completest classical buildings that France ever possessed. It was begun in 1570, but was unfinished when the Valois dynasty came to an end with the murder of Henry III. The Bourbons did little to it, and it fell into disrepair, and was destroyed by the Regent Orleans in 1719. It stood on the north side of the Abbey church at St. Denis, and was entered from the transept. The royal tomb occupied the centre, those of the other princes were to stand in the trefoil chapels which radiate from it. Over these a gallery ran round the upper part of the central hall, which had a hemispherical stone dome itself covered by an independent timber dome, the first of its type in France. The elevations, treated in a manner recalling those of the Louvre, were excellently proportioned and doubtless beautifully detailed. The interior was enriched with coloured marbles and the work of the great sculptors of the day. The tomb of Henry and Catherine can still be seen in the Abbey. The monument as a whole was a worthy resting-place for the ashes of the Valois kings, whose love for art had so large a share in endowing France with the glorious buildings of her Renaissance in its various stages.

Discussion.

Mr. John W. Simpson, F.R.I.B.A., proposed the vote of thanks, and congratulated the Association upon its remarkable success in procuring such interesting papers for its meetings. The fables of Gay, relating a discourse between a lion and an ape, or other animals, were always pointed by a moral. He would follow this example, whose chief merit was its brevity. Students should study architectural design and contemporary history together; and unless this method was followed the standard of criticism would inevitably become insular and cramped. Mr. Simpson proceeded to emphasise the necessity for studying a piece of architecture with due regard to its environment, and to the people for whom it was conceived, otherwise it would never reveal its true meaning. The paper, he said, gave in logical sequence an admirable account of a most interesting phase of architectural development in France.

Mr. Edward Warren, F.R.I.B.A., in seconding the vote of thanks, said that the study of the architecture of the French Renaissance was one of much charm; and it was interesting to follow contemporary development in different countries. Conservatism had kept us as much behind France, as France had been behind Italy. In England there were many instances of French work. At Christchurch, the Salisbury tomb was obviously French; and at Brede, in Sussex, there was the recumbent form of a warrior on a Renaissance tomb, which was dated 1537. French Renaissance work was to be seen in Old Chelsea Church, and in the stalls of King's College Chapel at Cambridge. He thought that the more interesting points in the sequence were at the beginning and the end. At the beginning, a class of ornament was largely used where it was not wanted, sometimes with picturesque results.

Mr. Allan Potter, in supporting the vote of thanks, observed that his feelings had been somewhat mixed while listening to the lecture. He had great admiration for Mr. Ward's knowledge, but less for his subject, which appeared to be a protracted struggle, between Gothic and Italian Renaissance. The earliest and the latest examples were certainly the most satisfactory. It was with relief, after the time of Henry II., that purer classic work was encountered. The period would be, he thought, of more interest to the student of social and religious evolution. The direct lessons, architecturally, were nearly all in the negative. Mr. Potter then asked whether Mr. Ward could say whether there



Photo: Topical.

THE FLOODS IN PARIS: A VIEW IN THE GARE D'ORLEANS, QUAI D'ORSAY.

This view is taken at the bridge level, and the depth of the water may be judged from the view on the opposite page, taken during the construction of the building.



THE GARE D'ORLEANS TERMINUS, QUAI D'ORSAY, PARIS, DURING CONSTRUCTION.

This, the newest and one of the finest of the termini in Paris, has been disastrously affected by the recent floods. The trains run into the station by electric traction from outside Paris, and the rails are below ground level. Some 16 feet depth of water now fills the station up to the bridge or outside road level. M. Laloux was Architect-in-Chief of the building, with M.M. Lemaresquier and Mayeux as Assistants. The view shows the steelwork construction of the building.

was any architectural connection between France and Spain at the time of Francis I.

Mr. H. P. G. Maule, F.R.I.B.A., and Mr. Rudolph Dircks, having joined in the discussion, the president (Mr. Henry Tanner) summed up and said that what little criticism there had been was no reflection on the able way in which Mr. Ward had prepared his paper. He was inclined to agree with the remarks of Mr. Potter.

Mr. Ward, in reply, said he had no special knowledge of the Renaissance in Spain, but he thought that the captivity of Francis I. had no influence on the architecture. Probably there were many Italian workmen in both countries.

Societies' Reports.

Glasgow and West of Scotland Technical College Architectural Craftsman's Society.

Mr. John Miller lectured to this society on "Some general observations on native timber." Dealing first with the structure, formation and growth, Mr. Miller spoke at some length on the means of identification, colour and texture. Several remarks were made on decay in timber, special reference being made to "dry rot." The suitability of Scotch timber for home use was also touched upon, and the lecture was concluded with a reference to afforestation, pointing out its advantage as a state asset, giving as evidence the forests in Germany and other countries.

Bradford Philosophical Society.

Mr. J. B. Stoughton Holborn continued, at the Bradford Mechanics' Institute, the series of lectures which he is giving under the auspices of the Bradford Philosophical Society upon "The History of Gothic Architecture." Interpreting the word "Gothic" to include the Romanesque architecture, Mr. Holborn devoted his address to an examination of the characteristics of the Norman style, the development of which he traced with the aid of a large series of drawings and photographic lantern slides. Briefly comparing English with Continental work, he observed that while French architecture developed more logically the English style, in his opinion, followed lines which, while less logical, showed greater beauty.

Leeds and Yorkshire Architectural Society.

Mr. J. A. Gotch, F.R.I.B.A., delivered a lecture on "The Elizabethan House." He explained that the Thorpe and Smithson collections of contemporary drawings together afforded a complete picture of the development of house design in England during the sixty years from 1570-1630—a period during which were built all the fine houses known as Elizabethan and Jacobean, including such places as Burghley House, Kirby Hall, Hatfield House, Bolsover Castle, and many others. These drawings, with reproductions of which the lecturer illustrated his paper, indicated the gradual and interesting change which took place in house-planning at that period. Prior to the sixteenth century the hall had been the chief apartment, forming the centre of the house, with the family rooms at one end and those for the servants at the other. Gradually, however, the hall ceased to be the heart of the house, and instead of being the principal living-room it became a vestibule leading to the rooms in constant use; so one of the strongest links with the mediæval past was broken. The elevations of the houses, too, showed the change from the semi-Gothic treatment of the early days of Elizabeth to the more formal and classic treatment at the end of James I.'s reign. The powers of design and of draughtsmanship of architects in the sixteenth and seventeenth centuries were admirably displayed in the selection of slides which the lecturer showed upon the screen. A vote of thanks was accorded Mr. Gotch for his paper, and members of the society participated in the discussion which ensued.

Edinburgh Architectural Association.

The fifth meeting of the session of the associates' section of the Edinburgh Architectural Association was held on February 2, in the rooms at 117, George Street. Mr. William Davidson occupied the chair. The principal business before the meeting was a paper by Mr. F. C. Mears on "The Failure of the New Town Plan." Mr. Mears, at the outset, exhibited a number of plans of the Old and New Towns of Edinburgh as they existed in the seventeenth and eighteenth centuries, and maintained, on a close and elaborate examination of these, that the designers of the New Town, i.e., Princes Street, George Street, and Queen Street, had failed in that they showed a lack of foresight in dealing with the valley of the Nor' Loch; in failing to provide in the original scheme for outlets, communications, or bridges, other than by the North Bridge; and in the arrangements of the houses in a continuous line east and west. Mr. Mears was cordially thanked for his address.



Photo: Topical.

THE FLOODS IN PARIS: THE PRESSURE ON THE BRIDGES.

This view, taken of the river at the Henri Quatre Bridge, shows the danger to which the bridges were subjected by the pressure of the water.

The Institution of Municipal Engineers.

At a meeting of the Council of the Institution held at 39, Victoria Street, London, S.W., on Wednesday, January 26, seven applicants were elected to membership. The roll of the institution now stands at 686 members and 96 students, making a total of 782. The report of the committee appointed to draw up regulations for district committees was presented, and the draft regulations accompanying the report were unanimously approved and ordered to be circulated. The Superannuation Committee reported that a letter, in the terms of the resolution passed at a meeting of the Northern District Committee, held on December 18 last, had been sent to the National Association of Local Government officers, and that, as a consequence, that body had sent a letter (the text of which appeared in the December issue of the Institution "Journal") to each candidate for Parliament at the present election. The secretary was instructed to arrange for a general meeting of the Institution in the Western District during the month of March.

Gloucestershire Architectural Association.

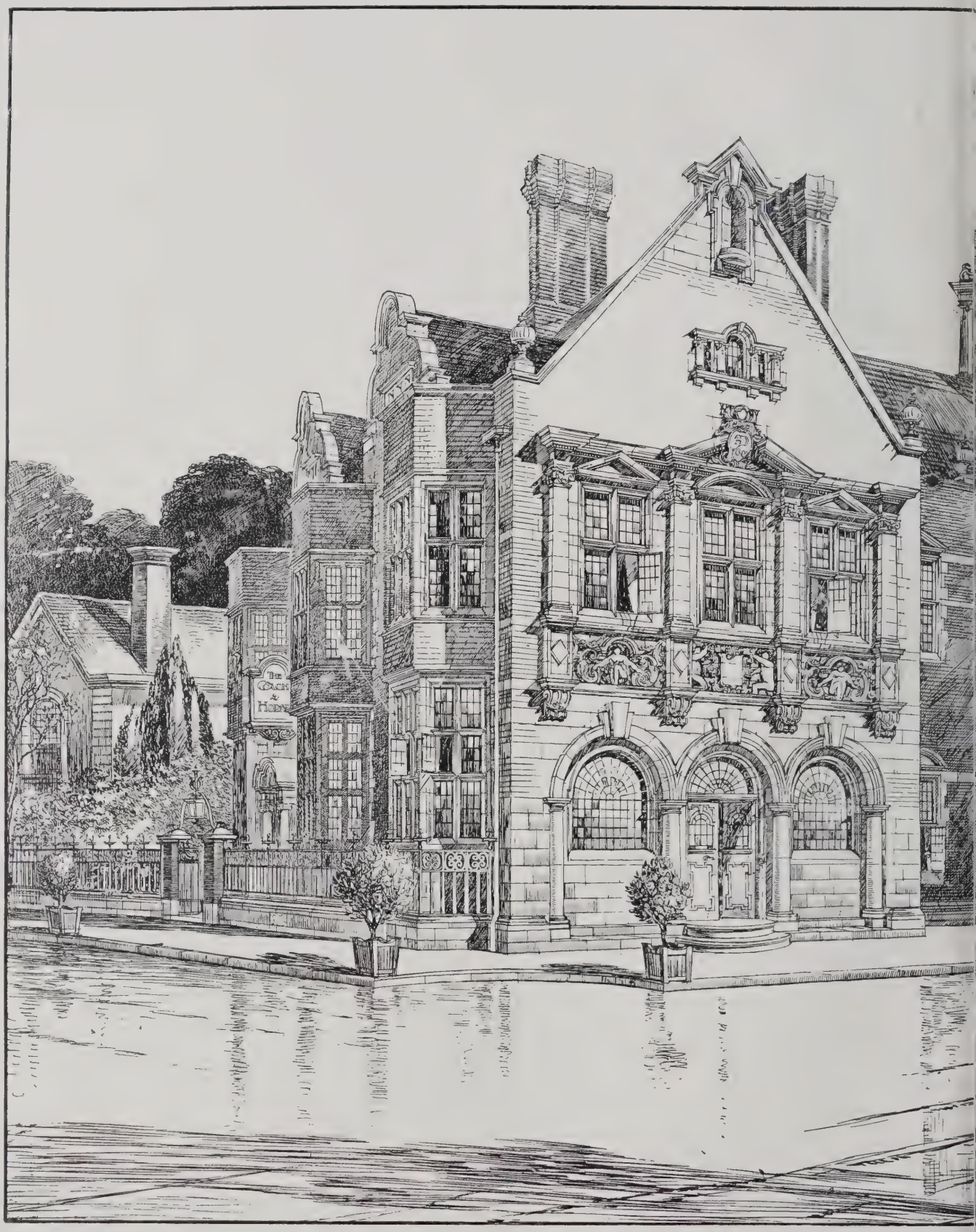
The annual general meeting of this association was held in Gloucester, but owing to the very inclement weather, the attendance of members was not quite so good as usual. The report for 1909 presented by the Council was considered and adopted, the financial statement being considered very satisfactory. The officers for the present year were then elected as follows:—President, Mr. H. W. Chatters; vice-presidents, Mr. F. W. Waller and Mr. W. B. Wood; council, Mr. S. H. Healing, Mr. W. F. Jones, and Mr. T. Malvern; hon. secretary at Stroud, Mr. G. P. Milnes; hon. secretary at Gloucester, Mr. J. F. Trew; hon. general secretary and treasurer, Mr. T. Overbury. The meeting terminated with votes of thanks to the retiring officers for services rendered during the past year, and to those gentlemen who have been good enough to prepare lectures for the association.

The Junior Institution of Engineers.

At a recent meeting of this institution held at the Royal United Service Institution, Whitehall, a paper on "The Design and Running of Modern Cement Works," was read by Mr. Harry Horsburgh, Assoc.M.Inst.C.E. After a few historical references in introducing the subject, the progress made in methods of manufacture was dealt with, followed by a description of the Schneider Kiln process and that of the rotary dry kiln. An interesting table was given setting forth the comparative dimensions, output, etc., of various types of kilns, including that of Messrs. Edgar Allen and Co., of Sheffield, 150ft. long, the largest in this country, installed at Messrs. Forder's Cement Works at Sundon. An animated discussion followed, in which Messrs. John Speakman, Percy M. Stewart, D. B. Butler, G. V. Maxted, Arthur Verdon, J. W. Hinckley, J. H. Pearson, W. F. Carr-Hill, F. G. Robinson, R. Marshall, and W. Fennell took part. As a sequel to the paper, a large party of members afterwards visited Messrs. Forder's works, under the guidance of the managing director, Mr. P. M. Stewart, all the processes being shown in operation.

Liverpool Architectural Society.

Mr. Frederick Batchelor delivered a lecture on February 7th on "Architecture in Ireland." The lecturer referred to the curious structures of pre-Christian days, describing in interesting detail the strength and other qualities of the rude beehive huts, forts, and monastic retreats, and also the ecclesiastical edifices, which have survived the stress of centuries, and are being utilised for the purposes of modern times. The lecture was illustrated by a capital series of drawings and lantern slides, Mr. Batchelor being thus enabled to demonstrate how the Irish have reproduced in stone what they were so successful in reproducing in earlier days in metal work and illuminated manuscripts. The lecture, which had considerable archaeological, as well as architectural interest, concluded with a series of pictures of beautiful ceilings, still to be found in Dublin. On the proposition of Mr. T. E. Eccles (president), a vote of thanks was accorded the lecturer.



"THE COACH AND HORSES" HOTEL, HIGH STREET, WAL



ID. ARMSTRONG AND WRIGHT, FF.R.I.B.A., ARCHITECTS.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Mar. 1.	GLAZED BRICKWORK DESIGNS AND ESSAYS. A committee of glazed brick manufacturers invite designs for works to be executed in glazed brickwork, also essays as to the advantages to be derived from the use of this material in accordance with conditions to be obtained from J. Johnston Green, 142, Liverpool Road South, Southport. Premiums of 100 guineas, 50 guineas, and 25 guineas awarded to designs and essays jointly. Assessor, Mr. Max Clarke, F.R.I.B.A., appointed by the President R.I.B.A.
Mar. 31.	SHEFFIELD ENDCLIFFE PARK CHURCH. Plans desired for Church for 650, Institute for 150, Primary Department for 125, Junior Department for 95, and Caretaker's Apartments. Premium, not merged in commission, £35. Assessor, Chas. Hadfield, Esq., F.R.I.B.A., Delivery on March 31. On receipt of 5s. the Secretary, J. W. Nicholls, 64, Everton Road, Brocco Bank, Sheffield, will furnish conditions and instructions with plan of site, showing existing buildings, levels, and drainage—these not returnable. Deposit returned only to those who send plans.
Mar. 31.	MUNICIPAL OFFICES, KARACHI. The Municipality offer a premium of 7,500 rupees (£500) for the best design, detailed plans and estimates for new Municipal Offices. Cost not to exceed 500,000 rupees, and the style of architecture is left open to the designers. Ferrotype plans of the site and a general arrangement of the floors of the building showing the accommodation to be provided, together with a copy of instructions to architects, will be supplied to intending competitors on application to the Chief Officer and Chief Engineer, Karachi Municipality. A charge of Rs. 5 will be made therefor, which will not be refunded. Each set of drawings must be sent in anonymously, but accompanied by a sealed envelope containing the author's name and address. Each set of drawings and all the documents required, including the sealed envelope, must be securely packed in a wooden box, addressed as follows:—The Chief Officer and Chief Engineer, Karachi Municipality, Karachi, India, and forwarded, at the competitor's own risk and charges, in time to reach the Chief Officer on or before the 31st day of May, 1910. It is proposed to apply to Government for permission for one of the chief architects to act as assessor to decide on the design to which the prize shall be awarded. The final decision of the assessor will be final and not open to dispute. The decision of the Municipality will be made within three months of the latest date for submission of designs, and payment of one-half of the premium will be made thereafter to the author of the selected design, the balance to be paid when the further details specified in the instructions to architects have been supplied. On payment of the premium the Municipality will have all rights in the design, with power to erect the building under its own agency, either according to the design selected or with such additions or alterations as it may deem necessary.
No Date.	SECONDARY SCHOOL AT PETERBOROUGH, for Soke of Peterborough Education Authority, to accommodate 250 scholars, but allowing for enlargement so as to accommodate 300 scholars. Particulars of the general instructions and conditions, together with a plan of the site, may be obtained on application to Walter J. Deacon, Clerk to the Authority, Cross Street, Peterborough.

The Institution of Civil Engineers.

The competition, limited to six selected architects, for a design for the new buildings of the Institution of Civil Engineers, London, has been won by Mr. James Miller, A.R.S.A., of Glasgow. Four competitors were from London, one from Liverpool, and one from Glasgow. Each competitor received a fee of 200 guineas. The new buildings will be situated on the south side of Great George Street, Westminster, close to Storey's Gate, and are to replace the present buildings on the north side, which are to be pulled down to make way for the extension of the Local Government Board buildings. The cost of the new structure will be, it is said, over £100,000.

Linthorpe School, Middlesbrough.

The report of Messrs. Oliver, Leeson, and Wood, of Newcastle, who were appointed as assessors on the competitive plans for the proposed extensions to the Linthorpe Council Schools, has been delivered. Their award placed Mr. Jas. Forbes, Middlesbrough, first in order of merit; Messrs. R. Lofthouse and Sons, Middlesbrough, 2nd; Messrs. J. Bottomley and Welburn, 3rd; and Mr. A. Forrester, Middlesbrough, 4th. It was agreed that Mr. Forbes's plans be approved.

Girls' Secondary School, Peterborough.

The Secretary of the Royal Institute of British Architects desires us to announce that the Competitions Committee are in communication with the promoters of the above competition with a view to the amendment of the conditions.

The note published above shows that the Competition Committee of the Royal Institute are already negotiating for a revision of the conditions issued in this competition. The principal objections may be cited as follows:

(1) The sum of money allowed, £7,250, exclusive of electric fittings and furniture, is not sufficient to provide accommodation for 250 pupils and allow the possibility of enlargement to 300. The price per head at this figure does not exceed £29.

(2) The 4th clause—wherein it is stated "that it is the intention of the authority to appoint the author of the selected design to carry out the work, but the authority reserve to themselves freedom of action should they think it desirable to take any other course, and if the selected design is abandoned, the author thereof shall have no claim upon the authority."

(3) Cluase 5—which asks for half-inch scale detail and two perspective views taken from points marked with a cross on the site plan, in which the building is not to measure more than 15ins. across, and the drawing is to be in pencil with monochrome wash.

(4) Clause 13—which fixes the remuneration of the selected architect at the lump sum of £350, with railway expenses (third class) within a distance of 80 miles. This works out at less than 5 per cent. on the stipulated cost, which, it should be noted, does not include electric fittings or furniture.

(5) Clause 15—which states that "the authority will appoint an assessor as referee to assist them in deciding upon the designs and to advise them generally in regard to the competition, but the authority reserve to themselves the right of final selection." No premiums are offered. No extra remuneration is to be given for the various sets of designs required by the Board of Education, Town Council, Local Government Board, etc.

As the Royal Institute is now in communication with the Secretary of the Peterborough Education Committee, it would be advisable for architects to await the result of their negotiations before proceeding with the competition further.

Our Plate.

The "Coach and Horses," Wallsend.

This building stands in a prominent position in the High Street, Wallsend. The materials used were red bricks and stone dressings for the walls; roofs covered with dark red, sand-faced tiles, and metal casements and leaded lights for the windows. The porches are of teak, and the flèche is painted white. The purpose of this building, which was erected on the site of the old "Coach and Horses," was to provide refreshment for those engaged at the various yards on the river. The internal fittings throughout were designed by the architects. The work was carried out by Mr. Thos. Lumsden, of Jarrow. The perspective drawing, reproduced in the centre-plate, is by Mr. C. E. Mallows, and is a very beautiful specimen of his work.

CONCRETE INSTITUTE.

The election of six members of Council of the Concrete Institute has resulted in the return of three new members and the re-election of three of the old members. The new members are Prof. Henry Adams, M.Inst.C.E., M.I.Mech.E., M.S.A., etc.; Mr. E. Fiander Etchells, F.Phys.Soc., M.Math.A., A.M.I.Mech.E.; and Mr. William G. Kirkaldy, A.M.Inst.C.E. The members re-elected are: Mr. G. H. Colson, M.Inst.C.E.; Mr. William Dunn, F.R.I.B.A., and Mr. J. S. de Vesian, M.Inst.C.E., M.I.Mech.E.



THE "COACH AND HORSES" HOTEL, HIGH STREET, WALLSEND.
ARMSTRONG AND WRIGHT, FF.R.I.B.A., ARCHITECTS.
(See also centre-plate.)

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible. The querist's name and address must always be given, not necessarily for publication.

The Editor is willing to answer enquiries from readers who require information on architectural, constructional, or legal matters. Such information must be regarded as the gratuitous advice or information of a friend, and not as the professional opinion of one who holds himself out as possessing expert knowledge on the subject in question. The Editor will, however, avail himself of the assistance of a large staff of experts in the matters above mentioned, but enquiries sent must be on the express understanding that he is not to be held responsible for any delays, mistakes, inaccuracies, or negligences which may occur.

Enquirers whose questions involve possible legal proceedings are strongly urged to consult their solicitors before taking definite steps in regard thereto.

Answers by post will be sent if the enquiry is accompanied by a postal order for 1s. made payable to Technical Journals, Ltd., and crossed, and a stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

This fee of 1s. required for answers by post is in no case to be regarded as payment for the answer given, but merely as a registration fee to meet the extra clerical and other expenses incurred in dealing with these special replies.

The Editor also reserves the right of refusing to reply to any question that he may deem to be unreasonable or unsuitable; and it must be understood that both question and reply will, as a rule, be published in these columns

Cycling Sketching Tour in Holland.

A correspondent enquires if we can give him a list of places to visit in Holland; also the town most suitable for making his headquarters. Particulars as regards hotels and sketching permits would be esteemed. It is proposed to visit Holland at Easter and to start the tour at the Hook. Perhaps some of our readers can give this information.

Colouring Cement Floor.

With reference to the reply given to A. P. (Heckmondwike) on p. 92 of our issue of February 2nd, Messrs. Arthur L. Gibson and Co., Ltd., draw our attention to Cabot's waterproof cement stains, which are manufactured for the purpose. Particulars can be obtained from the firm at Radnor Works, Strawberry Vale, Twickenham.

Books on Chimney Shaft Construction.

J. B. (PORTSMOUTH) writes: "Can you kindly advise me of some recent work on chimney shaft construction?"

—The standard work on chimney construction is Bancroft's "Tall Chimney Construction" (Calvert: Manchester), but there may be some difficulty in getting a copy. A paper was read by Prof. Charnock in 1906 and printed in the "Engineering Times." Some further information will be found in "Specification" No. 9, p. 69 (Eyre Spottiswoode, 2s. 6d.), and in the "Builders' Journal" for March 4th, 1903, and September 18th, 1907. A paper on reinforced concrete chimney construction was read recently by E. R. Matthews at the Concrete Institute, and is being re-printed at the present time by various technical papers. HENRY ADAMS.

Partition Not Sound Proof.

W. N. G. (RUGBY) writes: "Can you advise me as to the best form of soundproof partition to substitute for a wooden partition panelled both sides, through which conversation can be heard, even with the communicating door closed?"

—Probably the best way of remedying the defect complained of in this case would be to take off the panelling on one side, fill the space between the studs with silicate cotton packed closely, put strips of Anderson's impregnated felt up the face of studs, and refix the panelling. A baize door should be fitted closely into the door opening on the opposite face to the present door. HENRY ADAMS.

Waterproofing Brick Floor.

W. M. E. (LONDON, S.E.) writes: "The ground floor passages and floor of a house have been paved with ordinary red paving bricks. Can they be treated with any waterproof solution which will waterproof them so that they can be washed without the water soaking into the bricks? It is also desired by the same or other solution to harden the bricks. Can this be done? The bricks are as well burned as they could be without being vitrified."

—There is no means of waterproofing bricks which is really so satisfactory as the use of properly made paving bricks, as any material applied to the surface will soon wear away. The bricks may be coated with water-glass (silicate of soda), which can be obtained cheaply from most chemists, and this will render it fairly waterproof. The house would, however, be much warmer and more comfortable if the bricks were covered with linoleum, and this would be more easily cleaned than the bricks themselves. Such a covering should last longer than several treatments of the bricks with the waterproofing material, and would not in the end prove any more costly. A. B. S.

Glazed Earthenware.

H. P. (TOLLINGTON PARK) writes: "Can you tell me the name of a book or books dealing with the history and general information of glazed earthenware, particularly with reference to glazed bricks?"

—Glazed earthenware is an entirely different material from that of which glazed bricks are made, and consequently no single book adequately deals with both these subjects. A movement has been on foot on the Continent for some years past with a view to utilising a porcelain mass for brickmaking, but it is too costly to be commercially successful. There is no really satisfactory book on the subject of glazed brick manufacture, though much assistance may be gained from "The Manufacture of Glazed Bricks and Sanitary Ware," by H. Ansell, published by H. G. Montgomery, 43, Essex Street, W.C., price 7s. 6d. "Bourry's Treatise on Ceramic Industries," published by Messrs. Scott, Greenwood and Son, 8, Broadway, Ludgate Hill, E.C., is one of the best in English for the general subject, but does not give sufficient details in regard to brick manufacture to be of practical value. The "Clayworkers' Handbook," published by Messrs. Charles Griffin and Co., Ltd., Exeter Street, Strand, W.C., deals with the subject from the point of view of the practical man, but does not deal with the "history." Any question relative to any special point may be answered through these columns, but before embarking on the manufacture of glazed bricks, a specialist should be consulted, as there are many pitfalls which are not obvious to the beginner in this line of manufacture. A. B. S.

Books for R.I.B.A. Intermediate.

H. C. (ABERGAVENNY) writes: "Kindly advise me what books to get for the Intermediate Examination of the R.I.B.A. I do not want expensive ones. Are the following of use:—"Art of Building" (Dobson and Alien), "Advanced Building Construction" (Wilson), "Gothic Stonework" (Davidson), "Gill's Geometry" "Practical Geometry" (Carroll)?"

—The following text-books will be found very useful in preparing for the R.I.B.A. Intermediate Examination:—1st, for history of architecture, Fletcher's History, Spiers' Orders, Anderson and Spiers' Greece and Rome, Parker's Introduction to Gothic, and the Glossary, Anderson's Italian Renaissance, Blomfield's (small) English Renaissance, and see note at end. 2nd, for construction, Mitchell's two vols., Elementary and Advanced Building Construction. The latter gives the necessary information on materials. 3rd, for geometry, there are numbers of text-books. Gill's Elementary Solid Geometry is as good as any for the purpose. 4th, for stresses and theoretical construction, Middleton's Stresses and Thrusts, Hardy's Graphic Statics (and Mitchell). We have mentioned the less expensive works only, by request, and we can only add that almost all these books can be replaced by others. Occasional study of larger works is very advisable, and reference to good books or plates of measured drawings, such as Collings' Gothic Detail, Gotch's "Early Renaissance," Belcher and Macartney's "Later Renaissance," should be made in the public libraries when possible. Most of the books mentioned in your list are of use.

Fletton Bricks.

F. L. R. (WALTON-ON-THAMES) writes: "I have received a letter from a builder raising doubts as to the durability of Fletton bricks. I should be glad to have your advice as to whether his view is correct, and if it would be advisable to use stocks instead."

—There are so many makers and qualities of Fletton bricks that a wholesale condemnation of all would be foolish, and whilst some of them are quite satisfactory and durable, others are exactly the opposite. It is in fact much more difficult to obtain a perfectly durable brick when using the process used for Flettons, than with that for stock bricks. The former are made by compressing a slightly dampened powder, and the latter by shaping a plastic paste in a mould, the true qualities of the clay being developed in this instance. Some builders have professed objection to using Fletton bricks because they have a dense surface and consequently do not adhere well to the mortar during the process of laying. When properly made, Fletton bricks are quite as good as ordinary stock bricks, and are equally durable, but they would have



Photo: Topical.

FIRE AT THE IMPERIAL LIGHTING CO.'S PREMISES, BLACKFRIARS ROAD.

This illustration shows the remarkable resistance of heavy timber construction. The wooden beam is that supporting the back main wall of the premises, and though it burned fiercely for half an hour, is still strong enough to uphold the load.

to be carefully specified in order to avoid any abuse of the name of "Fletton bricks." If the building is in or close to London, stock bricks of good quality will certainly be the more durable, as no brick yet made resists the peculiar climatic conditions of the Metropolis so well as a first-class stock brick, but outside this area, and to some extent within it, Flettons are proving quite satisfactory and are cheaper. A. B. S.

Dull Finish on Oak Half-timber.

S. S. (CROYDON) writes: "What is the usual and best method of treating solid half-timber work (oak), so as to obtain the dull finish and old effect?"

—The dull finish and silvery colour of old oakwork results from the surface of the wood being left from the tool, untreated in any way; and if new work is so left it will develop a similar effect after two or three years' exposure. G.

Alleged Encroachment.

H. H. (PALMER'S GREEN) writes: "As shown on sketch plan [not reproduced], A has built a house adjoining garden ground belonging to a railway company (B). The boundary between A and B is a post and rail fence (belonging to B), which is irregular and out of plumb. In building his house A took a line from x to x and built 4ins. from the line, to the face of his wall, with footings as shown in sketch. B now claims the face of wall as boundary, the fence rails touching it in places. (Q. 1). Can A demand to have the fence straightened? (Q. 2). In the event of encroachment being proved, can B be compelled to accept a lump sum as compensation? (They are now demanding a yearly payment as license for encroachment.) (Q. 3). If 'yes' to former query, on what basis should the sum be calculated? As the 4ins. which A claims is of no use to him, he would be willing to allow B to remove the fence for the length of the house, and use the face of walls as boundary. Can B reasonably refuse this? A's object is to avoid annual payment of any sum, however small."

—With regard to Q. 1, there seems to be nothing which would enable A to compel the railway company to straighten their fence, unless indeed it is out of plumb, in which case part of it may be technically trespassing on A's land. An action for "trespass" on this head might afford a convenient set-off to an action by the railway company for damages for the trespass alleged to be caused by the wall. As to Q. 2, it is difficult to see how the railway company could be compelled to accept a lump sum in compensation. If they did, the lapse of years would confirm A in his title to the piece of land on which he has encroached. The railway company could never re-assert their right to it. It is probable that they want only a shilling a year. A should make the best terms he can with them on this basis, for if they chose to sue him at law, a mandatory injunction might issue to compel him to pull down his building. With regard to the user of A's house as a boundary, the railway company are under no obligation in this regard if it does not suit them. B.

Vibration of House from Wind.

ARCHITECTUS (HEREFORD) writes): "I enclose sketch plan [not reproduced] of a house which was erected about 20 years ago. The tenants occupying same complain of a rocking or swaying motion during exceptionally high winds, chiefly on the bedroom and attic floors. This rocking does not happen very often, perhaps once or twice per year. I have made a careful examination of the premises and fail to find any cracks in the walls or ceiling, but the main walls (see plan) above ground level are only 9ins. thick, and the width being 15ft. 6ins. over all, makes a very narrow building, and you will note it is detached from adjoining property on both sides and therefore gets the force of the wind. The house is situated on fairly high ground, and is somewhat open at the back to the east winds. Is there any remedy to strengthen the building at a reasonable outlay, and do you consider the house liable to fall during severe winds?"

—The compass point was omitted on the plan, but if open at the back to the east winds the long sides of the building face to the north and south respectively. The further adjoining building is 14ft. away on the north side, but no height is given for this building. This distance is, however, so small that it is difficult to imagine the wind reaching a dangerous force. Although the house is said to rock during gales, this statement must be received with caution. It is astonishing how small a vibration appears excessive to one lying in bed. The writer was engaged in a law case some years ago where it was alleged that the vibration from a central power station in the neighbourhood was so great as to almost throw the occupants out of bed, while a seismograph gave no indication of vibration when all the engines were running, but did indicate the passing of a four-wheeled cab in the road at a distance of 120ft. In the present case the only useful addition that can be made would be to cross brace the partitions on the bedroom floor. But if the house has already stood twenty years, it will probably last its full time. The first effect of a high wind is generally to strip the roof covering and blow down the chimney stacks.

HENRY ADAMS.



Photo: Topical.

FIRE AT MESSRS. B. MORRIS & CO.'S PREMISES, WHITECHAPEL, E.

The fire at these premises, which are those of a tobacco manufacturing firm, is another illustration of the danger of unprotected iron and steel-work. The sagging of the girders is clearly seen in the view.

Quantities.

STUDENT (CHILD'S HILL) writes: "1. In taking off quantities for a building, why is it customary to make no deduction of brickwork where a wall is faced with terra cotta, although the whole of wall is measured as solid brickwork? 2. In preparing a specimen drawing, if the 'pricker' is used freely the sheet of cartridge becomes rather unsightly. Which is the best way to minimise the bad appearance? If the cartridge is kept in damp atmosphere for a day or so, would the holes become invisible? 3. How does a mason work a perfectly true sphere from a cube of Bath stone? What labours should be taken for this in 'quantities'?"

—1. It is by no means customary to make no deduction of the brickwork when measuring terra cotta. "Leaning" states that the brickwork is not deducted, but many of the leading quantity surveyors are at variance with him, and treat terra cotta as stone, i.e., deduct the brickwork when measuring the facing and dressings. In any case it should be clearly stated in the bill which method has been adopted. 2. "Prickers," if carefully used, should not produce the unsightly appearance to which this correspondent refers. Keeping the drawing in a damp atmosphere would not be a difficult remedy. A better plan would be to turn over the cartridge paper and smooth it down with the thumb-nail, where bulges are caused by the pricker. 3. Spherical vaults or domes are seldom, if ever, worked in single stone, and are built up in courses, a mason's first operation being to divide both plan and section into the proper number of stones, and to draw the joints, of which the horizontal are portions of conic surfaces, and the vertical are planes tending towards the centre. The moulds for each course (commencing with the springing course) and the key-stone are found by

geometry, and the method of finding these is given in many of the leading books which deal with "masonry." "Nicholson's Practical Builder," published by Thomas Kelly in 1837 (although in many respects out of date) contains some excellent diagrams showing the construction of domes, niches, etc. Quantity surveyors measure the following labours after the total cube alone has been obtained :—Sunk joints to all edges of each stone. Circular circular face to the external surfaces of the spheres or domes. Circular circular face sunk to the internal surfaces. C.

Ruskin's Works.

T. J. G. (GUERNSEY) writes: "May I ask you to be good enough to let me know whether there is another book in the market known as 'Ruskin's Seven Lamps of Architecture,' besides the edition shown in your list and quoted at 1s. 6d.?"

—Since the copyright has expired on a number of the earlier editions of Ruskin's works, several publishers have brought out reprints in a cheap form. It should be explained, however, that Ruskin revised most of his books for fresh editions, and in many cases added foot notes amplifying or disapproving what he had previously written. These revised editions are still in copyright, and are published only by Messrs. George Allen and Son. Messrs. Allen have also issued a cheap edition, pocket size, of Ruskin's works, but the price of this is 2s. net for cloth bound copies.

R.I.B.A.

Town Planning Conference.

In view of the recent passing into law of the Housing and Town Planning Act, 1909, it is of the utmost importance that the architectural development of towns should receive the most careful consideration. The Royal Institute of British Architects has decided to organise a Conference to study the architectural problems involved in the improvement and extension of our cities. Members' co-operation is invited in this Conference, which will be held in London from the 11th to the 16th July, at the Royal Institute, 9, Conduit Street, Regent Street, London, W. His Majesty the King has graciously extended his patronage to the Conference. The programme of the Conference will include an exhibition of drawings, plans, models, and literature bearing upon the subject, and a large number of town plans and views will be displayed by means of lantern slides. It is expected that papers will be contributed by leading authorities on the various aspects of town planning, and that there will be a large number of visitors from the Continent and America in addition to those interested in the subject in this country. Membership of the Conference will be open to architects and all others, including ladies, interested in town planning. Members will be privileged to attend:—The inaugural meeting and the receptions that will be arranged; all the meetings of the Conference; the visits and the banquet (on payment of the necessary charges); and they will receive all the literature issued in connection with the Conference, including a copy of the illustrated volume of transactions to be published subsequently. The membership fee will be one guinea. If those interested in the Conference will apply to the secretary, the Royal Institute of British Architects, 9, Conduit Street, Regent Street, London, W., they will receive further particulars of the programme of the Conference, with a form of application for membership. As the number attending the Conference is necessarily limited, an early reply to the secretary is desirable.

BRITISH BRUSH MANUFACTURERS' ASSOCIATION.

The second annual dinner of this flourishing association was held at the Criterion Restaurant on Thursday last. The chair was taken by the President, Mr. Ernest N. Kent, of Messrs. G. B. Kent and Sons, who was supported by representatives of most of the leading firms of British manufacturers, including Messrs. Arthur Kent, C. A. Watkins, Ernest Watkins, F. G. Howard, Arthur Mason, C. F. Barrett, R. W. Chase, A. L. Burrow, and the secretary, Mr. T. Marson Till. In proposing the toast of the British Brush Manufacturers' Association, Mr. Kent said: "This association, as you know, has now been in existence for just two years, and is therefore little more than an infant in the matter of age. The infant, however, under the care of its excellent nurse, Mr. Till, is thriving, and showing much promise of leading a useful life in its particular sphere. This is the infant's second annual dinner, and many of you will have observed to-night how well it takes its nourishment—it is a 'good doer' in both senses of the word. I sincerely hope that as the child gets older its appetite may still improve. Some folks may think the child is growing precocious, and during the last year has been prying into other people's business, and suggesting how they should comport themselves. But at any rate, the association, I maintain, is a real benefit to the trade; and when the time comes, as I hope it may, when the question of tariffs in this country has to be discussed, the value of this cohesion of the members of our trade will be still more marked, and will prove of great advantage to every brush manufacturer in this kingdom; and that fact alone should induce all those brush manufacturers who are at heart interested in employing more hands, and increasing the manufacturing portion of their business, to join our association."

Mr. C. A. Watkins, in acknowledging the toast, dwelt on the necessity for such an association, and showed how it had already proved a real success to the manufacturers. Other toasts, including "The President" and "The Visitors," were duly honoured, and a most enjoyable musical programme was provided by Messrs. Frank Hicks, J. W. Dear and W. Wurtsburg. Although not on the official programme, a series of recitations by Mr. Arthur Kent proved quite the feature of a really excellent entertainment.

We reproduce the vigorous and fantastic design with which Mr. Arthur Rackham adorned the menu card.

Alderman Stephenson, of the Sheffield City Council, proposes that as the Town Planning Bill has now become law, the Special Committee appointed by the City Council to deal therewith on January 13th, 1909, be dissolved; that the exercise of the powers of part 1 of the Housing, Town Planning, etc., Act, 1909, as to housing be vested in the Estates Committee; that the exercise of the powers of part 2 of such Act as to Town Planning be vested in the Improvement Committee, with authority to both committees to confer from time to time if deemed advisable, and also on the part of the Improvement Committee, so far as Town Planning is concerned, if deemed advisable to confer with such outside professional persons as may be considered helpful, or with the authorised representatives of the Sheffield Society of Architects.



DRAWING BY ARTHUR RACKHAM ON THE MENU CARD AT THE DINNER OF THE BRITISH BRUSH MANUFACTURERS' ASSOCIATION.

Fire Prevention Notes.

Automatic Protection. Automatic protection, we are rather surprised to learn, has been hitherto more commonly adopted in the provinces and in the colonies than in London, where, it is reported, sprinklers are being but slowly installed in existing establishments, although the necessity for installing them in new buildings is far more generally recognised. The public ignorance on the subject may be inferred from the fact that, in referring to a recent fire, a London newspaper threw off the amazing statement that sprinklers were introduced into this country about five years ago! Mr. William Whiteley, noticing this statement, has pointed out that sprinklers in his vast establishment were installed more than twenty years ago; and it may be added that even then this system had been in use elsewhere for quite ten years.

"Life" of Sprinkler Installations. What is the life of a sprinkler installation? The question is asked and answered in the "Sprinkler Bulletin," a quarterly journal published in the interests of the system. The answer is, broadly speaking, that a sprinkler installation will last as long as the building in which it is fixed. It is contended that water that is without movement in a pipe, and is unassisted by atmospheric action, is practically non-corrosive. It has been found that, even in plants fifteen or twenty years old, the corrosion is inappreciable. In the exceptional cases in which special atmospheric conditions tend to set up external corrosion of pipes, a coat or two of paint is usually found to afford sufficient protection. It is claimed that, given properly constructed pumps, pressure tanks, and hydraulic injectors, and the same amount of attention that is given as a matter of course to the building, it is hard to say which will wear out first, the building or the sprinkler installation.

Fire-Resisting Economy. In the United States, confidence in fire-resisting construction has become so firm that the owners of buildings of up-to-date construction are abstaining from insurance. Our own Metropolitan Asylums Board seems disposed to adopt a similar course. At a recent meeting of the Board, it was unanimously resolved to abstain in future from insurance against risk of loss by fire. The Finance Committee had pointed out, in a report, that in the last six years £14,750 had been paid for insurance, and only £205 was received for claims; while, last year alone, £2,550 was paid in premiums, and only £10 was received in claims. The property concerned was considered to be much less hazardous than the average risks undertaken by fire insurance companies, the majority of the buildings being solid brick, in many cases with fireproof floors, and the risk from fire is thought to be infinitesimal. A few instances such as this should induce the insurance companies to reduce their rates proportionately to the risk, and will, moreover, tend to convince building owners of the truth of the contention so often put forward in these columns—that in the long run it is more economical to adopt modern fire-resisting methods.

How Flues Cause Fires. Experto crede! "A practical sweep" writes to a London morning paper a very sensible letter in which he contends that usually it is not the small fire left in the grate that sets the house ablaze. In nearly every case, he declares, fires are due to the wearing away of the brickwork at the back of the stove, and the falling of burning soot on to the wooden scantling behind the grate. He adds that he has often tried to persuade householders to have the back filled in with cement or stone so as to obviate this danger. The advice is excellent in its way, but ought not to be necessary. Where flues are properly constructed, all danger from fire is foreseen and obviated; but this gentleman has unique opportunities of observation, and not only is he able to make astute inferences from them, but he has the public spirit to place them at the service of all whom they may concern. Presumably the buildings to which he refers are very old, for the danger he indicates does not suggest modern construction.

A Fire-Master's Views. In the course of a recent lecture delivered to students of the Heriot-Watt College, Mr. A. Pordage, Firemaster of Edinburgh, contended that the aim of constructors should be in the direction of retarding the spread of fire. His view was to build as far as possible in sections with brick party walls running up through each section and through the roof, to avoid heavy construction for roofs, not to seek to confine the fire and compel it to spread, but to get it away through the roof. This applied particularly to theatre construction. In the construction of modern buildings on fire-resisting lines, it was his opinion that in aiming at building the structure with a minimum degree of risk from destruction by fire, sufficient attention was not paid to the matter of excessive loads on walls. The principal causes of the destruction of presumably fireproof buildings when attacked by fire was not so much due to the effects of fire as to wreckage due to the collapse and failure of parts of the structure. It was a mistake to attempt to confine a fire within the limits of a particular floor, and in order to assist the fire in getting out of a building they might provide special shafts to carry it up through the roof into the outer air instead of assisting it to spread laterally through the various floors.

Fire Danger. In a letter under this heading, addressed to the editor of a weekly newspaper, the question is asked: Is not a good deal of the blame in connection with the above due to the architects? They are, this correspondent declares, as a profession becoming more and more notorious as artists rather than practical building designers. Architects will not admit that this accusation is just. The fact is that they are, in this respect as in most others, far in advance of their clients, whom it is difficult to persuade to adopt such precautions as seem to entail extra initial outlay. Another correspondent (a lady) more usefully points out the necessity of making all decorations in shops safe from fire, which, she contends, is certainly one of the things that the authorities ought to insist upon. She states from experience that it is an easy and cheap matter to carry out, as for over a year she has made use of a preparation sold for the purpose, and makes a point of having all curtains soaked in this. If it were more generally known that this safeguard can be obtained at a cost of about 3d. for a large curtain, people with children would have it carried out for their own protection, but in any case its use should be compulsory in the case of decorating large shops. Yet a third correspondent complains that, while thousands of pounds annually of public money are spent to maintain a fire brigade—a very efficient force, no one can deny—prevention is of paramount importance, and is unquestionably possible to-day. He seems to think that in our present state of knowledge large and serious fires should be impossible; and we are quite disposed to agree with him The difficulty is, as we have said, to persuade owners to act on that knowledge.

We are informed by Messrs. James H. Tozer and Son, Ltd., of York Mansion, York Street, Westminster, and by Mr. Percy Tomey, that the latter gentleman no longer represents that firm as agent, engineer, or manager of the reinforced concrete department of their business.

Correspondence.

[*The Editor declines responsibility for the statements made or opinions expressed by correspondents.*]

The Provision of Quantities.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Having seen in your valuable journal correspondence and reports of meetings relating to the practice of architects obtaining tenders for works without supplying "quantities" for same, may I be allowed to state the case from an estimator's point of view? First, I thoroughly endorse the suggestion made that builders should combine with the idea of refusing to tender unless quantities are supplied for jobs of the value of, say, £500 and upwards. Especially at the present time, when the building trade is suffering from severe depression, the builders in their endeavour to obtain work and keep in touch with architects are necessarily obliged to quote for any and every job they can possibly get enquiries for. Consequently their estimating staff, never too large, have additional duties forced upon them, particularly when quantities are not supplied, often necessitating a continuous application to their work early and late for weeks on end, and for which they receive no extra pay. This results in many cases in hurried work, and exemplifying the oft-repeated saying, "that the man who makes the biggest mistake gets the job."

I think you will agree with me that this is a state of things that should and could be amended, in fairness to the surveyors, their clients, and the building world generally. My own experience tells me that the worst offenders are the L.C.C. (both educational and other departments), the Office of Works, and the Borough Councils. These bodies without exception insert the "fair wages" clause in their contracts, but little thought is given to the builders or their clerical staff.

Should the Q.S.A. and their able president, who have recently brought this matter to the front, meet with the support they deserve, I am convinced the builders will welcome it, clients will get a better and more just treatment, and endless litigation be saved.

ESTIMATING CLERK.

The Local Government Board and Reinforced Concrete.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—The attitude of the Local Government Board in refusing to allow loans to local authorities for the construction of works in reinforced concrete on the same terms as in cases where other materials are used, is by this time sufficiently notorious. But we think that the hardship inflicted upon small local authorities, and upon firms such as our own, whose business it is to design or carry out work in the material, is not fully appreciated. We should like, therefore, to call attention to a recent case (which is far from being an isolated one) in which we have received a letter from our client stating that he has just been informed by the Local Government Board that only ten years can be allowed for a loan with which a reinforced concrete tank was to be constructed, and that therefore the project must be abandoned. Several designs for this tank have been prepared by us, and negotiations have been continued between the contractor, our client, and ourselves for some months; yet when these have been brought to a conclusion that, owing to the economy both in original cost and up-keep of reinforced concrete as compared with any other material, is eminently satisfactory to the would-be owners of the tank, the whole of the trouble and expense are absolutely thrown away in consequence of the action of the Local Government Board. In addition to the waste of labour thus caused, the Local Government Board are preventing the local authorities in question from reaping the benefit of the

economy and other advantages of this material

That such advantages do actually exist, and are not merely the product of imagination, is sufficiently proved by the action of the Admiralty, War Office, Board of Works, railway companies, and large commercial firms, who have to such a large and increasing extent embarked upon the use of reinforced concrete.

It is absurd to suppose that such bodies would adopt a material whose life was supposed by their technical advisers to be only ten years. Up to the present, deputations, correspondence, and personal interviews have all met with the same fate, and have proved to be utterly ineffectual in obtaining the necessary consideration.

Surely when the consensus of professional opinion is so clearly against the action of the Local Government Board, it would be to the public advantage if a committee of independent experts were appointed by the President to advise him as to whether that action is in accordance with the accepted opinion of the engineering profession.

Yours faithfully,
THE PATENT INDENTED STEEL BAR COMPANY, LTD.

The Warming and Ventilating of Public Buildings.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—We notice in the current issue of the "Builders' Journal" an article upon "The Warming and Ventilating of Public Buildings and Factories," by Mr. T. W. Aldwincle, F.R.I.B.A., wherein the cable system is referred to. As licensees of this system, we should be pleased to forward full information to any of your readers interested in modern and economical methods of heating.

J. T. PHILLIPS AND SON.
21, Old Queen Street, Westminster, S.W.

CARPENTERS' HALL LECTURES.

The Joiner's Craft.

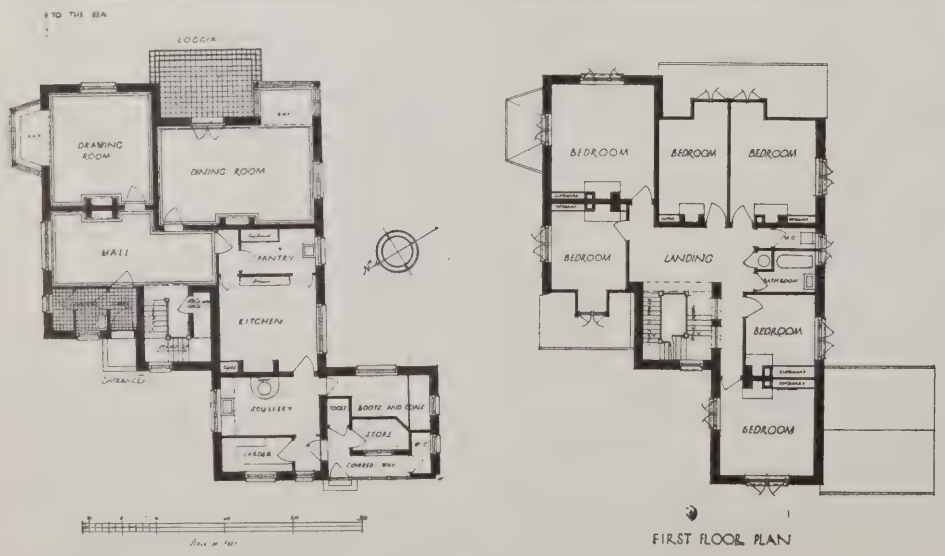
Sir A. Brumwell Thomas lectured on Wednesday week at the Carpenters' Hall on the craft of the joiner. If there is one thing which interests us all it is English woodwork, on which we as a nation pride ourselves. When this lecture was preceded by one on carpentry, it became a hard matter to decide how much English woodwork was joinery, and how much carpentry. The lecturer then recounted a controversy which took place between the Carpenters' Company and the newly-incorporated Guild of Joiners, and the dispute settled by a Court of Aldermen of the City of London. The dispute arose over the question as to what work belonged to the carpenter and what to the joiner. The resulting decision was that the joiner's craft was included in that of carpentry. The crafts of this country have received two strong artistic impulses, the first from France, followed by three centuries of mediæval art; the second from Italy resulting in three centuries of Renaissance work. The character of the work and the mode of expression of each differ distinctly. In the 13th, 14th, and 15th centuries stone was the chief material, and the woodwork of these periods closely follows the stonework both in design and workmanship. One of the oldest pieces of joiner's work in the kingdom is the Coronation chair in Westminster Abbey, which belongs to the great Edwardian period, and on which the stonework influence can be clearly seen. The choir stalls and pulpit from Winchester Cathedral also show this influence, and the backs of the stalls are nothing more than traceried windows constructed in wood. The Bishops' throne at Exeter is about the most beautiful and richest example of the joiner's craft we possess. The 15th century was remarkable for its wealth of woodwork, and a screen from Devonshire, of which a slide was shown, consisted of several openings, each one a perfect traceried window, with fan vaulting

This completed the remarks of the lecturer on the mediæval period. We now come, he said, to the Renaissance. Henry VIII, like the young King Francis of France, was a great patron of art, and the employment by him of Italian workmen began to influence the work of the period. The screen from King's College, Cambridge, clearly shows this Italian influence, and must have been executed by Italian workmen, as the English craftsmen had not yet attained such perfection in the new style. With the reign of Elizabeth, the country being at rest and free from strife, brought a desire for more comfort, and the ambition of all seems to have been a desire to build the finest house. Audley End, though only part now remains of the original building, is yet a fine stately mansion. An interior view was shown, in which the German influence could be seen, by the caryatide figures, etc., and the flat ceiling divided up into panels and filled with enriched plasterwork, which marks the transition from the open mediæval roofs dealt with last week. Many of the screens which were a feature of the work of this period remain at the Colleges at Oxford and Cambridge. Another interesting feature of the work of this period is the internal porch in a room designed to give access between two other rooms without passing through the third. Broughton Castle, Oxfordshire, possesses a good example, which was shown also one at Red Lodge in Bristol. The dining room door of Levens Hall, Westmoreland is a very fine example of the work of the period, with caryatide figures on each side, and the owner's arms over. The fireplace at Blickling Hall is also characteristic of the work of the time. Here again are caryatides on each side of the family arms. Passing on with the development of house planning a broad and easy wood staircase became a feature. That at Castle Ashby shows how the craftsman lavished all his care on the fretted panels and carved newels, also the staircase from Hatfield House, in Hertfordshire, the home of the Cecil family, has newels elaborately carved with strap ornament, and terminated with carved figures. This is a very picturesque period in English craftsmanship, but these staircases overladen with ornament show no originality in design.

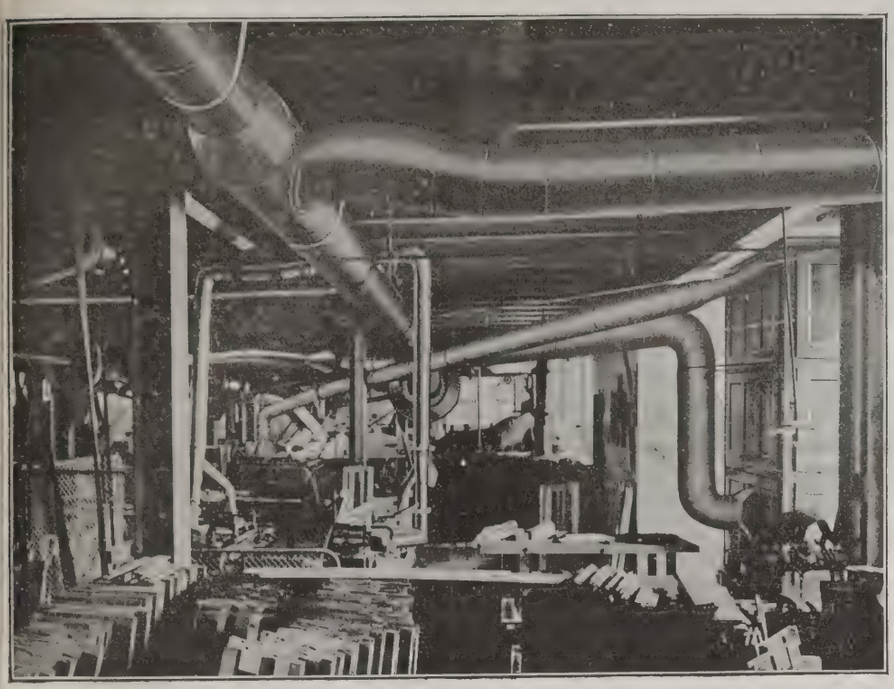


HOUSE AT HOPE POINT. KINGSDOWN, DOVER. J. A. BESSANT, ARCHITECT.

This house was erected in 1907. The site commanding magnificent views of the Channel, the rooms were arranged to take the fullest advantage of the outlook. The walls are hollow built, 16 ins. thick, of brick treated with cement roughcast. The roof is covered with red sand-faced tiles. The floors generally are of red jarrah unpolished and laid in narrow widths. The staircase is of oak with jarrah treads and risers. There are six bedrooms on the first floor and a room in the tower accessible from the first floor. The house is lighted throughout by means of Cox's air gas, The contractors were Messrs. G. H. Denne and Son, of Deal,



HOUSE AT HOPE POINT, KINGSDOWN, DOVER. J. A. BESSANT, ARCHITECT.



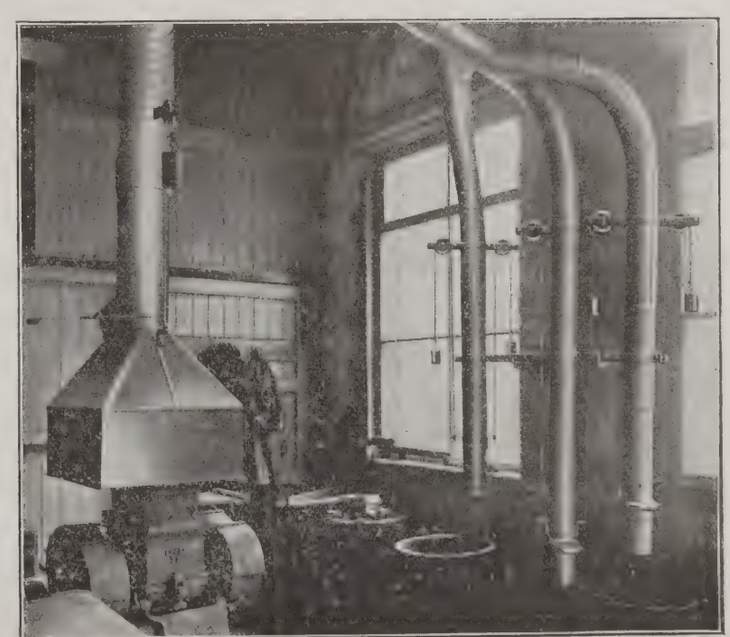
DUST REMOVAL IN WOODWORKING FACTORY, SHOWING SIROCCO FAN SUSPENDED FROM CEILING.

The carpenter relied on pattern book methods for gaining effect. At the end of the century, with the advent of Inigo Jones, the design of the work passed from the craftsman to the designer. Nothing much is known of Inigo Jones except that he travelled in Italy. Wilton House, in Wiltshire, exhibits features in design probably unsurpassed, while Ashburnham House is a delightful piece of planning, especially the staircase, and a door on the landing, of which a slide was given, shows great refinement. Inigo Jones's great successor was a man full of scholarship. Sir Christopher Wren was almost an amateur, but when the time came he was found to be the man. Much of his work was shown, including the organ case at St. Paul's, which the lecturer said is a most beautiful design, and will stand as a monument to the skill of the craftsman who built it. There is scarcely a crack or an open joint in the whole case, in spite of the time it has been standing. In the choir stalls the great projection of the carving was noticed. In early work, no such heavy construction in wood was tried. The construction of the joinery here is a feature of the work. The screens in the ambulatory and the chapel at the western end of St. Paul's, were also shown. There are two very charming doorways, beautifully carved, in Laurence Pountney Lane, while a fine example of the wall panelling from Clifford's Inn, designed on broad lines, is now in South Kensington Museum. The Court Room of the Brewers' Hall has some fine bolection mouldings, while the screen at the end of the hall of the Brewers' Company should be noted. Continuing, the lecturer remarked that this period which we have just passed is the summit of the joiner's craft, but if the work at the end of the century lacked inspiration, it certainly also lacked some of the excesses which we see in the work on the Continent. To-day there is a tendency to take up the wholesome tradition of this period. The lecturer next showed several examples of modern work, including the Council Chamber from Woolwich Town Hall, also a suite of committee rooms, the Lord Mayor's dais at Belfast City Hall, the whole richly carved with pierced panels; the reception room leading to the Council Chamber, and the committee room also at the Belfast City Hall, panelled in oak and containing a very large table made in four parts easily detached. Some examples of modern woodwork designed by Mr. Belcher in a London town house, and carried out by Messrs. Trollope and Sons, followed, also a view of the Council Chamber at Cardiff with inlaid wall panelling designed by Messrs. Lanchester and Rickards, some details and furniture of a house by Mr. Voysey; a house near London, designed by Mr. Dawber, and a panelled room by Mr. Lutyens, carried out in deal painted white. In conclusion, the lecturer pointed out that there is a difference between mediæval work and that of a later period. The earlier work is all carved out of the solid wood, but from the 16th century onwards the work is built up. In the earlier period the panel mouldings were worked on the solid, the stiles meeting at the angles in masons' joints. Then later came the true mitre still worked on the solid, followed later still by mouldings planted on. In conclusion, what about our original enquiry—where does the work of carpentry end and that of joinery begin? In early days we find in one man all the qualities which to-day are distributed over various trades and crafts.

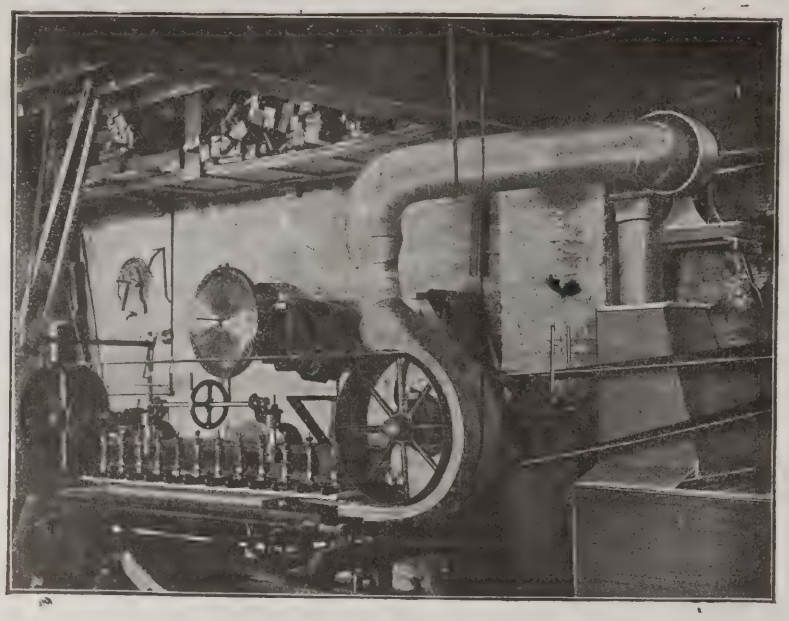
DUST REMOVAL IN JOINERIES AND WORKSHOPS.

The removal of dust, shavings, and chips from the machines and floors of woodworking factories is essential, not only for the purpose of freeing the tools, but for the all important necessity of reducing the fire risk. A lighted match, carelessly thrown down, may start some sawdust quietly smouldering without smoke until a puff of wind fans it into a blaze, which will reach something more inflammable, and convert the factory into a furnace.

Owners of modern woodworking factories, realising that shops free from shavings, etc., represent an annual saving on account of the reduced insurance tariffs, are installing special exhaust plants, consisting of fans and ductwork, which remove all shavings and chips as soon as they are produced by the machines. The fan required for this purpose must be of a special type, as it must not only be capable of setting up a strong suction which will draw away the material through an extended system of piping, but also be so designed that it will not become choked by the dust and shavings, or the wheel damaged by the impact of small blocks of wood. A type of fan used for this purpose, which may be applied in small sizes to a single machine as illustrated on p. 138, or arranged to serve, in its larger sizes, a series of different tools by means of pipework, as shown below. To collect the dust after it has passed the fan, a cyclone collector is usually employed, but in the case of sandpapering machines, which give off a quantity of very fine flour-like dust, special precautions have to be taken, necessitating the use of a special collector, as this class of dust shows the utmost aversion to being sifted from the air.



DUST REMOVAL FROM MIXER AND BARRELS.



SIROCCO FAN REMOVING DUST FROM SANDPAPERING MACHINE.

There are many operations in the manufacture of paints, such as the emptying and filling of barrels or bins, the sieving of colours, the grinding and mixing, in which a considerable amount of dust is produced, necessitating the provision of adequate exhaust draught arrangements. Over hoppers and shoots feeding the different machines, hoods must be carefully arranged, so as to localise the exhaust as much as possible, while the dust caused by shovelling or scooping the material into bins must be removed in such a manner that it does not reach the breathing level of the worker. In the mixers and grinders, the suction should only be just sufficient to prevent the dust from spreading into the room, as a very strong draught would draw up too much dust. The second illustration on p. 137 shows the arrangement adopted for removing dust from a mixing machine and from barrels. The three vertical pipes and the hood, which can all be raised or lowered at will, are connected to a small "Sirocco" fan requiring about half a horsepower for its operation.

Trade and Craft.

Stoniflex Felt and Sideroleum Wood Preservative.

Stoniflex felt has been upon the market for the last ten years, and is now known throughout the United Kingdom as a most durable and lasting felt, as, instead of becoming brittle as time goes on, it toughens, and becomes like leather. Its great advantage is that when once carefully laid and given a coat of mastic, it will not require any further attention for some years, and does not need constant yearly tarring. It has been used for roofing many of the largest factories in the kingdom, as well as schools, football stands, and other buildings, and we are informed that during the present skating rink craze, rinks all over the country have been covered with it. It does not contain coal-tar or pitch, is rubber-like, densely compressed, never sticks, does not crack, and is pliable in all temperatures. It is light as well as durable, and is proof against attack by the white ant. A folding card, with samples affixed, may be obtained from the sole manufacturers, Messrs. D. Anderson and Son, Ltd., Lagan Works, Belfast, and Roach Road, Old Ford, London, E.

The same firm have recently issued a catalogue containing about a dozen illustrations, printed in colours, to show the appearance of their "Sideroleum" in various applications, such as fencing, half-timber work, etc. Sideroleum penetrates deeply into the pores of the wood, and protects it against all forms of decay, as well as against vermin. It also serves the same purpose with stone and brickwork. The standard colour is a very pleasing nut-brown, which, however, can be modified to order.

Coming Events.

Wednesday, February 16.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. D. Y. Cameron on "Gothic Architecture," 8 p.m.

CARPENTERS' HALL LECTURES. — Mr. Lawrence Weaver on "The Art of the Leadworker," 7.30 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Mr. F. W. Rich, on "The Flavian Amphitheatre, commonly called the Colosseum, Rome," 7.30 p.m.

Thursday, February 17.

R.I.B.A.—Literature Committee Meeting.

THE ROYAL SANITARY INSTITUTE LECTURES.—Mr. Wellesley Harris on "The Duties of a Sanitary Inspector," 7 p.m.

ROYAL SOCIETY OF ARTS (Indian section).—Mr. G. W. Dunn, on "The Bombay Housing Question," 4.30 p.m.

SOCIETY OF ANTIQUARIES.—Burlington House meeting, 8.30 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—Mr. F. Hope-Jones, on "Electric Clocks," 8 p.m.

ROYAL INSTITUTION.—Professor Silvanus Thompson. First lecture on "Illumination," 3 p.m.

Friday, February 18.

THE ARCHITECTURAL ASSOCIATION. — Mr. E. Swinfen Harris on "The Life and Work of William Butterfield," 7.30 p.m.

THE ROYAL SANITARY INSTITUTE LECTURES.—Mr. Wellesley Harris on "The Duties of a Sanitary Inspector," 7 p.m.

LEICESTER AND LEICESTERSHIRE SOCIETY OF ARCHITECTS.—Mr. S. Perkins Pick on "Drainage and Sanitary Fittings," 8 p.m. at 5, St. Martin's East.

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS (Southampton Row, W.C.).—Mr. E. F. Strange on "Book Ornament," 6 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Annual General Meeting. Election of President and Officers. Report of the Council. Adjourned Discussion on 9th Report of Alloys Research Committee, 8 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Students' lecture. Sir R. Hanbury Brown, on "Irrigation Works," 8 p.m.

Saturday, February 19.

ABERDEEN ARCHITECTURAL ASSOCIATION.—Mr. J. A. Ogg Allan on "A Recent Architectural Tour in the United States," 7.30 p.m.

BIRMINGHAM MUNICIPAL SCHOOL OF ART.—Exhibition of Students' Work at the Rooms of Royal Society of Artists, New Street. Closes 10 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Edinburgh and District Water Trust's New Filter Works, Fairmilehead.

Monday, February 21.

THE SURVEYORS' INSTITUTION.—Mr. R. D. M. Saunders on "Land Banks and Small Holdings," 5 p.m.

INSTITUTION OF SANITARY ENGINEERS.—President's Address, 8 p.m.

Tuesday, February 22.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCHITECTURE. — Mr. Banister Fletcher on "Palaces of the Roman Emperors, Roman Dwelling-houses; Pompeii and Pompeian Decoration," British Museum, 4.30 p.m.

INSTITUTION OF SANITARY ENGINEERS.—Students' lecture. Mr. G. W. Chilvers, on "The Ventilation of Dwellings and Public Buildings," 7 p.m.

Wednesday, February 23.

CARPENTERS' HALL LECTURES. — Mr. Geo. P. Bankart on "The Art of the Plasterer." 7.30 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Students' Meeting. Mr. W. Milburn, jun., on "Notes on Continental Hospitals," 7.30 p.m.

Thursday, February 24.

LONDON MASTER BUILDERS' ASSOCIATION.—Annual dinner.

Friday, February 25.

THE ARCHITECTURAL ASSOCIATION DEBATING SOCIETY.—"That the Employment of a Quantity Surveyor is to the Interest of the Building Owner," Mr. Percy Gleed, R.A.S.I., for; Mr. S. L. Dale, A.R.I.B.A., against, 7 p.m.

CAMBERWELL SCHOOL OF ARTS AND CRAFTS.—Annual Exhibition of Students' Work at South London Art Gallery, closes at 10 p.m.

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS (Southampton Row, W.C.).—Mr. W. W. Watts' First Lecture on "The History and Development of English Silversmiths' Work," 6 p.m.

ROYAL SANITARY INSTITUTE.—Provincial meeting, Derby, at County Offices, St. Mary's Gate. Mr. G. H. Widdows, on "Derbyshire Elementary Schools: Principles of Planning," 7.30 p.m.

Saturday, February 26.

ROYAL SANITARY INSTITUTE.—Provincial meeting, Derby. Visits to Derbyshire County Schools at Langley Mill, Sandiacre and Long Eaton; also in Borough of Derby.

Monday, February 28.

THE ROYAL SANITARY INSTITUTE LECTURES.—Mr. E. J. Steegmann on "Elementary Science," 7 p.m.

R.I.B.A.—General and Business Meeting. Election of the Royal Gold Medallist. Election of members.

THE SURVEYORS' INSTITUTION. — Junior meeting. Mr. E. A. Rogers, on "Prospects in Municipal Surveying," 7 p.m.

Tuesday, March 1.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCHITECTURE. — Mr. Banister Fletcher on "Early Christian Architecture (A.D. 4th century to A.D. 6th century)," British Museum, 4.30 p.m.

INSTITUTION OF SANITARY ENGINEERS.—Students' lecture. Mr. Nandy Hoskins on "Sanitary Law," 7 p.m.

Wednesday, March 2.

CARPENTERS' HALL LECTURES.—Mr. C. F. A. Voysey, on "Castles in the Air," 7.30 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Council meeting, 7 p.m. Ordinary meeting, 7.30 p.m. Paper by Mr. Joseph Oswald.

THE ROYAL SANITARY INSTITUTE LECTURES.—Mr. E. J. Steegmann on "Elementary Science," 7 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. J. H. Stevenson on "Heraldry as Applied to Architecture," 8 p.m.

R.I.B.A.—Art Committee Meeting.

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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, Builders' Journal, Caxton House, Westminster.

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Ashford (Middlesex).—For new secondary school, for the Middlesex County Council. Mr. H. G. Crothall, architect.

A. Jordan	£9,752
G. Neal	9,600
Mattock Bros.	8,630
H. Knight and Son	8,599
W. Lacey	8,590
W. J. Dickens	8,495
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A. and B. Hanson	8,286
W. Lawrence and Son	8,248
A. Fairhead and Son*	7,985

*Recommended for acceptance.

Cardiff.—For extensions to Wesleyan Sunday schools, Cathays, Cardiff. Mr. Henry Budgen, F.R.I.B.A., architect, 95, St. Mary Street, Cardiff.

C. Totterdell	£1,484 3 0
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E. Turner and Sons	1,238 0 0
W. T. Morgan	1,234 0 0
Knox and Wells*	1,195 0 0
W. C. Ransom (withdrawn)	1,125 0 0

All of Cardiff.
*Accepted.

Chatham.—For erection of balconies at the Workhouse Infirmary, Chatham, for the Guardians of the Medway Union. Mr. E. J. Hammond, architect, Balmoral Road, Gillingham.

Wenham and Waters, Paragon Works, Works, Croydon	£1,171
West Bros., High Street, Rochester	1,039
A. G. Webb, Glencoe Road, Chatham	944
H. A. Phillips, Gillingham	785
F. J. Leonard, High Street, Rochester	789
G. Baker and Son, Pelican Wharf, Strood	774
H. E. Phillips, Barnsole Road, Gillingham	755
G. Gates and Son, Frindsbury, Rochester	725
A. E. Tong, Gravesend	670
J. Leech and Co.,* Gundulph Road, Chatham	629

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Exeter.—For alterations and additions to No. 1, Higher Summerlands, Exeter, for the Guardians. Mr. R. M. Challice, architect, 14, Bedford Circus, Exeter.

Westcott, Austin and White, Summerland Crescent, Exeter	£577 0 0
Ham and Passmore, 17, Sidwell Street, Exeter	550 0 0
Mr. T. Sleeman,* 68, Mount Pleasant Road, Exeter	497 10 0

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Exmouth.—For the new general post office and shops, Rolle Street, Exmouth. Ernest E. Ellis, architect, Exeter and Exmouth.

Yeo and Sons, Torquay	£5,798
Stephens and Bastow, Bristol	5,792
H. J. Gay Lang, Exmouth	5,780
Lacey, Exmouth	5,250
Wilkins, Bristol	4,775
Brealy, Exeter	4,668
Cooper and Son, Exmouth	4,340
Hayman,* Exmouth	4,322
Guyas, Bristol	4,300

*Accepted.

Frome.—For new chapel, for the Trustees of the United Methodist Chapel, Frome. Mr. W. S. Skinner, F.R.I.B.A., architect, 16, Baldwin Street, Bristol.

F. Chown, Wellington Street, St. Paul's	£1,370 0 0
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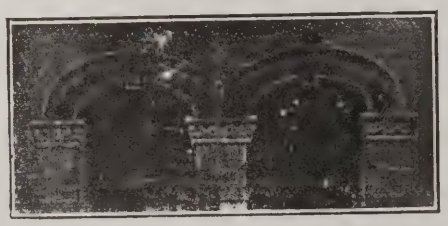
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Rest of Bristol.

(Tenders continued on page viii.)

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B

(Tenders continued from page vi.)

Hornchurch.—Accepted for the erection of a cottage residence, Woodland Avenue, Gt. Nelmes, Hornchurch, for Mr. Alfred Barber. Mr Walter Gray Ross, A.R.I.B.A., architect.
Walter Houghton, 7, Finsbury Square, E.C., £633.

Hornchurch.—Accepted for the erection of a detached house, Gt. Nelmes, Hornchurch, for Mr. J. H. Barber. Mr. Walter Gray Ross, A.R.I.B.A., architect.
Walter Houghton, £750.

Hull.—For the necessary work to be performed in alteration and additions to Wawne Street school. Mr. Joseph H. Hirst, city architect, Town Hall, Hull.

D. R. Robinson, Freehold Street	£3,420 0 0
Hull General Builders, Ltd., Lockwood Street	3,226 0 0
F. Southern, Wright Street	3,183 2 7
V. Knowles, St. James Street	3,150 0 0
G. Jackson and Sons, Witham	3,044 14 0
T. Goates and Sons, Brunswick-Avenue	2,981 0 0
Quibell, Son and Greenwood, Sculcoates Lane	2,974 10 0
J. T. Levitt, Holderness Road	2,959 15 4
J. H. Fenwick, Albert Avenue	2,900 0 0
F. Singleton, Bleakin Street	2,858 0 0
G. H. Panton, Anlaby Road	2,849 0 0
M. Harper,* 41, Brunswick Avenue	2,842 0 0

*Accepted.

London.—For construction of tramways from Brockley Road to Forest Hill, for the London County Council.

A. N. Coles, Paddington, W.	£54,275 8 6
W. Manders, Leyton	45,428 11 9
Kirk and Randall, Woolwich, S.E.	41,804 0 0
Dick, Kerr and Co., Ltd., Abchurch Yard, Cannon Street, E.C.	41,748 16 9
J. Mowlem and Co.,* Ltd., Westminster, S.W.	39,792 0 0

Chief Engineer's estimate, £42,607 1s. 2d.
*Recommended for acceptance.

London.—For erection of a temporary iron building at the rear of the premises of the L.C.C. Camden School of Art, Islington, N., for the London County Council.

Humphreys, Ltd., Knightsbridge	£667
J. Harrison and Co., Station Works, Denmark Road	657
J. McManus, 237, Hammersmith Road	590
W. Harbrow,* South Bermondsey Station	567

Architect's revised estimate, £560.
*Recommended for acceptance.

Llanwrtyd Wells.—Accepted for the erection of a new boarding house at Llanwrtyd Wells, for Mrs. Job. W. D. Jenkins, A.R.I.B.A., architect, George Street, Llandilo, S. Wales.
D. Howells and Son, St. Clears, Carmarthen, £1,270; lowest tender received out of 16.

Portsmouth.—For additions to the boys' secondary school, Victoria Road North, Southsea, in the borough of Portsmouth, for the Local Education Authority. Mr. A. H. Bone, architect, Cambridge Junction, Portsmouth.

E. W. Payne, 6, Munster Road, North End, Portsmouth	£9,550 3 0
W. Barnes, Ltd., 85, Palmerston Road	7,399 0 0
F. J. Privett, Cottage Grove	6,849 0 0
Wakeham Bros., Plymouth	6,782 0 0
J. Croad, Portland Street, Portsea	6,700 0 0
J. Tanner, Castle Road	6,593 0 0
J. Say and Co., Arundel Street	6,488 0 0
J. Saunders and Co., Ltd., Spring Lane, Bishopstoke, Hants	6,436 0 0
J. Crockerell, Victoria Road North	6,391 0 0
S. Salter, Yorke Street	6,221 0 0
H. Jones and Son,* Broad Street Rest of Southsea.	6,176 0 0

*Accepted.

Shrewsbury.—For alterations and additions to Vaughan's mansion, College Hill, Shrewsbury. Mr. A. E. Williams, architect, County Chambers, High Street, Shrewsbury.

W. Bowdler and Co.	£1,280 0 0
G. H. Bickerton	1,250 0 0
T. Morris and Sons	1,220 0 0
J. Pritchard	1,161 15 0
T. Pace*	1,160 0 0

*Accepted.

Southall (Middlesex).—For new cookery and manual training centres and extension of boys' sanitary offices at the Dudley Road and Featherstone Road Council schools, for the Middlesex County Council. Mr. H. G. Crothall, architect.

G. Neal	£1,710
H. Knight and Son	1,545
Fassnidge and Son	1,500
Brand, Pettitt and Co.	1,497
W. Brown	1,433
Dorey and Co., Ltd.	1,432
G. Bollom	1,430
W. Lacey	1,430
W. J. Renshaw	1,425
W. J. Dickens	1,422
Try and Hancock	1,398
A. and B. Hanson*	1,349

*Recommended for acceptance.

Sudbury (Middlesex).—For extension of the Sudbury Council schools, for the Middlesex County Council. Mr. H. G. Crothall, architect.

H. Woodbridge	£3,328
W. Lacey	3,089
J. and J. Bailey	2,950
J. Batchelor	2,862
W. J. Dickens	2,787
Tribe and Co., Ltd.	2,723
H. Knight and Son*	2,509

*Recommended for acceptance.

Late Contracts.

ROADS AND CARTAGE.

March 1. **BEACONSFIELD.**—Reconstruction of Station and Penn Road, Beaconsfield, for the D.C. Plans, sections, and specincation, may be seen at the office of the Surveyor to the Council, H. Sargeant, Baring Road, Beaconsfield, from whom forms of tender may be obtained on deposit of £5 5s. Tenders to be delivered to G. H. Charsley, Clerk to the Council, Beaconsfield.

March 4. **ROTHERHAM.**—Supply of granite and slag, to be delivered at the various railway stations within the district, from April 1, 1910, to March 31, 1911, for the R.D.C. Also for carting necessary in removing the above to the roads where required during the same period. Specincations and forms of tender may be obtained from R. Bradbury, District Surveyor, Imperial Buildings, Rotherham. Tenders to be delivered to Oxley and Coward, Clerks to the Council, 6, Westgate, Rotherham.

March 5. **STRETFORD.**—Paving with setts, granited rock, asphalts, etc., in the following streets and passages, for the U.D.C.:—Chorlton Grove, Chorley Street, Warwick Road North, passage 92,94, Taylor's Road. Drawings and specincations may be seen and forms of tender, with schedule of quantities and other particulars, obtained on application to Ernest Worrall, the Council's Surveyor, on deposit of £2 2s. (cheque). Tenders to be addressed to the Chairman of Highways, Council Offices, Old Trafford.

March 5. **DRIFFIELD.**—Supply for the year ending March 31, 1911, of the following materials, for the R.D.C.:—About 7,000 tons of whinstone; 2,500 tons of broken slag; 600 tons of sea cobbles; 300 tons of sea gravel; 150 tons of tarred chips, to be delivered at the several railway stations and wharves of the district. Particulars and forms of tender can be obtained on application to T. Casson Beaumont, C.E., Surveyor, Driffield, to whom tenders are to be sent.

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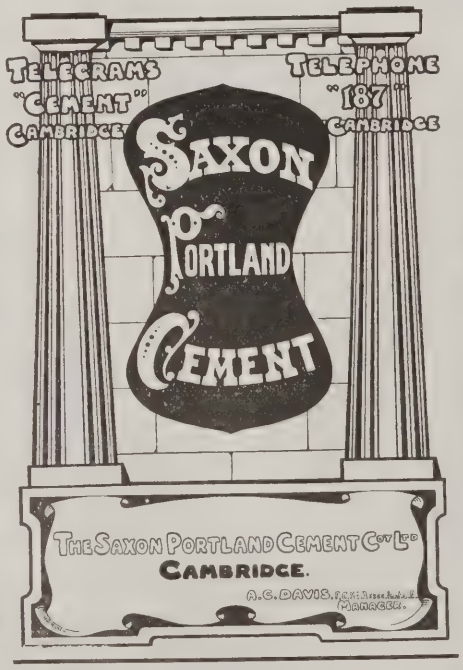
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COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about **five days** or longer after the date of this issue.
Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders.
The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Feb. 4—25. **BELLSHILL (Lanark).**—Erection of buildings to contain refuse destructor; also steel chimney stack; provision of water supply and drainage, and formation of access road and other relative works at Boggs Brae, near Bellshill, for the C.C. Plans may be seen, and copies of specification and schedule of measurement obtained at the office of W. L. Douglass, C.E., District Engineer, District Offices, Hamilton, on deposit of £1. An assistant engineer will meet intending contractors at Bothwell Bridge at 10.20 a.m., on Feb. 4. Tenders must be lodged with the Clerk to the Local Sub-Committee, James Forsyth, the Cross, Bellshill.

Feb. 16—March 8. **BIRMINGHAM.**—Erection of a Council school in Sladefield Road, Washwood Heath, for the Education Committee. Applications for forms of tender and bills of quantities may be made on or before Feb. 16, in the Finance Office at the Education Department, Edmund Street, Birmingham, accompanied by deposit of £2. Drawings may be seen in the Architect's Office at the Education Department. Tenders must be delivered to Jno. Arthur Palmer, Secretary of Education, Education Department, Edmund Street. Fair wages clause.

Feb. 17. **CLEATOR MOOR.**—Contractors willing to tender for the various works required in the erection of a new vicarage at Cleator Moor are requested to send their names, stating trades required, before above date, to J. H. Martindale, F.R.I.B.A., Architect, Eaglesfield Abbey Rooms, Castle Street, Carlisle.

Feb. 18. **MIDDLESBROUGH.**—Builders wishing to tender for the various works required in building new offices, 15, Albert Road, Middlesbrough, for A. H. Sill and Son, are requested to send in their name to Moore and Archibald, architects, 27, Albert Road, Middlesbrough, by above date, when bills of quantities will be supplied.

Feb. 21. **WOKING.**—Erection of a cottage in South Road, Horsell, Woking, for the U.D.C. Tenders are to be delivered to G. J. Wooldridge, Surveyor to the Council, Council Offices, Woking, from whom particulars may be obtained.

Feb. 21. **WATERLOO WITH SEAFORTH.**—Erection of the Rawson Road Council School, Seaforth, near Liverpool, for the U.D.C. Bills of quantities may be obtained from the undersigned upon deposit of £1 1s. Drawings and specifications may be seen at the office of Appleyard and Quiggin, Architects, No. 67, Lord Street, Liverpool. Tenders must be delivered to John I. Thompson, Clerk to the Council, Town Hall, Waterloo, near Liverpool.

Feb. 21. **WELLINGBOROUGH.**—Execution of the following works in connection with a scheme for water supply to the village of Isham, for the R.D.C.:—1, construction of brick water tower, fencing, and other works connected therewith; 2, supply of C.I. mains; 3, supply of valves, hydrants, and other fittings; 4, carting from station and excavation for and laying of mains, etc.; 5, supply, delivery, and fixing of 25,000-gallon C.I. tank and girders to carry same, etc.; 6, duplicate pumping plant, by wind and oil engine. Drawings and specification may be seen at the office of Sharman and Archer, Engineers, Wellingborough, where tenders must be delivered.

Feb. 21—March 5. **NORMANTON.**—Erection of new girls' school at Normanton, for the Governors. Plans and specifications may be seen, and quantities obtained, at the office of Arthur Hartley, architect, County Chambers, Castleford, to whom names must be sent by 21st inst. Tenders to be delivered to W. Norwood, Clerk to the Governors, Snow Hill View, Wakefield.

Feb. 22. **EDINBURGH.**—Raising existing car sheds, roofs, etc., at Henderson Row Cable Power Station for the Corporation. Specification and form of tender may be obtained from J. Walker Smith, Burgh Engineer, on deposit of £2 2s. by crossed cheque payable to Town Clerk. Tenders must be lodged with Thomas Hunter, W.S., Town Clerk, City Chambers, Edinburgh.

Feb. 22. **SHEFFIELD.**—Extensions and alterations of the training college for teachers, Collegiate Crescent, for the Corporation. Drawings and conditions of contract may be seen, and bills of quantities and forms of tender obtained, on application to the City Architect, Town Hall, Sheffield. Tenders to be delivered at the Education Office, Leopold Street, Sheffield. Fair wages clause.

Feb. 22. **HANDSWORTH (Birmingham).**—Erection of a new station at Handsworth, Birmingham, for the Great Western Railway. Plans and specification may be seen and forms of tender and bills of quantities obtained at the office of the New Works Engineer, at Paddington Station. Tenders to be sent to G. K. Mills, Secretary, Paddington Station, London.

Feb. 22. **LANDRAKE, CORNWALL.**—Alterations and additions to farm buildings at Lowertown, in the parish of Landrake, for the Small Holdings Committee of the Cornwall C.C. Plans, specifications, conditions of contract, and forms of tendering, on application to the County Land Agent, Public Rooms, Truro. Tenders to be sent to S. G. Carnell, County Land Agent, Public Rooms, Truro.

Feb. 22. **KELSO.**—Erection of a new post office at Kelso, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and conditions and form of contract, may be seen on application to the Postmaster of Kelso. Sketch plans may be seen and bills of quantities and forms of tender obtained at H.M. Office of Works, Parliament Square, Edinburgh, on deposit of £1 1s. Tenders must be delivered to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

Feb. 22—March 12. **SHREWSBURY.**—Erection of new secondary schools to accommodate 350 pupils, at Shrewsbury, for the Salop C.C. Plans, specifications, etc., prepared by Frank H. Shayler, F.R.I.B.A., and James A. Swan, joint Architects may be obtained at 16, Pride Hill. Shrewsbury. Names to the architects, accompanied by a deposit of £3 3s., by 22nd inst. Tenders must be delivered to W. H. Pendlebury, Secretary for Higher Education, Shirehall, Shrewsbury.

Feb. 23. **MERTHYR TYDFIL.**—Construction of a swimming bath at South Wales and Monmouthshire Truant School. Plan and specification can be seen at the office of C. M. Davies, Architect, High Street, Merthyr. Tenders to be sent to the Secretary, E. Stephens, Town Hall, Merthyr Tydfil.

Feb. 23. **CROSLAND MOOR.**—Erection of new pattern works for David Brown and Sons (Ltd.), Park Gear Works, Crosland Moor. Plans may be seen and bills of quantities obtained of J. Berry, Architect and Surveyor, 3, Market Place, Huddersfield, to whom tenders are to be sent.

Feb. 23. **COOLINE (near Charleville, Ireland).**—Erection of a residence at Cooline, near Charleville, according to plans and specification, which may be seen at the offices of W. H. Hill and Son, 28, South Mall, Cork, and also with Jas. Murphy, Cooline. Tenders to be lodged with the Architects.

Feb. 23. **THORNE (Yorks).**—Alterations and additions to the workhouse infirmary, for the Guardians. Particulars and specifications may be obtained from Harold Forster, Architect, North Field, Thorne. Tenders to be sent to George H. Newborn, Clerk, Union Office, Thorne.

Feb. 23. **CLIFFORD (near Hay).**—Additions and alterations to the Council School, at Clifford, near Hay, for the Herefordshire County Council. Plans and specifications may be seen and bills of quantities and form of tender obtained at the office of the County Surveyor, Shirehall, Hereford, on deposit of £1 1s. Tenders to be delivered to John Wiltshire, County Education Secretary, Education Office, Shirehall, Hereford.

Feb. 23. **SEAHAM HARBOUR.**—Builders desirous of tendering for the first portion of a new church at Dawdon, Seaham Harbour, may inspect the plans and specification on application at the Londonderry Offices (Architect's Department), Seaham Harbour, up to above date. Quantities may be obtained from W. Morton, Quantity Surveyor, 45, John Street, Sunderland. Tenders to be sent to C. Hodgson Fowler, F.S.A., Architect.—The College, Durham.

Feb. 23. **CARDIFF.**—Erection of (1) proposed gun sheds and stores in Dumfries Place, Cardiff, for the Royal Field Artillery, and (2) carrying out extensive repairs and renovations to the drill hall buildings, Dumfries Place, Cardiff. Plans and specification may be inspected at the office of the Architect, W. H. Dashwood Caple, F.R.I.B.A., 2, Church Street, Cardiff, who will supply copies of the bills of quantities and schedules of dilapidations on deposit of £1 1s. each. Application for quantities and schedules to be made by 9th inst. Tenders to be delivered to Capt. C. Wilkie, Secretary, 20, Dumfries Place, Cardiff.

Feb. 24. **LINDLEY.**—Erection of a two storey warehouse, for F. Peckett and Sons (Ltd.), Portland Mills, Lindley. Plans may be seen and bills of quantities obtained of J. Berry, Architect, Surveyor, and Valuer, 3, Market Place, Huddersfield, to whom tenders are to be sent.

Feb. 24. **LONDON, E.**—Alterations in the building used as a kitchen at the Workhouse in Bancroft Road, Mile End, London, E., for the Guardians. Forms of tender, with specifications, may be obtained upon application to Benjamin Catmur, Clerk to the Guardians, Guardians' Offices, Bancroft Road, Mile End, E. Fair wages clause.

Feb. 25. **ST. DENNIS (Cornwall).**—Erection of a dwelling-house and shops at Fore Street, St. Dennis, for T. Varcoe. Drawings and specification may be seen at the office of B. C. Andrew, M.S.A., Architect, Biddock's Court, St. Austell, to whom tenders are to be sent.

Feb. 25. **WALBERSWICK (Suffolk).**—Persons desirous of tendering for the erection of a Primitive Methodist Church at Walberswick can inspect plans and specification and receive copy of the quantities on application to A. F. Scott, architect, 24, Castle Meadow, Norwich, or N. R. Etheridge, Blythburgh Lodge. Tenders to be delivered to Rev. A. T. Wardle, Halesworth.

Feb. 25. **WELLINGTON (Salop).**—Erection of public baths, for the U.D.C.:—1, for erecting the baths; 2, for heating and warming. Plans can be seen (on production of specification and quantities, on application to Geo. Riley, Surveyor to the Council, 14, Walker Street, Wellington, Salop. Specification and quantities can be obtained on deposit of £2 2s., from J. W. Littlewood, Clerk to the Council, Bank Chambers, Wellington, Salop.

Feb. 25. **FELIXSTOWE AND WALTON.**—Fixing meters and execution of builders' work, for the U.D.C. Specifications and general conditions and forms of tender may be obtained at the offices of the Consulting Engineer, Reginald P. Wilson, 66, Victoria Street, Westminster, S.W., on deposit of £1 1s. Tenders endorsed "Fixing Meters" or "Builders' Work" must be addressed to F. B. Jennings, Clerk to the Council, Town Hall, Felixstowe.

Feb. 28. **LONDON.**—Execution of artificers' work at Salisbury Plain (Western Section), for one year from April 1, 1910, for the War Department. Forms of tender, conditions of contract, and all necessary information may be obtained on application by letter to the Commanding Royal Engineer, Royal Engineer Office, "C" Lines, Bulford Camp. Tenders are to be forwarded to the Director of Army Contracts War Office, Whitehall, London, S.W.

Feb. 28. **NEWBURN.**—Erection of proposed Council Offices at Newburn, for the U.D.C. Drawings, bills of quantities, and conditions of contract may be seen and form of tender obtained at the office of Edward Cratney, Architect, 88, Station Road, Wallsend, by whom bills of quantities will be supplied on deposit of £2 2s. Tenders, addressed to the Chairman of the Newburn U.D.C., Clerk's Office, 1, Mosley Street, Newcastle, must be delivered to George Wilkinson.

Feb. 28.— **MERTHYR TYDFIL.**—Erection of twenty-two terrace houses in three blocks and six pairs of semi-detached villas, together with the construction of roads, sewers, and surface water drains, on the Meyrick Estate, Gwaelodygarth Field, Merthyr Tydfil, for the Grove Building Club. Drawings and specifications can be seen and forms of tender obtained at the office of T. Edmund Rees, Architect and Surveyor, Merthyr Tydfil. Tenders to be sent to Martin Evans, Solicitor, High Street, Merthyr Tydfil.

Feb. 28. **DARTFORD.**—Construction of an open-air swimming bath, for the U.D.C., in accordance with plans and specification, which may be seen at the office of the Surveyor, Council Offices, Dartford. Tenders must be delivered to W. Kay, clerk, Council Offices, Dartford.

Feb. 31. **MIDDLESBROUGH.**—Builders desiring to tender for the various works required in alterations to 59½, Linthorpe Road, Middlesbrough, can obtain particulars from Moore and Archibald, architects, 27, Albert Road, Middlesbrough.

March 1. **COLWYN BAY.**—Erection of a temporary pavilion for the Royal National Eisteddfod of Wales. Those desiring to tender are requested to send their names and addresses to Darbyshire and Smith, Architects, 17, Brazennose Street, Manchester, not later than March 1.

March 1. **CHESTER.**—Alterations and additions to a public elementary school in Victoria Road, Chester, for the Corporation. Plans and specifications can be seen at the office of the Architect, Philip H. Lockwood, St. Werburgh Street, Chester, and quantities obtained on deposit of £1. Tenders are to be sent to J. H. Dickson, Town Clerk, Town Hall, Chester.

March 1. **EPSOM.**—Supplying and fixing complete (including all builder's and other work) a self-registering 10-ton weighbridge, of the size of 12ft. by 7ft. in the roadway at the Workhouse, Epsom. Further particulars can be obtained on application to the Master of the Workhouse. Tenders, on forms to be obtained of Alick G. Ebbutt, Clerk, must be delivered at the offices of the Guardians, "Gynsdale," Waterloo Road, Epsom.

March 3. **PENDLETON.**—Structural alterations at the Union Infirmary, Hope, Pendleton, for the Salford Union. Specification and all particulars may be obtained from H. Lord, F.R.I.B.A., 42, Deansgate, Manchester, on deposit of £2. Tenders must be delivered to F. Townson, Clerk to the Guardians, Union Offices, Eccles New Road, Salford.

March 4. **WAKEFIELD.**—Execution of the following works, for the West Riding Education Committee: Saddleworth Uppermill New School (builder, joiner, slater, plasterer, plumber, painter, road maker). Plans may be seen, and specifications with quantities obtained, on application to the Education Architect, County Hall, Wakefield. Deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders to be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

March 5. **DISS.**—Erection of new stables, with fire engine house and harness house, in the Council's yard, in Chapel Street, for the U.D.C. Plans may be seen, and specifications obtained on deposit of 5s. Tenders must be sent to Alfred Cooper, Surveyor, The Terrace, Diss.

March 5. **SALE.**—Erection of a new County high school for girls at Sale, for the Chester C.C. Plans and specifications can be seen at the office of H. Beswick, F.R.I.B.A., County Architect, Newgate Street, Chester, and quantities obtained on deposit of £2. Tenders are to be delivered to W. Egerton Smith, F.C.A., Clerk to the Governors, 46, Brown Street, Manchester.

March 5. **NEW ROSS.**—Sanitation and alteration to Workhouse, comprising:—1, drainage and water supply; 2, erection and completion of sanitary annexes, etc.; 3, plumbing and hot water circulation; 4, erection of a new kitchen and annexe at the fever hospital, for the Union. Plans and specifications may be seen at the Boardroom, New Ross, and at the office of the Architect, J. A. Ryan, 33, Catherine Street, Waterford. Forms of tender are to be obtained from P. A. Pope, Clerk of the Union, New Ross, to whom tenders are to be sent.

No date. **BALLYMENA.**—Erection and completion of proposed parochial house, Ballymena, County Antrim, for Very Rev. T. O'Donnell, P.P., V.F. Plans, specification, and particulars of the work can be obtained at the office of Moore and Flanigan, Architects, 35, Royal Avenue.

No date.—**STON EASTON (near Bath).**—Erection of two or more blocks of cottages at Old Down, Ston Easton, near Bath, for J. Henry Iles. Builders desiring to tender should send their names to William F. Bird, M.S.A., Architect, Midsomer Norton, Somerset., and bills of quantities, with forms of tender, may be obtained on application. Plans and specifications will be deposited at the office, also at the office of the Emborough Stone Co., Ltd., Emborough.

ENGINEERING.

Feb. 22. **LONDON, S.W.**—The Sec. of State for India in Council is prepared to receive tenders to supply woodworking machinery. Conditions of contract may be obtained on application to the Director-General of Stores, India Office, Whitehall, S.W.

Feb. 22. **LONDON.**—Road work and platelaying required for the construction on the underground conduit system of the Council's tramways in Mitcham Lane and Southcroft Road, and in Wimbledon Road, and paving works for street widenings, for the L.C.C. The route is equivalent to about 3.63 miles of single track. The contractor will be required to use the track rails with fastenings, slot rails, and conductor rails, and the special work for the crossovers, etc., which will be provided by the Council under other contracts, but all the remaining metal work and other materials will be included in the contract. Persons desiring to submit tenders may obtain specification, bills of quantities, form of tender, and other particulars on application to the Chief Engineer of the Council, Maurice Fitzmaurice, C.M.G., at the County Hall, Spring Gardens, S.W., upon payment to the cashier of the Council of £5 deposit. Full particulars may be obtained on application at the County Hall before payment of fee. Tenders to be delivered at the County Hall, addressed to the Clerk of the London County Council, Spring Gardens, S.W. Fair wages clause.

Feb. 23. **HOLLINGBOURN.**—Construction of two new culverts at Hawkesbury, in the parish of Headcorn, for the R.D.C. Drawings and specifications can be seen on application at 33, Earl Street, Maidstone. Tenders to be sent to H. J. Breacher, Clerk, 33, Earl Street, Maidstone.

Feb. 28. **WIMBLEDON.**—Supply and execution during the year ending March 31, 1911, of the following materials, works, etc., for the Corporation:—1, engine room stores; 2, cables and earthenware conduits 3, joint boxes and jointing materials; 4, transformers; 5, meters and prepayment meters; 6, oils; 7, incandescent electric lamps and accessories; 8, flame arc carbons; 9, castings; 10, firebricks and fireclay. Forms of specification and tender, with conditions of contract, may be obtained, and samples inspected on application to the Borough Electrical Engineer, Electric Light Works, Durnsford Road, Wimbledon. Tenders to be delivered to A. Steele Sheddon, Town Clerk, Wimbledon.

March 7. **BUCKIE, N.B.**—Construction of an extension of the Buckie (Cluny) Harbour, and the improvement of the existing harbour, for the T.C. The work includes the construction of concrete piers and quays, rock excavation, dredging, etc. Contract drawings, terms, and conditions of contract, specification, and bills of quantities, may be seen on application to the undersigned, or at the office of the Engineer to the Council, W. T. Douglas, 15, Victoria Street, Westminster, S.W. Copies of the form of tender, terms and conditions of contract, specification, and bills of quantities, may be obtained on application to the Engineer upon deposit of £3 3s. Copies of certain of the plans may be obtained from the Engineer on payment of 10s. 6d., which is non-returnable. Tenders to be delivered to John L. M'Naughton, Town Clerk, 4, Cluny Square, Buckie, N.B.

IRON AND STEEL.

Feb. 22. **LONDON.**—Supply of (1) crossings and switches; (2), rails; (3) fishplates, for the Secretary of State for India. Conditions of contract may be obtained on application to the Director-General of Stores, India Office, Whitehall, S.W., to whom tenders are to be delivered.

Feb. 22. **SOUTHALL NORWOOD.**—Supplying and fixing entrance gates and wrought-iron unclimbable fencing, and other appurtenant works at Southall Park, for the U.D.C. Drawings and specification may be seen and forms of tender and all information obtained of Reginald Brown, A.M.Inst.C.E., F.S.I., Engineer and Surveyor to the Council, Public Offices, Southall, Middlesex. Tenders must be delivered to the Clerk of the Council.

Feb. 22. **NEWPORT, ISLE OF WIGHT.**—Supply of (1) 30 yards of 12in. cast-iron spigot and socket pipes and other special castings, delivered at the Town Quay; (2) carting pipes from the Town Quay, Newport, to the waterworks, and excavation for and laying of same from the pumping station to the new main adjoining, at Carisbrooke, and supply of valves, hydrants, etc., for the Corporation. Plan may be seen and specifications and conditions of contract, together with form of tender and drawings of special pipes, obtained on application to T. Ross Pratt, Town Clerk, Town Clerk's Office, 19, Quay Street, Newport, I.W., to whom tenders are to be sent.

(Continued on next page.)

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Feb. 24. **LEEDS.**—Supply of:—1,100 tons of rails, B. Eng. S. S. No. 4; 500 soleplates; 500 pairs of fishplates; 12 pairs of points; 11 crossings; 2 layouts; 40 tons of tie bars, 1,800 tons of cement; for the Corporation. Conditions of contract and tender forms may be obtained on application to J. B. Hamilton, General Manager, Tramways Offices, City Square, Leeds. Tenders to be delivered to R. E. Fox, Town Clerk, Town Hall, Leeds.

March 15. **MANCHESTER.**—Supply of:—Manual valves, 40ins. and 36ins. diameter; automatic valves, 36ins. diameter; reflux valves, 40ins. diameter; sluice valves from 18ins. to 3ins. diameter; air valves; and miscellaneous ironwork, for the Corporation. Specification and form of tender may be obtained on application to G. H. Hill and Sons, Civil Engineers, Albert Chambers, Albert Square, Manchester, and 3, Victoria Street, Westminster, upon receipt of cheque deposit £2 2s. Tenders addressed to the Chairman of the Waterworks Committee, must be forwarded to the Secretary, Waterworks Offices, Town Hall, Manchester.

PAINTING.

Feb. 21. **NOTTINGHAM.**—Execution of external painting:—1, golf and cricket pavilions, Bulwell Forest; 2, cricket pavilion and tool shed, Meadows Recreation Ground; for the Public Parks Committee. Copies of the bill of quantities and form of tender may be obtained from the office of the City Architect, Frank B. Lewis, Guildhall, on deposit of £1 1s. each contract. Tenders to be delivered to J. A. H. Green, Town Clerk, Guildhall. Fair wages clause.

March 1. **LARBERT.**—Painting and decorating the Dobbie Hall, Larbert, for the Council. Specifications may be had on deposit of 10s., from Alex Smith, Clerk, Larbert, to whom tenders are to be sent.

PLUMBING AND SANITARY

Feb. 21. **SEAFORD.**—Provision of, and laying on the foreshore of about 134 yards of 24in. and of 112 yards of 18in. cast-iron pipes, including all piling required in the duplication and extension of the sea outfall sewer. Construction in the town of about 1,379 yards of steel-ribbed concrete tube sewers, from 27 to 18in. dia.; 1,977 yards stoneware pipe sewers, from 12 to 6in. dia.; 867 yards cast-iron pipe sewers, from 27 to 9in. dia.; with the construction of manholes, flushing and ejector chambers, and additions to the engine house. Supply and erection of boilers, air compressors, and Shone's ejectors, and the provision and laying of about 543 yards of cast-iron rising main and 780 yards of air main, together with all incidental works, for the U.D.C. Drawings and specifications may be seen at the offices of the Council, or at the offices of the Engineers, Pollard and Tingle, 31, Old Queen Street, Westminster.. Form of tender can be obtained only from W. H. Pawson, Clerk to the Council, 3, Clinton Place, Seaford, on deposit of £5 5s. Bills of quantities can be obtained only from the Engineers upon production of form of tender. Tenders are to be delivered at the Council's Offices.

Feb. 22. **GUISELEY.**—Making about 162 yards of 12in. stoneware pipe sewer, with manholes and appurtenances, from the bottom of Union Street, Guiseley, for the U.D.C. Plans and specification may be seen, and bills of quantities and full particulars obtained, on application to Joe Battye, Surveyor, Town Hall, Guiseley, on deposit of 10s. Tenders must reach M. Rennard, Clerk to the Council, Guiseley, near Leeds.

Feb. 24. **BIRMINGHAM.**—Construction of about 2¼ miles of 9in. to 21in. stoneware pipe sewers, 500 yards of 2ft. 6in. to 4ft. diameter brick and concrete sewers, together with an overflow chamber and manholes, in the Floodgate Street, and Macdonald Street areas of the city, and in the neighbourhood of Cannon Hill Park, for the Corporation. Plans and specification may be seen and quantities and forms of tender obtained on deposit of £2 at the office of Henry E. Stilgoe, M.Inst.C.E., City Engineer and Surveyor, the Council House, Birmingham. Tenders to b eaddressed to the Chairman of the Public Works Committee. Fair wages clause.

Feb. 24. **FARNHAM.**—Provision, laying, and jointing of about 7,000 yards of 9in. stoneware pipe sewers, together with manholes, lampholes, and flushing chambers; also construction of liquefying tanks, four circular bacteria beds, sedimentation tank, sludge well, pump house, and other works; for the R.D.C. Drawings and specification may be seen, and bills of quantities obtained of the engineers, Willcox and Raikes, 63, Temple Row, Birmingham, on deposit of £3 3s. Contractors can also see copies of drawings and specification at 15, Victoria Street, Westminster, S.W. Tenders to be delivered at the office of Ernest Crundwell, Clerk, Farnham, Surrey.

Feb. 25. **BANFF.**—Supplying, laying, and jointing about 430 lineal yards of fire-clay sewer pipes, with manholes, gully tanks, and about 425 lineal yards of cast-iron water pipes, with fire hydrants, and street wells, for the District Committee. Plans and specifications may be seen with the subscriber, or with James Barron, M.Inst.C.E., 216, Union Street, Aberdeen, from whom schedules of quantities can be obtained on deposit of £1. Offers to be lodged with James Grant, District Clerk, 23, Castle Street, Banff.

Feb. 25. **WALLINGFORD.**—Extension of the Didcot Sewage Farm, including the construction of a concrete carrier, together with valves, etc., for the R.D.C. Plan and details may be seen, and copies of specification, bill of quantities, and form of tender obtained at 7, St. Martin's Street, Wallingford, Berks, upon deposit of £1 1s. Tenders to be delivered to G. F. Slade, Clerk to the R.D.C., 7, St. Martin's Street, Wallingford.

Feb. 25. **BANFF (Scotland).**—Supplying, laying, and jointing of about 430 lineal yards of fireclay sewer pipes, with manholes, gully tanks, and about 425 lineal yards of cast-iron water pipes, with fire hydrants and street wells, for the District Committee. Plans and specifications may be seen with James Grant, District Clerk, 23, Castle Street, Banff, or with James Barron, M.I.C.E., 216, Union Street, Aberdeen, from whom schedules of quantities can be obtained on deposit of £1.

Feb. 28. **ALNWICK.**—Execution of the following works, for the R.D.C.:—1, providing and laying about 1,800 yards of 4in. sanitary pipes, in 3ft. lengths, and construction of open reservoir to hold 50,000 gallons, near Shilbottle Wood House; 2, furnishing and laying about 1,006 yards 3in. cast-iron socket pipes and fittings from Heather Leazes to Warkworth. Plans and specifications may be seen at the office of the Rural District Council, Alnwick, and copies at 94, Queen Street, Amble. Tenders to be delivered to the Clerk, H. W. Walton, Alnwick.

March 2. **PRESTWICH.**—Work and materials required in the construction of No. 6 distributing chambers, No. 6 percolating beds, supply main, etc., in accordance with the detail drawings, specification, and instructions of the engineer, Sydney H. Morgan, A.M.Inst.C.E., for the U.D.C. Drawings may be seen and copies of the specification, bill of quantities, and general conditions of contract obtained at the office of Sydney H. Morgan, A.M.Inst.C.E., the Council Offices, Prestwich, Lancashire, upon deposit of £2 2s. Tenders must be sent to Lewis A. Ortord, Law Clerk to the Council, Council Offices, Prestwich.

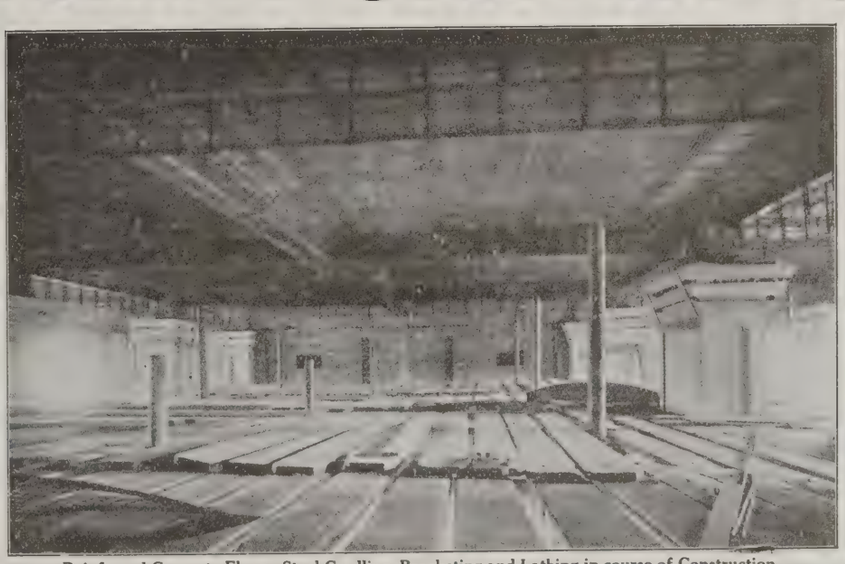
March 19. **HALIFAX.**—Construction of fourteen percolating filters (8 90ft. and 6 85ft. diameter), at the sewage disposal works, for the Corporation:—22, excavators', masons', and bricklayers' work; 23, cast-iron pipes and sluice valves; 24, distributors (revolving); 25, filtering medium; 26, unloading and filling filtering medium. Plans and specifications may be seen and forms of tender obtained on application to James Lord, M.I.C.E., Borough Engineer, Town Hall, Halifax, upon deposit of £10 for each set of quantities. Tenders must be sent to Herbert Ashling, Town Clerk. Fair wages clause.

(*continued on next page.*)

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March 4. **LONDON (for Malta).**—Supply of stoneware pipes and specials, for the Receiver-General and director of Contracts, Valletta, at whose omce tenders will be received. Tenders are to be accompanied with a deposit of £300, to be made in the Office of the Crown Agents by tenderers residing in Great Britain not having a representative in Malta. Particulars, specification, etc., may be obtained on application at this office or to the Crown Agents for the Colonies, Whitehall Gardens, London.

March 14. **STANHOPE.**—Laying 3,160 yards or thereabouts of main sewer and the construction of tanks, filters, and irrigation area for sewage disposal purposes at Stanhope, for the U.D.C. Plans and specifications may be seen and quantities and forms of tenders and other information obtained on application to the Council's Engineer, J. S. Parker, A.M.I.C.E., Post Office Chambers, St. Nicholas Square, Newcastle-on-Tyne, or the Council's Surveyor, J. R. Ridley, Town Hall, Stanhope. Deposit of £1 required. Tenders should be sent to F. H. Thompson, Clerk to the Council, Stanhope.

ROADS AND CARTAGE.

Feb. 21. **CHARD.**—Execution of works of levelling, paving, metalling, channelliug, and making good Cambridge Street, in accordance with the plans, sections, and specifications, which may be seen at the office of the Borough Surveyor, where tender forms may be obtained, on deposit of £1. Tenders must be delivered to J. A. Forward, Town Clerk.

Feb. 21. **CHERTSEY.**—Construction of a new road at Fowler's Well, Burrowhill, in the parish of Chobham, about 150 yards in length and 36ft. in width, including drainage, kerbing and paving complete, for the R.D.C. Plan, specification, and conditions of contract may be seen by appointment at the Surveyor's Office, Chobham. Tenders must be delivered to 80, Guildford Street, Chertsey.

Feb. 21. **ROMFORD.**—Construction of about 550 yards of 12in stoneware pipe sewer, and making-up the following private streets at Chadwell Heath, Dagenham, for the R.D.C.:—Albany Road, Gordon Road, Hainault Road, Whalebone Grove, Whalebone Avenue. Drawings and specifications may be seen and forms of tender and quantities obtained on application to W. J. Grant, Surveyor to the Council, Victoria Chambers, Romford, on deposit of £2 2s. (cheque). Tenders must be delivered to William Smith, Clerk to the Council, 13, North Street, Romford.

Feb. 21. **PORTSMOUTH.**—Providing and laying block asphalte pavement in Queen Street, Portsea, and part of King's Road, Southsea, and maintaining in thorough repair for two years from the completion, for the Corporation. Form of tender, specification, and schedule of prices may be obtained on application to the undersigned at the Town Hall, Portsmouth, on deposit of £2 2s. Tenders to be sent to G. Hammond Etherton, Town Clerk, Town Hall, Portsmouth. Fair wages clause.

Feb. 21. **CAMBERWELL.**—Kerbing, channelling, foundations for asphalt paving, and road work, in Ruskin Walk (part of), Half Moon Lane, for the Corporation. Specification and form of tender can be obtained from William Oxtoby, Borough Engineer, Town Hall.

Feb. 21. **EAST GRINSTEAD.**—Supply of materials to be delivered free to railway stations in the District before Oct. 1, for the R.D.C. Forms of tender will be sent on receipt of a stamped addressed foolscap envelope. Tenders must be sent to Francis S. White, Clerk to the Council, East Grinstead. Samples of materials required must be delivered carriage paid to the Board Room, Union Workhouse, East Grinstead.

Feb. 22. **WOODFORD.**—Supply of small granite and granite chippings, tar, pitch, and creosote oil, for the U.D.C. Particulars and forms of tender may be obtained from William Farrington, Surveyor to the Council, Council Offices, Woodford Green, Essex, to whom tenders are to be sent.

Feb. 22. **SALFORD.**—Sewering, paving, and flagging works, for the Corporation. Plans may be seen and forms of tender, with quantities, obtained at the Borough Engineer's Office, Town Hall, Salford. Tenders must be delivered to L. C. Evans, Town Clerk, Town Hall, Salford.

Feb. 22. **LEWISHAM.**—Supplying and laying creosoted deal blocks in roadways, Brockley Road, to Forest Hill, for the Corporation. Plans, specification, and conditions may be seen, and forms of tender obtained at the Town Hall Catford (Surveyor's Department). Copies of the specification may also be had on payment of 5s. (not returnable). Tenders must be delivered at the Town Hall. Fair wages clause.

Feb. 22. **DUNDEE.**—Supply of the following materials, for the Water Commissioners;—750 tons Portland cement, British manufacture; 1,400 tons sand; 600 tons gravel; 900 tons clay. Specifications and forms of tender may be had on application to George Baxter, Engineer and Manager, 93 Commercial Street, Dundee. Offers should be lodged with Wm. H. Blyth Martin, Clerk of the Commissioners, City Chambers, Dundee.

Feb. 22. **ALTRINCHAM.**—Supply of the following materials, for the U.D.C.:—Macadam, granite setts, granite chippings, concrete flags, Rochdale flags, kerbs and setts, and limestone chippings, for the twelve months ending March 31, 1911. Forms of tender may be obtained on application to the Surveyor, H. E. Brown, Town Hall, Altrincham. Tenders are to be sent to the Chairman of the Highways Committee, Town Hall, Altrincham.

Feb. 22. **LONDON (for Kent).**—Laying Kentish rag tar paving at Council schools under the administration of the Kent County Council, also carrying out any repairs to tar paving, for the Kent Education Committee. Specification and form of tender will be sent on deposit of £1, on application to Fras. W. Crook, Secretary, Caxton House, Westminster, S.W., to whom tenders are to be sent. Firms tendering must submit particulars of their quarries (which must be situated in Kent) and the material must be manutactured in the county.

Feb. 23. **WESTHAMPNETT.**—Supply and delivery of 3,540 cubic yards of clean surface field flints, and 10,840 cubic yards of best quality hard pit gravel, at per cubic yard, to be delivered to depots in the respective parishes, for the R.D.C. The whole of the material must be delivered at such times as the Council or the Surveyor may direct. Tenders to be delivered to William Parker Cogan, Clerk to the Council, 5, South Street, Chichester.

Feb. 24. **CROYDON.**—Supply (among other materials) of the following, for the R.D.C.:—1, broken granite; 2, hand-picked flints, dug flints, and fine gravel; 3, tar paving material and tar paving work; 4, kerbing, pitching, and channelling; 5, lime for sewage disposal purposes; 7, Portland cement; 11, stoneware pipes and gullies.—Forms of tender, specifications, and conditions of contract can be obtained on application to Ernest John Gowen, Clerk, District Council Offices, Katherine Street, Croydon, and samples of tools, etc., can be seen at the Vestry Hall, Mitcham, and any other particulars obtained by applying to the Surveyor, Council Offices, Katherine Street, Croydon, or Vestry Hall, Mitcham. Tenders must be delivered at the Council Offices, Croydon.

Feb. 25. **MERTON.**—Making-up the undermentioned, private streets, for the U.D.C.:—Chatsworth Avenue, Oxford Avenue, Carlton Park Avenue (Southern end). Plans, sections, and specifications may be seen, and forms of tender obtained, on deposit of £2, on application to G. Jerram, Surveyor, Council Offices, Merton. Tenders must be delivered to C. J. Mountfield, Clerk, District Council Offices, Kingston Road, Merton, Surrey.

(Continued on next page.

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Feb. 28. **TENTERDEN (Kent).**—Supply of granite or other approved macadam, and Kent rag stone; carriage and steam rolling of the above; mason's work in the Borough, for the Corporation. Particulars and forms of tender may be obtained of W. L. C. Turner, Borough Surveyor, Tenterden, to whom samples should be sent. Tenders to be sent to J. Munn Mace, Town Clerk, Tenterden, Kent.

Feb. 28. **STREATHAM.**—Making-up and paving of part of Greyhound Lane, Streatham, for the Corporation of Wandsworth. Specification and drawings may be seen and forms of tender obtained at 56, East Hill, Wandsworth, S.W., upon deposit of £5 5s. Tenders must be delivered at the Council House, East Hill, Wandsworth, S.W. Fair wages clause.

Feb. 28. **LITTLE HULTON.**—Supply of broken granite, grit setts, granite and limestone chippings, grit kerbs, artificial flags, stoneware pipes, and gullies, cement, steam road rolling, and scarifying, disinfectants, pitch, and oil, for the U.D.C. Forms of tender and particulars can be obtained from the undersigned. Tenders are to be delivered to James H. H. Heyes, Clerk, Council Offices.

Feb. 28. **YEOVIL.**—Supply, delivery, and laying of Keinton and other stone paving, kerbing, water table, and block pitching, at Yeovil, for the Corporation; also for the supply of flints (hand picked and quarried), broken granite and basalt, gravel, and asphalte, during the one or three years ending March 31, 1911 or 1913 respectively. Copies of specifications and forms of tender may be obtained of A. Oddy, Borough Surveyor, Municipal Offices, Yeovil, to whom tenders are to be sent.

Feb. 28. **CLAYPOLE.**—Supply of about 2,200 tons of granite and 2,500 tons of slag, for the R.D.C., to be delivered as the Council or the District Surveyor shall require and direct. Tenders to be delivered to A. J. Franks, Clerk, Union Offices, 24, Lombard Street, Newark. Samples must be delivered free of expense at the Board Room, The Ossington, Newark. Further particulars may be obtained upon application to the District Surveyor, F. C. Meyrick, Beckingham Rectory, Newark, upon receipt of a stamped addressed foolscap envelope.

MISCELLANEOUS.

Feb. 21. **BECKENHAM.**—Supply of the following, among other, materials:—Cement and lime; disinfectants; flints, field; flints, pit, gravel, and sand; granite, Guernsey; ironwork; oils and colours; oils: crank, chamber, and cylinder; pitch; stoneware goods; stores: general; tar paving. Particulars and conditions and forms of tender may be obtained on application at the Council Offices. Tenders to be sent to F. Stevens, Clerk of the Council. Fair wages clause.

Feb. 21. **FINSBURY.**—Supply of the undermentioned articles (among others) from March 31, for the Corporation, for twelve months:—Blacksmiths' work; castings; gasfittings, etc.; granite, patent stone, etc.; Portland cement and lime; sand, ballast, etc.; stoneware goods; timber; wood paving blocks; York paving. Particulars and forms of tender may be had on application at the Borough Surveyor's Department, Town Hall, Rosebery Avenue, E.C. Tenders must be delivered to George Whitehead Preston, Town Clerk, Finsbury Town Hall, Rosebery Avenue, E.C.

Feb. 21. **SOWERBY BRIDGE.**—Supply of the following for the Sowerby Bridge and Luddenden Foot gasworks:—Retorts, firebricks, fireblocks, fireclay, etc., setting retort per bench, lining furnaces, sulphuric acid, special castings, wrought-iron tubes, brass main gas cocks, hand-picked Buxton lime, medium red oxide paint ground in oil; also old scrap iron and brass. Tenders, specifications for which can be obtained with any further information, on application to A. W. Bissell, Engineer, Gasworks, Sowerby Bridge, to be sent to R. W. Evans, Solicitor and Clerk to the Council, Commercial Bank Chambers, Halifax.

Feb. 22. **YORK.**—Supply of the following articles during year ending March 31, 1911, for the Corporation: — Portland cement; building lime; sewage lime; pipes (stoneware); pitch and creosote oil; sludge press cloth; stone flags, landings, and setts; kerbing, edging, and channelling; whinstone (broken and rough), slag, (broken and rough), and limestone chippings. Forms of tender will be supplied upon application to F. W. Spurr, City Engineer, Guildhall, York, to whom tenders are to be sent.

Feb. 23. **BELFAST.**—Supply of the following stores (among others) and work for a year, commencing April 1, 1910, for the Corporation:—Earthenware sewer pipes, timber and slates, hardwood, iron castings, plumber work, nails, etc.; iron and steel, paints and oils, glazing, mill furnishings, glazed bricks artificial flags, lime, pitch, felt, tar, etc.; cement. Forms of tender and particulars may be obtained at the Office of the Superintendent of Works, City Hall. Tenders to be lodged with R. Meyer, Town Clerk.

Feb. 25. **WALTHAMSTOW.**—Supply of the following for the twelve months ending March 31, 1911, for the U.D.C.:—1, broken granite for macadam; 2, granite kerb and setts; 3, granite chippings for manufacture of paving; 4, tools; 5, ironmongery, etc.; 6, wheelwrights' and blacksmiths' goods; 7, blue lias lime; 8, lime for sludge pressing; 9, Portland cement; 10, illuminating oils; 11, glass, colour, etc.; 12, stoneware pipes, etc.; 17, pitch, etc.; 19, engine room stores; 20, alumino ferric for sewage precipitation; 24, castings. Forms of tender and further particulars may be obtained at the Surveyor's Office, Town Hall, Walthamstow. Tenders to be delivered, by post only, to C. Sydney Watson, Clerk to the Council, Town Hall, Walthamstow. Fair wages clause.

Feb. 25. **CORK.**—Supplying timber, iron, paints, lubricating and other oils, glass, bricks, slates, cement, cut stone, flags, setts, sewer pipes, sanitary requisites, lime, gravel, iron and brass castings, in accordance with specification and conditions, to be seen in the City Engineer's Office, City Hall. Tenders to be sent to F. W. M'Carthy, Town Clerk. N.B.—All goods to be, as far as possible, of Irish manufacture, preference being given to goods and materials bearing the registered Irish Trade Mark. Standard samples can be seen on applying to the Storekeeper.

Feb. 26. **HEATON NORRIS.**—Supply and delivery of undermentioned materials and stores, during the period of twelve months from April 1, 1910, for the U.D.C.:—East Lancashire setts, flags, and curbs, rough rubble stone, Derbyshire setts, Scotch, or Irish granite setts, Clee Hill and Welsh machine and hand-broken macadam, iron manhole and lampeye covers, and street grids, earthenware and stoneware pipes and intercepting traps, aluminoferric, pitch, creosote oil and tar, shovels, and spades, limestone chippings, artificial stone flags, and cement. Applications for forms of tender should be made to F. W. Brooke, Clerk to the Council, Council Offices, Heaton Moor.

Feb. 26. **CARLISLE.**—Supply of the following stores and materials, etc., for one year, from March 31, 1910, for the Corporation:—(a) granite and whinstone paving stones; (b) Lazonby and concrete flags, edging, channelling; (c) Portland cement; (d) timber; (e) sewer and drain pipes, etc.; (f) sewer ironwork; (j) bricks and tiles (local manufacture); (k) paints, oils, and varnishes (in small quantities); (m) iron and steel, nails, screws, bolts, shovels, files, spouting, paint brushes, general ironmongery, etc. (small quantities); (n) glass, ropes, twine, sulphur, etc. Forms of tender, with specification, schedule, and particulars, may be obtained of Henry C. Marks, M.Inst.C.E., City Engineer and Surveyor, 36, Fisher Street, Carlisle, to whom tenders are to be sent.

March 5. **WARRINGTON.**—Supply of the following materials for a period of twelve months, from April 1, for the Corporation:—1, cast-iron pipes, valves, and cast-iron surface boxes; 2, bib, stop and ball cocks, and ferrule couplings; 3, cylinder and engine oils; 4, carting. Deposit of 10s. per section is required. Further particulars may be obtained from James Gray, Engineer, Municipal Offices, Warrington.

(*See also page viii.*)



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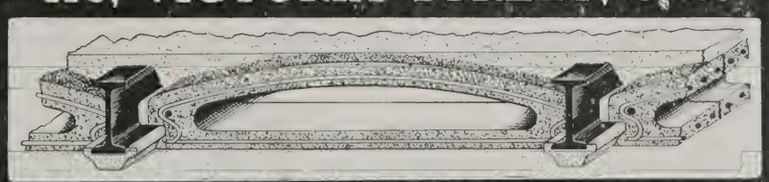
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ARCHITECT'S Junior Assistant, 5 year's experience: quantities, specifications, levelling, domestic, church work, working drawings, neat draughtsman; excellent references: moderate salary.—Box 5503, Builders' Journal Office.

ARCHITECT'S Assistant (24), 7 years' experience, good draughtsman, working and detail drawings, specification, surveying, measuring up, supervision, moderate salary.—C. Bowdler, 8a, Darleston Road, Upper Clapton, N. 5534

ARCHITECT'S and Surveyor's Assistant (21), desires engagement, 4½ years' experience with Liverpool architect, neat and reliable draughtsman, tracer, colourist, etc.; excellent testimonials.—Withers, 16, Laurel Road, Liverpool. 5512

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TO BUILDERS AND CONTRACTORS.

The above Council is prepared to receive TENDERS for the erection of the RAWSON ROAD COUNCIL SCHOOL, SEAFORTH, near Liverpool.

Bills of quantities may be obtained from the undersigned upon payment of a deposit of one guinea, which will be returned on the receipt of a bona-fide tender.

Drawings and specifications may be seen at the office of Messrs. Appleyard and Quiggin, Architects, No. 67, Lord Street, Liverpool.

Sealed tenders endorsed "Tender for Rawson Road Council School," must be delivered to the undersigned not later than 12 noon on Monday, the 21st February, 1910.

The Council does not bind itself to accept the lowest or any tender.

By order,
JOHN I. THOMPSON,
Clerk to the Council.

Town Hall, Waterloo, near Liverpool.
1st February, 1910. 5509

THE ROYAL NATIONAL EISTEDDFOD OF WALES.

COLWYN BAY,

13th to 17th SEPTEMBER, 1910.

TO BUILDERS AND CONTRACTORS.

THE EXECUTIVE COMMITTEE are prepared to receive Tenders for the erection of a Temporary Pavilion for the purposes of the Eisteddfod. Those desiring to tender are requested to send their names and addresses to Messrs. Darbyshire and Smith, Architects, 17, Brazennose Street, Manchester, not later than the 1st of March next.

T. R. ROBERTS,
General Secretary.

Eisteddfod Office, Colwyn Bay. 5528

February 23, 1910. Volume 31, No. 786.

THE BUILDERS' JOURNAL

AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Status and Maintenance.

Mr. Walter Sickert, who is always exhilarating and illuminative, said, in the course of a lecture st week, that if he had a grievance it as about the relation of the painter to e public in this country. The painters, said, were treated rather as bishops, hile they preferred to be treated as adesmen. What they wanted was not atus, but maintenance. "When people ent to other professional men for advice, ey were told to take things they did not ke, such as Gregory's powder. It was ot so with the artist." Surely this is to mpare unlike conditions. The artist, hether painter or architect, does not wish have status and maintenance set before im as mutually exclusive alternatives. e wants them both; and, unless he is a ad artist, he finds them inseparable. Nor he, as a rule, desirous of forcing his leas upon an unwilling patient as if they ere physic. Of course there are exceptons. Of the late Mr. Bodley, for instance, is refreshing to read, on the authority of Ir. Edward Warren, that he "was not only master of his art, but excessively masterul. He permitted nothing and nobody to terfere with his intentions. In the carrying out of a design he had set his heart n, he was obstinate and obdurate, and he ways ended by getting his own way in e long run—and the run was sometimes matter of years." But then he had the atus and the maintenance, both barrels aded.

"Serious Defects."

A long time must elapse before it will have been possible for the Housing and Town Planning Act be thoroughly examined from every oint of view. Mr. R. E. Havard Villiams, in a paper read at the Auctioneers' Institute, called attention to ertain portions of the Act which he regarded as serious defects It does not epeat previous Acts *in toto*, but merely mends them, and thus gives rise to difficulties with regard to its interpretation. e therefore wants a consolidation Act. a year or two this request will have atured into something like reasonableess. Human foresight is not so keen that e can afford to dispense with actual experience of the working of the Act. A onsolidating Act based upon mere theory ould make confusion worse confounded. hen Mr. Williams thinks that "the proters of the Act might have devoted their legislative energy to giving, among other things, facilities for dealing with undesirable tenants. An occupant should be made to keep his premises in a clean and sanitary condition." He also thought that it should provide for the supply of ejectment orders in respect of tenants at rentals up to £40 a year in London. It is well that we should see the Act as others see it; but sympathy with the specialist's attitude is always subject to a considerable discount. That being understood, it would be unwise to discourage such contributions to the general understanding of the Act, however extravagant and extreme they may appear to those who are tolerably free from the exuberance of perfervid professionalism. The Act is sufficiently complicated already, and it is to be devoutly trusted that revision will make for simplification; and that, in particular, it may not be rendered unutterably odious by associating it with writs of ejectment or other inquisitorial engines of torture. Its success depends on its popularity; its popularity, on its being blandly ameliorative.

Plutarchitecture.

Of late there has been a strongly marked tendency on the part of lecturers on architectural subjects to resort to biography. The method has many advantages, the chief of which are, perhaps, the actuality, and the consequent concentration of interest, to which this form lends itself with peculiar facility. Whether or not, in any particular case, we care more for the man than for his works, or vice-versa, is a minor matter, seeing that in any case the very natural association of the one with the other tends to heighten the interest in both, the work glorifying the man, the man humanising the work and giving it an interest and a unity with which it is not always easy to invest examples of miscellaneous authorship, or principles of art and practice abstracted or disconnected more arbitrarily from a wider field of investigation and inquiry. Perhaps, on the whole, it is not a more sound nor a more scientific method than that now generally discredited and discarded habit of making the history of England a series of short biographies of its rulers; yet there can be no doubt of its attractiveness, and that is a quality which, in these days of very necessary pioneer and foundation work in architectural education, it were folly to despise. In all processes of education, "stimulus" is essential to receptivity and assimilation; and lecturers on architecture are fortunate in having at command fairly abundant materials with respect to the more recent men and their work. Where, as in the case of the admirable account of the late Mr. Bodley given before the R.I.B.A. on St. Valentine's Day, the biographer happens to have been closely associated with the life commemorated, there is perhaps some slight aberration of the perspective, for which, however, we get ample compensation in the nearer view and the clearer light; and where, as in Mr. Reginald Blomfield's lecture at the Royal Academy on the life and work of Philibert de l'Orme, the subject is more remote in time and place, the loss of the intimate personal element is usually set off by a considerable gain in the coldly judicial impartiality of the criticism. Each condition has the defects of its qualities, and in either there is more or less of inspiration and delight.

Rome's Zone.

A difficulty and danger of town planning is strongly emphasized in the case of the Zona Monumentale dispute which is now raging at Rome. A federation for the preservation of Italian monuments and artistic treasures is strongly opposing the corporation project of constructing a wide avenue straight across the historic region of Rome, which extends from the Porta Capena to the Porte S. Sebastiano and Latina. The formation of this avenue would inevitably destroy several ancient monuments. It is complained that the commission entrusted with this work does not include a single archæologist or artist; and it is obvious that the commissioners have no sympathy and but little patience with the attitude of the Supreme Council of Antiquities, to whose protest a haughty and dictatorial reply has been returned. The Government has been asked to intervene, and the upshot of the controversy will be awaited with keen interest in this country, where, before long, we may find ourselves in the throes of somewhat similar conflicts between the old spirit and the new. If ever the zone craze reaches London, and is there put into operation, probably the work can be done without demolishing anything more precious than cheap suburban villas, and most of our great cities are in similar case. It is in the formation of straight and wide streets that venerable

obstructions are likely to be encountered, and we may be very sure that proposed operations under the Town Planning Act will not escape the very delicate attention of our societies for the preservation of ancient buildings. Paris, as M. Benoit-Lévy reminds us in an admirable article in the current issue of the "Architectural Review," is fortunate in having its proposed zone occupied by fortifications, of which the futility was demonstrated in the last unhappy war, so that they are likely to disappear without serious protest. Most Parisians, we should suppose, will be glad to see the last of these sinister memorials of "old, unhappy far-off things and battles long ago."

A Street Problem.

An improvement that is being carried out at the junction of Cornhill with Bishopsgate Street, at a cost of nearly £10,000, consists in the demolition of certain property in order to set back the line of frontage, increase the width of the road, and round off a sharp corner. This last item in the programme brings to mind a rather vexed question in street planning. The "sharp corner" is bad for vehicles, but safer for pedestrians; while, on the other hand, the curve that is most suitable for vehicles is apt to be very dangerous to those who go afoot. The curve that is easy for the wheeled traffic brings it with fatal facility on to the person who is about to cross the road. Therefore, the "improvement" at Cornhill is a strong argument for the formation of another subway. The crossing there is already highly dangerous, and will become still more so in the measure to which it facilitates wheeled traffic to the inconvenience of the foot-passenger.

Measured Drawings and Details.

With the steady growth of scholarship which is one of the most encouraging portents for British architecture, there is an increasing demand for the means of study. The architect of to-day is keenly anxious to examine and to analyse good work, whether it be that of his contemporaries or of earlier date. In this direction much may be achieved, in these days of facile transit, by visits to actual buildings, and this is an exercise which the neophyte cannot afford to neglect. Those, however, who have got beyond this stage, and are no longer, in the strict sense of the phrase, *in statu pupillari*, require a shorter method. They have no imperative need to measure and draw actual buildings, because their experience in this kind has furnished them with power to extract all the information they require from the measured drawings that are now being published in sufficient abundance to furnish them with an ample and a varied supply of examples that are worthy of analysis; and, in a modified degree, the same remark applies to the student proper, who, indeed, is bound to supplement his own original efforts by recourse to the labours of others in the same field. The proprietors of this Journal were quick to recognise and prompt to supply this need, and in the "Architectural Review" a special feature has been made of "The Practical Exemplar of Architecture," in which, every month, there has been maintained a constant supply of measured drawings of noteworthy work old and new, and this feature has been recently augmented and strengthened by the incorporation of the publication known as "Details." This periodical, it is hardly necessary to explain, was an entirely independent venture, in which the present proprietors were in no way interested. Having acquired it by purchase, they decided to discontinue it as a separate publication, and to incorporate it with the "Architectural Review" as an augmentation of "The Practical Exemplar." We have evidence that "Details" was highly appreciated; and subscribers to it will be glad to know that it is now embodied in "The Architectural Review," in which they will find not only the features which they valued in "Details," but, in addition, the high-class contributions and fine illustrations which have secured for the "Architectural Review" the position it has so long held as the most eminent of architectural periodicals. The publishers desire us to state that they have taken over all the bound stock and back numbers of "Details" for which application should be made to "Technical Journals, Ltd.," Caxton House, Westminster.

Tenders Under Seal.

We are informed that recently the War Office invited tenders for building works in the provinces, and stated, as one of the conditions of tendering, that the priced quantities must be sent in, under seal in separate covers, along with the tenders, and that only those quantities relating to the lowest tender would be opened. On the faith of this the priced quantities were sent in, but in the case of one at least of the competitors, whose tender was not the lowest and not accepted, it was evident when the quantities were returned that they had been opened and examined, and even pencil corrections made on them. It would seem that there is laxity in the War Office that should not be allowed to continue. Builders rightly object very strongly to sending in priced quantities, even under seal, and the least that those who insist upon having them can do is to see that they are not opened in contravention of the conditions under which they were obtained. Unless this is done, builders will have no alternative but to refuse entirely to send priced quantities along with tenders, as many do even now. It is hard to understand why the War Office, or any other public authority, continues to require priced quantities to accompany tenders when the leading architects in London and the provinces find such a proceeding unnecessary, and never resort to it

Fulwood's Rents, the little Holborn court leading into Gray's Inn Gardens, which will be largely rebuilt, is so named from the Fulwood family. It formerly possessed the privilege of "sanctuary," and hence became a notorious resort for fraudulent debtors, and still more unpleasant characters. Francis Bacon lived here in "Fulwood's House," and valued his furniture at £60, a huge price for that period. Here the Whig Club, and Melbourne and Oates's Club, met in the reign of Charles II., and here stood Squire's coffee-house, from which several numbers of the "Spectator" were dated.

* * *

With their oaken timbers surviving the great fire of London and the ravages of time for more than 250 years, three of the quaintest old houses in London, which stand in Fetter Lane, have just come into the hands of the housebreaker. Originally these three old gabled buildings—Nos. 85, 86, and 87—were part of Barnard's Inn, which was founded in the fifteenth century. Their panelling and stair-rails date from the days of Queen Anne. Generations of lawyers have used the large, low-ceilinged rooms, with their queer capacious cupboards. Faintly, under the paint on the doors, the names of some of them could still be seen.

THE LIFE AND WORK OF G. F. BODLEY.*

By Edward Warren, F.S.A.

Mr. Warren, a former pupil of Mr. Bodley, divided his review into three periods, the initial period covering early training and individual work; the middle or collaborative period; and the final period of reversion to single practice.

Initial Period.

Mr. G. F. Bodley, son of Dr. Bodley, a descendent of Sir Thomas Bodley, of Oxonion fame, was born at Hull in 1827. While a boy his father moved to Brighton and he there first met Sir Gilbert Scott, his future principal. He served five years with Scott, and found his studies and surroundings rather dreary. His enthusiasm for Gothic revived with employment on drawings for Gothic buildings. Work came to him quickly at the expiry of his apprenticeship, his first commission being to add an aisle to a church at Bussage in Gloucestershire for Thomas, brother of John Keble.

His training had been in the rigid convention of English Gothic; formalised versions of English 13th and 14th century styles. His first complete church—St. Michael's, Brighton—shows a revolt, and suggests early French character. Has been spoilt through the addition, by another hand of a large incongruous nave and aisle. The church strikes a note of suave severity, which characterises all subsequent work. Bodley was in close alliance and personal friendship with William Morris, Edward Burne-Jones, Ford Madox Brown, and Dante Gabriel Rosetti in the early Pre-Raphaelite days, and gave them opportunities for work on his buildings. William Morris carried out some stained glass at King's Stanley, Gloucestershire, as well as the western windows at St. Michael's, Brighton, and Burne-Jones was employed on a painted reredos at the latter church. At St. Martin's, Scarborough, Morris carried out the stained glass; Rosetti, Burne-Jones, and Madox Brown painting the pulpit and reredos. Bodley also started C. E. Kempe in stained glass; he also designed one or two of Morris's early wall papers, and assisted and advised in designs for glass, tiles, and church fittings Of this period, St. Martin's, Scarborough, is one of the most interesting buildings. It shows a decided leaning towards severe 13th century Gothic, still with a flavour of France. The elaborately carved and moulded rood and screen were added later by Bodley. He also built the parsonage of the church, and a second church, All Saints, in the same town.

For the first few years Mr. Bodley's small but steadily maintained practice seems to present almost ideal conditions for a young architect of quiet and reserved but strong character, of high courage and of great patience, absorbed by the love and the study of his art, free from professional ambitions, and happily saved, by the possession of modest private means, from the anxieties and compulsions of money-earning. He lived during this early period with his mother, in Harley Street, where he worked single-handed, or with occasional assistance only, for several years. Commission followed commission at comfortable intervals, without rush or hurry, and though requiring, as he frequently told me, very strenuous days and laborious nights at times, leaving upon the whole ample time for thought, for music—to which he was always passionately devoted—for reading, for the enjoyment of the society of his friends, amongst whom were conspicuous the various members of the Pre-Raphaelite Brotherhood; for delightful journeys of study, in France, Italy, and Germany, as well as in England, and for occasional indulgence in the pastimes he preferred. Of fine physique and strong and athletic figure, he was a great walker, a keen fisherman, and, as I

*Summary of a paper read before the Royal Institute of British Architects, Monday, Feb. 14th, 1910.

have been told by contemporaries, a very competent cricketer. He detested competitions, which were essentially opposed to his quiet reflective nature and abstract idealism; for, from beginning to end, before and beyond all things, he was an idealist."

The Middle or Collaborative Period.

As work increased he began to find the need of skilled assistance, and turned to his friend, Thomas Garner, who had followed him as a pupil in Scott's office, and who was developing a small practice in Warwickshire. Mr. Garner, at first, worked for him as an occasional assistant; but he was an assistant quite outside any ordinary sense, and his co-operation, though for some time without partnership, grew steadily closer and more important.

At this time a marked change had been taking place in Mr. Bodley's handling of Gothic. The French feeling waned, and the type became more determinately national. His future partner was pronouncedly English; the church of St. Salvador's, Dundee, seems to mark a middle point in this conversion. Austere in form, but with a tempered austerity, there is a fine and graceful severity about its sharply pointed nave arches, which die on to capless piers, and the accentuation of the bays by the slim wall shafts which run up to carry the roof principals; a gorgeous reredos, a gilded wrought-iron screen, and diapered wall-painting were added later.

Mr. Bodley was married about this time to Minna Frances, the daughter of Mr. George Reavely, of Kinnersley Castle, Herefordshire. He left one son, Mr. Hamilton Bodley.

In co-operation with Mr. Garner and before actual partnership, Mr. Bodley built All Saints Church, opposite the great gate of Jesus College, Cambridge. The interior is elaborately decorated in colour, but the glass by Morris, is not very successful.

A dangerous and unfortunate attack of blood-poisoning followed, apparently, after an inspection of some fetid burial vaults under a church at Louth. Unhappily it kept Mr. Bodley in bed many months, turned his hair white and crippled him for life. The effects of this illness subjected him to recurrent periods of disablement and pain, and his lameness made his constant journeys and supervision of buildings onerous and difficult. The illness led him to seek a closer co-operation with Mr. Garner, and a formal partnership was entered into in 1869.

Among the early works of the partners are: The Church of St. John, Tue Brook, Liverpool, the Church of the Holy Angels, Hoar Cross, Staffordshire (built by Mrs. Meynell Ingram as a memorial to her husband), and St. Augustine's, Pendlebury. The church at Hoar Cross is quite a small village church, but probably is the building which most completely represents the ideals of the partners. At this church a memorial to Mr. Bodley has recently been added in the shape of a narthex, from the designs of Mr. Cecil G. Hare, Mr. Bodley's second partner.

Then follows the London Education Committee's offices on the Thames Embankment, which was begun in 1873. It has since been added to by another hand. Mr. Garner was mainly responsible for the original elevation. Another riverside building is River House, at the corner of Tite Street, Chelsea.

Of work at Oxford and Cambridge may be mentioned the addition to the Library at Christ Church, Oxford, and the Great Tower at the south-east corner of the Tom Quad; the Master's Lodge, University College, built between the years 1876 and 1879; additions to Magdalen College, known as St. Swithin's Quadrangle, begun in 1880. In the Oxford work Mr. Garner bore the lion's share (except for the Church of St. John the Evangelist at Cowley, Oxford). At Cambridge the work is mainly Mr. Bodley's. Here, new and distinct buildings were added to King's and Queen's Colleges; at the first-named an incomplete quadrangle, known as Bodley's buildings; at the latter the red-brick chapel. Bodley's buildings properly come in the last period. Of the churches of this time, may be mentioned the Cathedral at Hobart, Tasmania; St. Michael, Camden Town (1880), the Church of St. Germain, Cardiff, and St. Saviour's, Cardiff.

The next building, the Church of St. Mary the Virgin, Clumber, Notts, built for the Duke of Newcastle in 1886, marks a point of departure, a cessation of active collaboration between the partners. From this time, until the actual cessation of the partnership in 1898, each partner worked singly upon a given design.

Even before this date there were several works, which though bearing the names of both partners were really the absolute work of one of them. The reredos in St. Paul's Cathedral, for instance, was entirely Mr. Garner's design.

The Final Period.

Taking Clumber Church as the beginning of the last period, the ten years from 1885 to 1895 saw as many new churches begun and completed by Mr. Bodley. Eckenswell, Horbury, Skelmanthorpe, Warrington and Danehill Church in Sussex are all small buildings; Epping, Hackney Wick, Norwood, Branksome, Bournemouth and Cowley, are all town or suburban churches of some size. The last-named is a monastic church, built for the Cowley fraternity. Mr. Bodley's skill in adaptations and alterations may be seen in the English Church at Florence (formerly a secular hall), the church at Hickleton and the conversions of the modern churches of St. Paul's, Knightsbridge and St. Giles, Wimborne. The last was unfortunately burnt down recently.

Later works are St. Mary's, Eccleston, built for the Duke of Westminster, Holbeck Church, near Leeds, All Souls, Leicester, and the Wayside Chapel at Woodlands, Dorset, all in the later manner. The last building of any considerable size was the Church of Holy Trinity, Kensington, built on a somewhat cramped site. The extreme slimness, the attenuation of detail in this church are extremely symptomatic of his final manner, and a critical mind will find this quality carried to excess in much of his late work.

Great honours and great opportunities came to him very late in life. One of the greatest opportunities, indeed, the more is the pity, close at the end. In 1906, the year before that of his death, came the remarkable evidence of American appreciation in the commission to design the cathedral for Washington, in conjunction with his old friend and former assistant Henry Vaughan of Boston. This was quickly followed by the placing of another American cathedral, that of San Francisco, in his hands. In the autumn of 1906 he journeyed out with Mr. Cecil Hare, his friend, assistant, and ultimately his partner, to the United States to inspect the sites of the two great churches, and to make preliminary arrangements. Upon his return to England, and while employed upon yet another remote cathedral—in India—he at once began the designs for Washington and San Francisco. He was much hampered by ill-health in the spring of the following year, but managed nevertheless to complete his designs, working to a great extent in the beautiful old stone manor house of Water Eaton, near Oxford, which he had taken in 1906, and where he was to end his days. He was destined never to witness even the actual beginning of the American buildings, but left the drawings in a well advanced stage of preparation. The United States had done him previous honour by bestowing upon him in the year the gold medal of the American Institute. A similar honour was done him in 1899 by the R.I.B.A., for in that year he received from the hands of the president, in this room, the Royal Gold Medal. He was elected Associate of the Royal Academy in 1882, and full Academician in 1902. In the summer of 1907 he received from the University of Oxford an honour which he greatly valued, that of the honorary degree of Doctor of Civil Law. He died suddenly and peacefully on the evening of Sunday, the 21st October, in the old house that he had grown to love. Among his pupils, beside Mr. Warren and Mr. Vaughan, may be mentioned Professor F. M. Simpson, the late A. H. Skipworth, Mr. J. N. Comper, Mr. F. Inigo Thomas, and Mr. R. S. Lorimer, A.R.S.A., of Edinburgh. Mr. Walter J. Tapper was one of his head assistants.

Personality.

No just estimate of his character or attainments could be formed without intimate acquaintance, and he was not easy to know. Retiring and indeed somewhat shy, self-contained and introspective, his external manner, albeit invariably courteous to all alike, was frequently somewhat aloof and apt to impress strangers as reserved and rather cold. He did not as a rule make friends



Photo: H. Boughton and Son.

THE BURKITT HOMES, KING'S LYNN: THE BOARDROOM. HERBERT T. TILSON, ARCHITECT.

The room has door, chimney piece, and dado in oak, enriched with cinquefoil tracery. The ceiling is carried by oak beams, and the floor is laid with oak parquet.

easily or quickly, but once made, he retained them, and their number was not a few. To his pupils and assistants, and he had many during the latter half of his life, he was delightfully friendly, and inspired admiration and respect in all, and in those who knew him best the warmest affection. To his intimates, to those with whom he was in real sympathy, he was delightfully open and indeed expansive at moments, full of kindly humour and fun, a charming host, extending charming hospitality to his guests, loving a good story, a good rubber of whist, and a good cigar; loving above all, music and song. He was an ardent musician, and an accomplished pianist, playing with intense delicacy and feeling the old melodies he preferred, or occasionally his own compositions. Music he placed above all arts, and used sometimes to say that he wished he could have devoted his life to it. His love of colour and his fine instinct for its employment and distribution, were almost phenomenal. In his own home, or homes, for I have known him in many houses, he was always surrounded by fine hangings, stately old furniture, old tapestries, pictures, rare old china, mostly blue and white oriental, silver, and glass. He was fastidious in such things, and could understand no comfort without comfort for the eyes. He loved his house and perhaps still more his garden. A certain stateliness of surroundings was ever part of his natural appanage, and seemed becoming to his stately personality, his handsome face, lofty forehead and large dark eyes, grave in repose, but lighting up in greeting to a friend, or twinkling with fun at a joke.

He expressed himself admirably in writing tersely, humorously and amusingly in his friendly letters; his actual handwriting was picturesque and characteristic rather than legible. He wrote with great facility, but did not like the task of writing. Ready, expressive and apt in conversation, and frequently witty, he was a diffident speaker in public, and shrank from all public speaking. He filled, however, the office of Prime Warden of the Fishmongers' Company, presiding with graceful dignity at many feasts. Functions and public ceremonies he hated, and always carefully avoided all "inaugurations" and foundation-stone layings. His conspicuous professional success owed nothing to business habits; it was won in spite of their default, for a worse man of business in the usual sense it would be impossible



Photo: H. Boughton and Son.

THE BURKITT HOMES, KING'S LYNN: ENTRANCE GATE. HERBERT T. TILSON, ARCHITECT.

The walls are of narrow bricks with wide mortar joints, and terra cotta voussoirs to the arch. The gate is of wrought-iron.



Photo: H. Boughton and Son.

THE BURKITT HOMES, KING'S LYNN: INTERIOR OF ONE OF THE LIVING ROOMS. HERBERT T. TILSON, ARCHITECT.

The woodwork is all in oak, the floor is laid with oak parquet, and the light fitting is of wrought-iron.

to find. He detested accounts and kept none; he detested business letters, and frequently delayed answers to important communications—when he answered at all—for weeks or months. If a client became bothersome, he got no answers to any written communication; if he called in a rage, he was received with unruffled courtesy, and generally bowed out smiling and happy in a quarter of an hour. Mr. Bodley was not only a master of his art, but excessively masterful; he permitted nothing, nor nobody to interfere with his intentions. In the carrying out of a design he had set his heart on he was obstinate, nay obdurate, and he always ended by getting his own way in the long run—and the run was sometimes a matter of years. He has been called a copyist. Nothing could be farther from the truth. Except occasionally in minor details, he never copied. He possessed remarkably few architectural books; his professional library, indeed, would have been modest for a beginner. In his youth, even during his pupilage, he had sketched but little, in spite of constant urging; in his later years not at all. His method of studying an old building was, as regards the exterior, to borrow a chair, which he carried from point to point of view, during the contemplative smoking of a cigar; when the cigar was out, he went inside, and, minus the tobacco, continued the contemplation. Yet he would remember the building, even to its details, for the rest of his life. He would never make any written note of an engagement, but I never heard of his forgetting one. I have heard it confidently stated that he could not draw—a most absurd statement. He regarded drawing for an architect as solely a means to a definite end—the realisation of his design; and to that end his drawing was always adequate. For neat and finished drawings he had small regard, and no patience in his later years for their preparation; but his planning was quick and accurate, and his sureness and rapid facility in detail-drawing were astonishing. His little explanatory sketches, rough though they were, were always vividly graphic. His first notes of his various conceptions for a plan, or some large detail, were made anyhow and anywhere—in bed, in the train, in an hotel, at his club, or in his garden, and on anything handy—the back of a letter, an advertisement card, or the margin of a newspaper. He sketched in his cheque book, and is known to have filled his bank pass-book with notes and sketches. He had an extraordinarily fine sense for curves, and hated a weak or a flabby one. "Keep them nervous," he told one. His injunctions to his staff were always in the direction of refinement and restraint. "Learn to leave out. A young architect's india-rubber is more important than his pencil," he once said to me; and again, of window tracery, "It's not the shapes you make, but the shapes you leave, that matter." Of drawing generally, as applied to architecture, he used to say that we all draw too much; and that with one vernacular style, and workmen who understood it, hardly any drawing would be necessary.

He was extremely ingenious and resourceful, but disliked obvious ingenuity in design, and indeed avoided it; his work, whatever else may be thought of it, has ever the effortless, inevitable look of quiet surety. His aim was never to startle, he never "played to the gallery," or tried to outrival others. In placing a building in a street, or in contiguity to others, he was always careful to do no hurt to its environment. "You must consider your neighbours," he said, "you've got to be a gentleman in your art."

Discussion.

Mr. G. H. Fellowes-Prynne, in proposing a vote of thanks to Mr. Warren, said his paper was obviously the sincere appreciation of a loyal and devoted pupil. The care with which Bodley had treated restoration work marked him as a man who cherished his art with sincerity. Bodley had followed the tradition of mediæval work, but, as they could see, with no slavish hand. He spent immense care on details, wall paper, etc., and was adept in the use of quiet, refined colour. Hoar Cross illustrated this admirably, and Christ Church, Ealing, was another good example. To-day, the want of colour was everywhere apparent; but it was difficult to educate the popular mind to the need. Bodley was fortunate in having private means, otherwise he would not have been able to deal with clients in so careless a style. Mr. Prynne then voiced his satisfaction that York Minster had been placed in the able hands of Mr. Walter Tapper, a former pupil of Mr. Bodley. Bodley, he continued, was an ardent churchman, as were Pugin, Butterfield, and Street; and this great underlying principle had unquestionably been an inspiration in the conception of noble church architecture.



Photo: S. B. Bolas and Co.

ST. MARY'S CHURCH, ECCLESTON: INTERIOR LOOKING WEST. THE LATE G. F. BODLEY, R.A., ARCHITECT.

This building Mr. Warren refers to in his paper (see page 140) as characteristic of Mr Bodley's later manner. The building, erected in Red Runcorn stone, is less inspired than the churches at Pendlebury, Hoar Cross, or Clumber.

Mr. Walter J. Tapper, in seconding the vote, said he was much impressed by the dominant note of love and reverence that pervaded Mr. Warren's paper. There was a prevalent feeling that Bodley could not draw, and was not an expert draughtsman. He, perhaps, could not draw in the modern sense, as, for instance, in the execution of elaborate water colours; but it was quite untrue to say he could not draw. Bodley was a very rapid worker, in illustration of which Mr. Tapper mentioned how he (Mr. Bodley) would commence work on Saturday afternoon when his assistants had left, and would surprise them by having ready on the following Monday morning a complete design for a church, replete with detail drawings. By his method of working it was quite obvious that he was a great creative genius.

Mr. Longden and Mr. Maurice B. Adams having joined in the discussion, Mr. Warren made a brief reply.

Correspondence.

[The Editor declines responsibility for the statements made or opinions expressed by correspondents.]

The Guild of Architects' Assistants.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I should be greatly obliged if you would allow me space to correct an impression concerning the above Guild which appears to have some currency. The Guild does not propose to place any section of the profession in opposition to any other, or to oppose any of the existing architectural societies in their work, and for that reason its subscription is placed at a very low figure. Its main object is to fill up a gap which undoubtedly exists, by the formation of an assistants' society. It desires to bring together architects' assistants and interested principals for the purpose of mutual aid, social intercourse, and the discussion of the various professional difficulties which beset the assistant. Principals have continually been invited to join and assist in developing the programme we have formulated, and some well-known architects in practice have heartily supported our proposals.

The Guild has no desire to run into absurdities or to decry the proud position of architecture as Mother of the Arts; but the work it desires to accomplish is the work that is really necessary, the task of the improvement of the assistants' position, educationally and professionally; to encourage and maintain that enthusiasm for architecture so necessary for the development of ability; to endeavour to introduce some order into the present chaotic condition of the assistants' relationship to the profession, the result of which cannot fail to be of benefit to all.

ERNEST J. DIXON, A.R.I.B.A.,
Hon. Secretary.
137, Church Street, Edgware Road, W.

Obituary.

The death is announced of Mr. James Armitage, builder and contractor, of Southwick, Sunderland. Mr. Armitage, who commenced business for himself at Hartlepool in 1849, was responsible for a large number of buildings in the town and district. He erected Park Lands, Castle Eden, a mansion built for the widow of the late Mr. Rowland Burdon; the offices of Messrs. Doxford and Sons, the business premises of Messrs. Grimshaw and Sons, High Street West; Messrs. Clark and Sons, Engine Works, Southwick; and a large number of churches, chapels, schools, the police buildings at Southwick, and the Fulwell Council Schools, while other schools are in course of erection at Wingate, Seaham and Horden. Mr. Armitage was for many years a member of the Southwick District Council, and one of the first members of the School Board, of which he was vice-chairman for 12 years. Mr. Armitage, who was 83 years of age, leaves a widow and a family of one son and three daughters.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Mar. 1.	GLAZED BRICKWORK DESIGNS AND ESSAYS. A committee of glazed brick manufacturers invite designs for works to be executed in glazed brickwork, also essays as to the advantages to be derived from the use of this material in accordance with conditions to be obtained from J. Johnston Green, 142, Liverpool Road South, Southport. Premiums of 100 guineas, 50 guineas, and 25 guineas awarded to designs and essays jointly. Assessor, Mr. Max Clarke, F.R.I.B.A., appointed by the President R.I.B.A.
Mar 31.	SHEFFIELD ENDCLIFFE PARK CHURCH. Plans desired for Church for 650, Institute for 150, Primary Department for 125, Junior Department for 95, and Caretaker's Apartments. Premium, not merged in commission, £35. Assessor, Chas. Hadfield, Esq., F.R.I.B.A., Delivery on March 31. On receipt of 5s. the Secretary, J. W. Nicholls, 64, Everton Road, Brocco Bank, Sheffield, will furnish conditions and instructions with plan of site, showing existing buildings, levels, and drainage—these not returnable. Deposit returned only to those who send plans.
Mar 31	MUNICIPAL OFFICES, KARACHI. The Municipality offer a premium of 7,500 rupees (£500) for the best design, detailed plans and estimates for new Municipal Offices. Cost not to exceed 500,000 rupees, and the style of architecture is left open to the designers. Ferrotype plans of the site and a general arrangement of the floors of the building showing the accommodation to be provided, together with a copy of instructions to architects, will be supplied to intending competitors on application to the Chief Officer and Chief Engineer, Karachi Municipality. A charge of Rs. 5 will be made therefor, which will not be refunded. Each set of drawings must be sent in anonymously, but accompanied by a sealed envelope containing the author's name and address. Each set of drawings and all the documents required, including the sealed envelope, must be securely packed in a wooden box, addressed as follows:—The Chief Officer and Chief Engineer, Karachi Municipality, Karachi, India, and forwarded, at the competitor's own risk and charges, in time to reach the Chief Officer on or before the 31st day of May, 1910. It is proposed to apply to Government for permission for one of the chief architects to act as assessor to decide on the design to which the prize shall be awarded. The final decision of the assessor will be final and not open to dispute. The decision of the Municipality will be made within three months of the latest date for submission of designs, and payment of one-half of the premium will be made thereafter to the author of the selected design, the balance to be paid when the further details specified in the instructions to architects have been supplied. On payment of the premium the Municipality will have all rights in the design, with power to erect the building under its own agency, either according to the design selected or with such additions or alterations as it may deem necessary.
No Date	SECONDARY SCHOOL AT PETERBOROUGH, for Soke of Peterborough Education Authority, to accommodate 250 scholars, but allowing for enlargement so as to accommodate 300 scholars. Particulars of the general instructions and conditions, together with a plan of the site, may be obtained on application to Walter J. Deacon, Clerk to the Authority, Cross Street, Peterborough.

Oldham Town Hall Extension Competition.

The Oldham Corporation has appointed Mr. G. H. Willoughby, F.R.I.B.A., of Manchester, as the assessor in the above competition. The estimated cost of the extension is £25,000.

Johannesburg Town Hall.

The Town Council has adopted the report of the assessor, Mr. Leonard Stokes, F.R.I.B.A., which awarded the premiums as follows:—1st (£500), Messrs. Hawke and McKinley, Cape Town; 2nd (£300), Mr. W. H. Stucke, Johannesburg; 3nd (£150), Mr. D. Hoets, Pretoria; 4th (£100), Mr. P. Treeby, Johannesburg; 5th (£100), Mr. F. G. McIntosh, Pretoria. The stipulated cost is £120,000, for which sum the assessor states that the design placed first can be carried out.

Concrete and Steel Notes.

At a meeting of the Newport (Isle of Wight) Town Council, the question of affixing the seal of the Council to an additional by-law dealing with the walls of a public building or warehouse constructed with steel or iron framework came up for discussion. Mr. Salter took exception to the incomplete way in which the by-laws were drawn up and quoted a report of a fatality arising from the collapse of a steel frame and concrete building at Brussels. He said the by-law stated that the framework should be of sufficient strength to secure due stability, but the strength was not laid down as in all by-laws dealing with brickwork buildings. This was a kind of building much used in America, but he thought they in the old country wanted something more substantial. Buildings of that description were death traps. Mr. J. C. Millgate spoke in support of the adoption of the by-law, saying that the reinforced concrete buildings were the coming style of building for warehouses, etc., and the hundreds which had been successfully erected throughout the country demolished Mr. Salter's argument as to their instability. They must move with the times and their old town should be up to date. Mr. Hinds said it was much better to have by-laws to govern the erection of buildings of that kind than to have those buildings erected without any inspection or restriction whatever as to quality. (Hear, hear.) The proposition was carried, Mr. Salter only voting against it.

THICKNESS OF CHURCH WALLS.

A Coventry correspondent has recently enquired if there is any special thickness of wall required in the design and construction of new churches, when materials are to be of brickwork, with stone dressings, other than the requirements of usual building by-laws.

Should any grant be desired from the incorporated Church Building Society, the construction must be according to their published requirements and suggestions; those relating to walls being as follows:—"Walls must be of not less than the following thicknesses:—

—	Squared Stone of the best quality, or Brick.	Brick or Concrete faced with Flint or Stone.
If less than 20′ 0″ high and carrying a roof not exceeding 20′ 0″ span	1′ 10½″	2′ 3″
If 20′ 0″ high and under 30′ 0″ or carrying a roof exceeding 20′ 0″ span	2′ 3″	2′ 6″
If more than 30′ 0″ high ..	2′ 7½″	3′ 0″

The arcade walls to be measured from the floor line and the gable walls from the ground to half way up the roof. The thickness to be measured on bed and clear of plaster. These dimensions are given on the supposition that the walls are solid and sufficiently buttressed. If buttresses are not used, or the walls are made hollow, the thickness must be increased as much as in the judgment of the committee of architects, is in each case required. Iron ties must not be used in hollow walls. The walling round chimney flues must be nowhere less than 9ins. thick." These rules represent a reasonable minimum requirement, and somewhat similar regulations are made by other bodies with funds at their disposal for a like purpose. A copy of the suggestions should be obtained from 7, Dean's Yard, S.W., as other points of design and construction are also dealt with.

ALFRED STEVENS.

Before the Aberdeen Architectural Association, Mr. Henry F. David, Gray's School of Art, read a paper on "Alfred Stevens: His Life and Work," and said that the history of European art since the sixteenth century showed few men exhibiting the versatility which was common during the period of the Renaissance in Italy. For an artist to exercise his talents with ease and distinction in the various departments of architecture, painting, and sculpture was something with which they were not familiar, and yet among the Italians at the time of the Renaissance that diversity of talent was characteristic. They looked back on that epoch, and contemplated with wonder, even with awe, its wealth of talent, and of many-sided genius. In versatility they did not greatly believe. They leaned to it a little in theory, because it had the sanction of remote times, but they were neither anxious to encourage it nor disposed to see it flourish. Yet in that country during last century they were enabled to realise to some degree that all-round power of the great masters in the life and work of Alfred Stevens. That great artist died thirty-three years ago, yet his work was scarcely known to the general public and not even among artists and craftsmen, to whom Stevens should specially appeal, was it familiar. A few knew him as the designer of the great memorial of our military hero in St. Paul's Cathedral, and there all knowledge of Stevens too often ended. The lecturer then briefly outlined Stevens' training, which he said had the intention to equip him fully on all sides to carry on the Latin tradition of Art—that great conception of Michael Angelo's motto, "I know of but one Art,"—and like the great Florentine, his powers could range freely through the whole gamut of the arts—could plan a building, carve its sculptures, and paint its domes. His training was no narrow or exclusive culture, but broad and central, embracing the permanent and universal in the great common language of Art. Mr. David then dealt with the extant works of Stevens, the most important of which he showed on a screen by means of a lantern. He referred to Stevens' appointment to teach in the Government Schools of Design at Somerset House, and his connection as chief designer with Messrs. Hoole and Co., ironfounders, Sheffield. Referring to the Duke of Wellington's memorial in St. Paul's Cathedral, he said it was the principal work of Stevens' life, and said it occupied him for a period of seventeen years, and was practically complete when he died. In considering that monument as a masterpiece of combined architecture and sculpture, one or two things characteristic of Stevens' work as a whole were seen there in finest form. In the first place the whole spirit and form of Stevens' art was classic. Reared as he was in the atmosphere of Italy—an atmosphere still laden with the fragrance of a time when art blended with all the thoughts and actions of men—Stevens was a belated and perfect blossom of that bygone era, and the whole spirit of his art, its broad and central character, its dignified rectitude, its striving after the greatest common measure of expression, accorded with the spirit of that time. The qualities of his work, like all things classic in spirit and form, were those that would survive all fashions, all peculiarities of time and place. His art would survive those because its principles were inherent in humanity as a whole, and in the very nature of art—principles that strive to embody the greatest common beauty and character, free from what was excessive, peculiar, eccentric, or the result of personal bias. Stevens caught up the



HOLY TRINITY CHURCH, KENSINGTON. THE LATE G. F. BODLEY, R.A., ARCHITECT. *Photo: Cyril Ellis.*

This is one of Mr. Bodley's last churches, the very last upon any considerable scale. It is a lofty building of simple character, in which there is an evident intention to rely greatly for effect upon the perspective of tall slim columns and the oblique rather than the direct or axial vista.

C

conception of the classical tradition, as it had been understood by the men of the Renaissance. He adopted the form of architecture, of painting and ornament, and the general manner and method of art as used by them, but he was no mere dull copyist or lifeless reviver of a past style. All his work was fresh and new, and animated with his own individual feeling. The architectural members employed in the Wellington monument were those that tradition, by centuries of use, had made familiar. Stevens' power as an artist was to be seen in the adjustment of those forms in a manner so contained in the vigorous and compact pattern of line and mass into which they combined. The forms and their proportions were as finely and justly conceived, and with such rare feeling for crisp piquancy of effect that the various members although familiar acquired a new and delightful beauty.

Our Plate.

The Burkitt Homes, Kings Lynn.

Famous as a seaport town for many centuries, Kings Lynn enjoys a yet wider fame among the artists of the world as a treasure store of architectural art. From the stately churches, which have ever been a proud possession of the town, down to the gem of a Custom House, which marks the apex of the neo-classic revival, the town can exhibit a whole range of interesting and beautiful buildings adorning its picturesque streets. It seems to have been impossible for the forefathers of Kings Lynn to erect a building, however ordinary, without investing it with some feature to charm the artist's eye. However commonplace the structure, it yet possesses a cornice, a doorway a quaint window, or an indisputable sense of proportion that lifts it from the rut of the undistinguished. Moreover the town can furnish examples of building of almost every style and period of English architecture, and thus possesses advantages over other English showtowns, such as Stamford, Abingdon, and Bath. It is not, therefore, remarkable that a visit to Kings Lynn has come to be regarded as a necessity by every student of architectural art.

Few of the passers-by in Queen Street, Kings Lynn fail to stop and gaze at the Burkitt Homes for old people, one of the latest additions to the charities of the town. Standing back from the road behind a trim grass plot, the building possesses quiet dignity and homeliness. The style adopted is Tudor.

The plan follows tradition very closely, though the somewhat awkward shape of the site introduced difficulties that required some amount of thought for their solution. A central tower, or gateway, pinnacled and battlemented, flanked by two low wings on either hand, forms the street front, and through the entrance archway a glimpse may be had of the grass court and sun dial round which the homes are ranged.

The buildings are faced externally with thin red bricks set with wide mortar joints, a combination that makes the brickwork effective and pleasing. The roofs are covered with red tiles, and the casement windows throughout are of wrought-iron with leaded panes and oak frames and sills. The court level is three steps above that of the pavement outside. Immediately on the right under the archway is the door of the turret staircase that leads to the board-room over the entrance.

This is a long narrow room, some 20ft. by 8ft. 6ins., with a big bay overlooking the centre court. At one end is the chimney-piece of oak, with simple Tudor tracery, fitted with a dog-grate in surrounds of dull red monastic tiling. The room has oak beams to the ceiling, and an elaborate dado, 3ft. 9ins. high, of oak, enriched with cinquefoil tracery. The door is elaborately enriched with tracery in the panels. The floor is laid with oak parquet. The fine oak table and the chairs, specially designed, will inevitably attract attention. They are Jacobean in design, the table having bossed legs and a fine stretcher, and the chairs the high backs and carved tops of the later period and Dutch influence. The lighting fixtures are suspended from finely-carved Tudor rose bosses at the intersections of the main beams. Outside the board-room is an ante-chamber, lighted, like the staircase, by windows in the front.

It is characteristic of many of our old almshouses that while much care and money have been expended on the board or governors' rooms and chapels, the homes themselves, which, after all, are the most important part of the foundations, are of the plainest and most uninteresting description. This is not the case with the Burkitt Homes, for the dwellings are even more elaborately fitted than the board-room. They are probably the most beautifully equipped buildings of their class in the kingdom.

As soon as one enters the central Court the doors of the twelve homes are visible, each with its little granite step, oak door and hood, the latter supported by ornamental wrought-iron brackets of simple design. Considerable ingenuity has been displayed in planning the homes at the angles of the court, but though they are not all arranged alike, the accommodation, fittings and equipment of each is exactly the same. The rooms are all on one floor, a thoughtful provision for old people, to whom stairs would undoubtedly prove troublesome. Each dwelling contains a well-lighted entrance lobby 2ft. 10ins. by 5ft. 9ins., with room for hats and coats, leading into a living-room about 11ft. square, off this, and separated from it by heavy curtains, is a bed alcove, 6ft. by 8ft. 2ins. of sufficient size for the double bedstead in oak, specially made, with which each dwelling is provided. This alcove has a separate window, and this necessary means of ventilation and the arrangement of the sanitary accommodation are notable points in the general planning. Out of the living-room opens a small scullery, with sink, and off the scullery is a small coal-cellar and light airy larder. The living-rooms and lobbies are panelled in oak to a height of 7ft. 3ins., the chimney-pieces are also of oak, with small open ranges, having oven and boiler, with bright steel canopies over, set in surrounds of red monastic tiling and fireclay, like the board-room. The ceilings have oak beams, and the floors are laid with oak parquet. A capacious cupboard is provided by the side of the living-room chimney-piece. The whole of the door furniture and light fittings are of wrought iron. Sunk mat spaces and mats are provided in the lobbies. The sculleries are paved with small red tiles, and have dadoes of salt-glazed bricks; the porcelain sinks are of the bowl type, dispensing with the necessity for washing bowls, and each is fitted with a teak draining board and plate rack. The sanitary fixtures are of the latest and most highly finished pattern, and are on a par with the other excellent arrangements. Separate entrances from the street are provided to the paved back courts, so that coal may be brought in and dust removed without entering the central court.

The forethought expended on the individual dwellings is, however, typical of the arrangements generally for the comfort and well-being of the occupants. At the extreme end of the site is a separate building containing the laundries and bath-rooms, by this arrangement all the hot-water fixtures and heating apparatus is concentrated under one roof. There are two laundries, each equipped with three porcelain washing tubs, with hot and cold water laid on, copper for boiling in addition to the water heater, an ironing table and mangle. The bath-rooms, of which there are two, are in the centre of the block. They have glazed dadoes, and floors of black and white tiling. The baths, of porcelain, are sunk three steps down in the floor, this being the most suitable form for old people, and strong rails are provided to enable the users to raise and lower themselves, and to prevent their slipping and falling. Heated towel rails are also provided.

The lighting throughout the almshouses is by electricity, a two-light fitting being provided in the living-rooms and single drop lights elsewhere. The central court is lighted by six lamps, carried by ornamental wrought-iron brackets projecting from the fronts, and a three-light fitting under the archway provides ample illumination at the entrance.

The court has been laid with turf, in the centre of which a Ketton stone sundial has been placed.

The plans were prepared by Mr. H. T. Tilson, and the contractors were Messrs. F. and S. Dickerson, of King's Staithe Lane, Kings Lynn.

Town Planning and Housing Notes.

The Planning of Suburbs.

Mr. Raymond Unwin delivered on February 10th, a lecture before the Leeds and Yorkshire Architectural Society. The paper was illustrated by an extensive series of views and plans of the Hampstead Garden Suburb, and typical examples of town planning abroad. The lecturer, in the course of his paper, said that the successful setting out of such a work as a new city will only be accomplished by the frank acceptance of the natural conditions of the site; and, humbly bowing to these, by the fearless following out of some definite and orderly design based on them. To straighten a river, level a hill, fill up a valley, or even cut down a fine clump of ancient trees, to make the site fit some preconceived design, would be presumptous folly. Such natural features should be taken as the keynote of the composition, but beyond this there must be no meandering in a false imitation of so-called natural lines. Let our avenues be straight or boldly curved, not aimlessly crooked, and let our open spaces be not shapeless patches, but squares, circles, or other orderly forms. The glittering path of the river as it winds across the plain, or the slope of the mountain range standing out in silhouette against the sky, delight us indeed; but the inconceivably complex conditions which form these curves have no part in any work of ours; and, in attempting to mimic them, we but miss that beauty of orderly design for the creation of which alone power has been given to us. The problem is complicated because it is necessary to consider not only what is desirable, but what is possible with the building conditions that are prevalent now. In the Garden City at Letchworth a considerable degree of harmony has been secured by requiring all roofs to be covered with tiles, while the very cheapness of the land at Letchworth, and the desire of many of the early settlers for the most countrified sites has led to an appearance somewhat too scattered for the best architectural effect. This, however, will gradually rectify itself, and if in some cases too great freedom has been left, this, in its turn, will help to foster local public opinion. In Germany there has been a great change in the style of their town planning. When the modern town-planning movement started, the formal and geometrical style typical of Haussmann's work in Paris, was adopted, and the work was much in the hands of engineers; but since the time of Camillo Sitte a more irregular and picturesque style of work has become prevalent, and is being carried to an extent which tends to destroy dignity and architectural effect. Taking the Hampstead Garden Suburb, by way of illustration, one can see the importance of carefully studying the site preparing a survey of the trees and other features on the land, together with a contour plan, before attempting to lay it out. The convenience of access to certain points such as the railway station, drainage facilities, proper gradients for the roads, etc., will indicate generally the lines which the more important ones will take, while the cutting up of the land into the building plots of suitable sizes, with due regard for economy in length of road and proper consideration for the aspects of the buildings, will determine in a general way the lines of many of the building roads. The preservation of the outlook across





View from Queen Street.

Photos: W. Boughton and Sons, King's Lynn.

THE BIRKITT HOMES FOR OLD PEOPLE, KING'S LYNN. HERBERT T. TILSON, ARCHITECT.



THE CHURCH OF COWLEY ST. JOHN, OXFORD. THE LATE G. F. BODLEY, R.A., ARCHITECT.

This church stands alone in treatment and intention. It is a monastic church, built for the use of the Cowley confraternity. The long chancel, screened from the relatively short nave, is for the use of the fathers and brethren of the order. The public is admitted to the body of the church. The eastern end of the exterior, shown in the accompanying view, rises above the monastic garden. Along the southern and eastern walls runs a low flat-roofed building containing a cloister and vestries. The northern side is flanked by a chapel and a music school or practice room for choristers.

ıy open space available should be con-dered. It is also essential to secure a suit-ıle position to form the centre of the parish, ıburb, or estate, where may be grouped the ore important buildings. Having, in a ıeral way, determined all these factors, the roblem becomes essentially very much one the exact lines and arrangement of the ıads, together with the building lines, and ıe placing of the buildings must be deter-ined primarily on architectural grounds secure satisfactory street pictures, hether of a picturesque or more dig-fied and architectonic character. In ealing with areas devoted to cottages, ɔnomy in roads is the first consideration. t Hampstead, by means of a special Act of arliament, power was obtained to make ıads limited to 500ft. in length of a width of ɔft., provided the houses on each side were ɔt less than 20ft. apart. As justifying the ranting of this privilege the Trust bind ıemselves not to build more than an average f eight houses to the acre over the whole state.

The passing of the Town Planning Act af-ɔrds an opportunity probably for the first ıne, for controlling the character of sub-rban development, and it will be the duty of rchitects in future to regard their buildings s parts of a total picture rather than as iso-ıted units. At the same time, an immense pportunity will be afforded for considering treets and areas as a whole, and for produc-ıg architectural grouping on a large scale. f wise use is made of the powers given in ıe Act, and if the citizens, and especially the rchitects and surveyors, will co-operate, it ıay be possible to stop the devastation go-ng on round all our large towns, and begin ɔ build up suburbs worthy to be the homes f the people.

Housing Questions.

Mr. Howard Martin, at a recent meeting of he Surveyors' Institution, dealing with the Housing and Town Planning Act, said that if it was fairly administered in a practical spirit it would be productive of much good. He considered the clauses as to the warranty of fitness for habitation of certain classes of houses had been framed on a mistaken basis. While many tenement houses would be outside the provision of the Act, in other cases a question would arise as to the onus of liability to repair, as it would fall on the landlord under the law, and on the tenant under the lease. As to town planning, he considered that Eastbourne was an admirable example of the possibilities of the large estate dealt with on the leasehold system, while Newquay exposed the undesirable results which often followed from the small ownership system, under which everybody did just what he pleased. Landowners themselves should take the initiative in town-planning schemes.

Landlords' Future Liabilities.

A claim in the Manchester County Court by a tenant for damage done to his furniture through the defective character of the roof of the house resulted in a verdict for the defendant. It appeared from the evidence of the plaintiff and his wife that during the course of a heavy storm "a river of water" ran from the roof into the house. For the defence, expert evidence was given that the gutter was perfect of its kind, of the sort usually provided in working-class property and quite adequate to carry off the water. The trouble arose through an india-rubber ball being thrown up by children, which lodged in the gutter and caused a block in the down-pipe. Remarking that if the roof were sound, one would expect the water to run down the wall outside, Judge Parry asked an architect whether the flashing of the gutter on the house side ought not to be higher than on the street side. Witness replied that it never was in houses of a working-class character. He agreed, however, that if it were, the water would flow into the street in case of a dam and not into the house. The Judge: When the Housing and Town Planning Act of 1909 comes into operation, this form of gutter will have to be displaced, I think, for in cases of all houses up to the value of £26 a year a house will have to be "in all respects reasonably fit for human habitation," not only at the commencement of the holding, but during the holding. The Judge said the case was of importance. In his opinion it was proved that the gutter was defective in construction, but he was not satisfied that as the common law stood a landlord was responsible for defective construction in a house of this class, which was let at seven shillings a week. As he had pointed out, it would be different when the new Act came into force. He commended sections 14 and 15 of the new Act to the attention of all owners of house property up to the value of £26 a year.

Mr. Lever's New Prizes.

Mr. W. H. Lever has given to the School of Architecture in the University of Liverpool three prizes of £20, £10, and £5 annually for the best scheme for laying out the land near the church in the centre of Port Sunlight, to provide sites for a Village Library, Picture Gallery, a Gymnasium, and a College for higher education. Mr. W. H. Lever further offers, if he carries out any of the schemes submitted, to pay the author of it £100. These prizes are open to students both in the School of Architecture proper and the Department of Civic Design. The former include in their schemes designs for various buildings.

We understand that the (U.K.) Winget Concrete Machine Co., Ltd., of Newcastle-on-Tyne, have just received from one of H.M. Government Departments a further order for another "Winget" concrete machine, complete with ordinary outfit, pallets, etc.

Societies' Reports.

Liverpool Architectural Society.

At the second members' meeting of this society, held in the rooms of the society, 13, Harrington Street, Professor C. H. Reilly, who presided, referred to the formation of the City Guild, the object of which was to assist in the preservation and increase of the natural and structural beauties of the city and neighbourhood.—Mr. Edmund Rathbone read a paper, which was illustrated by lantern slides, on "The City Beautiful; or, Liverpool Compared with Cities Old and Modern." The lecturer remarked that it would be a very great benefit to Liverpool if the City Council were personally conducted over Paris at the expense of the city, under the guidance of our professors of architecture and town-planning, in order to show them what could be done in the way of beautifying a city, and also that something might be learned of the possibilities of street improvement by the introduction of properly selected and carefully tended trees. The subject of trees in our streets, the lecturer added, was entirely avoided by our city. The lecturer also agreed with a subsequent speaker that much might be done towards making our town squares possible as a resort of the wealthy by removing the forbidding iron railings around the portions of the squares which are laid out as gardens. —A vote of thanks was proposed by Professor S. D. Adshead, seconded by Mr. P. C. Thicknesse, and supported by Messrs. Gilbert Fraser and H. B. Bare.

The Leicester and Leicestershire Society of Architects.

Mr. Arthur Marshall, A.R.I.B.A., read a paper on "Spanish Places and People." Mr. Marshall gave, in a delightfully humorous, and at the same time exceedingly interesting, way, the account of a visit of his to Spain. Starting from Bayonne, he detailed his journey across the Pyrenees to Fuentarabia, a mediæval town of great interest and beauty. A feature of strange character to English eyes was the large number of balconies, and one side of each balcony was, the lecturer explained, generally devoted to the culture of vegetables, and the other to the culture of flowers, while in almost every case there was either a chaffinch or a nightingale in a cage hanging over the centre. A remarkable feature in such an old-world town was an up-to-date electric installation, the power of which was produced by a mountain stream, the motive force being used to do all kinds of domestic work, even to the working of the humble mangle. San Sebastian and Burgos were described, and the handsome buildings of the former town were much admired, also a view in Burgos, "A Dusty Day." Mr. Marshall mentioned that the photograph had been exhibited nearly all over England and America. A few views of Madrid, and some clever photographs of a bull-fight were shown, the lecture concluding with two or three slides depicting "Spanish types of beauty," according to the title Mr. Marshall solemnly gave to them, but there was a good deal of laughter among the audience when the "types" were shown.

The Junior Institution of Engineers.

At a recent meeting of this Institution held at the Royal United Service Institution, Whitehall, the chairman, Mr. Geo. T. Bullock, presiding, the honorary members' lecture of the year was delivered by Mr. R. H. Hammersley Heenan, M.Inst.C.E., late consulting engineer to the Harbour Commissioners of Port Elizabeth, who took as his subject "The Creation and Development of a Successful Commercial Port." With the Harbour of Algoa Bay or Port Elizabeth as an illustration, the lecturer showed how great natural difficulties could be overcome in port development, and provision made for a satisfactory harbour. Both failures and successes were considered in the course of the lecture, reference being made to the breakwater of 1856, the design for docks in the bay in 1876, jetties and sea walls, mode of working the port, improvement of jetties, landing stage for explosives, hydraulic dock, slipway, land reclamation, and fishing interests. The effects of improvements and the results of experience were dealt upon, and the lecturer concluded with an interesting review of the various projects which had been put forward from time to time, including the latest proposal of Messrs. Coode, Son, and Matthews, the breakwaters of which would enclose an area of 740 acres, the general design being one recommended to the Harbour Commissioners by Mr. Heenan some years previously. When those great works would be carried out it was hard to say, but it was even more difficult to imagine a country with the enormous potentialities of South Africa, and with an enterprising and energetic people would neglect to develop when a suitable time arrived one of the most important ports which it possessed. It was moved from the chair, seconded by Mr. F. E. Powell, of the Auckland Harbour Works, N.Z., and supported by Mr. R. W. Newman, Mr. A. H. Tyler, Mr. J. Wylie Nisbet, and Mr. B. E. Dunbar Kilburn, that a cordial vote of thanks be passed to the lecturer.

Glasgow and West of Scotland Technical College Architectural Craftsmen's Society.

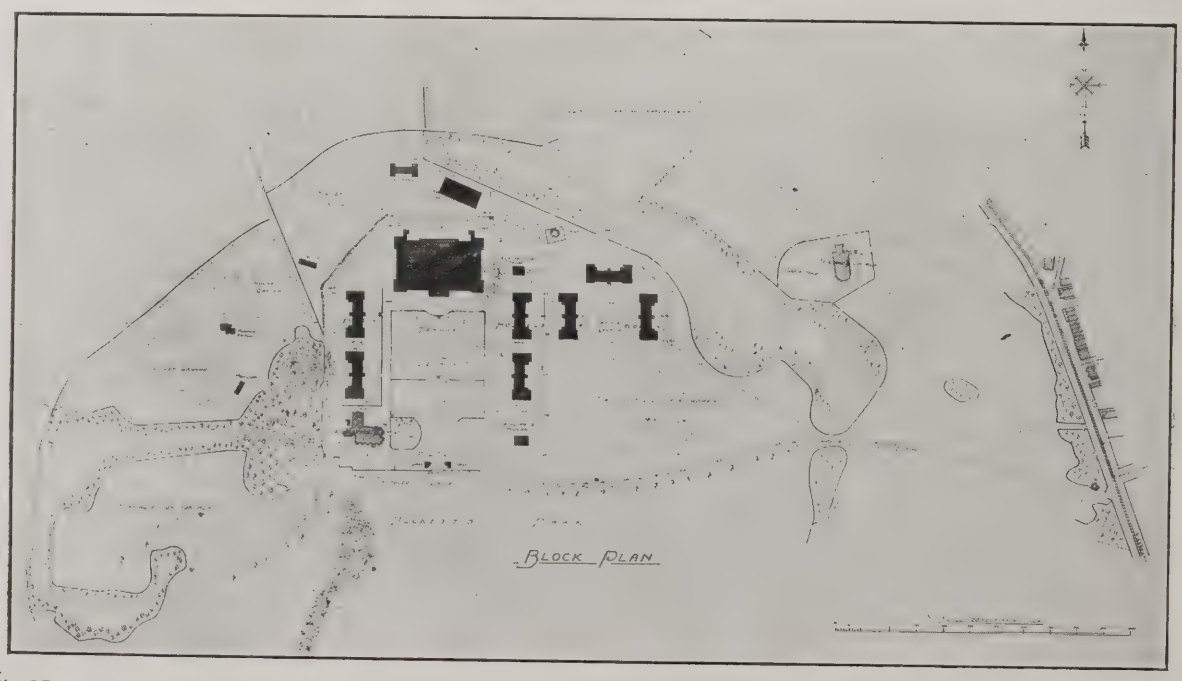
"Tiles and Tile Work" formed the subject of a lecture delivered on the 11th inst. by Mr. T. S. Allan to this Society. The lecturer referred to the vast improvement both in regard to materials and workmanship in this class of work, and also to its more extensive use in recent years. The process of tile manufacture was briefly described, attention being given to the various kinds, sizes, and qualities of tiles, and also to the geometrical relationship in size of the various flooring tiles. In dealing with the methods of fixing and of design, reference was made to work recently carried out, special mention being made of the interesting character of the work at the New Royal Infirmary (Glasgow), described as one of the finest examples in the country of what can be accomplished in tiles. In concluding, the lecturer called attention to the dirty condition in which many good specimens of tile work are to be found, remarking that with a liberal supply of soap and water the appearance of these would be considerably enhanced.

Northern Architectural Association.

At the fifth ordinary meeting of the session, held on Wednesday, February 16th, Mr. F. W. Rich, F.R.I.B.A., delivered to the members of the Northern Architectural Association at Higham Place, Newcastle, a lecture of special interest, the subject being, "The Flavian Amphitheatre, commonly called the Colosseum, Rome." Mr. Rich described the methods of construction and design of the building, illustrating his observations by a series of specially prepared slides, and exhibiting some specimens of the materials used in the building. On the motion of Mr. Charleswood, seconded by Mr. J. H. Morton, and supported by Mr. Jos. Oswald, the lecturer was heartily thanked. Mr. G. T. Brown (Sunderland), president of the society, occupied the chair, and there was a large attendance. Two members and seven associates were elected.

Institute of British Decorators.

The annual meeting of the Incorporated Institute of British Decorators (Scottish Branch) was held in Aberdeen on Saturday,

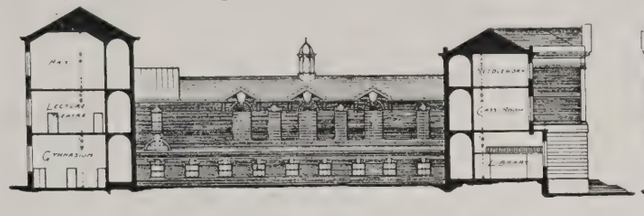


CITY OF LEEDS TRAINING COLLEGE, FAR HEADINGLEY. DESIGN SUBMITTED BY A. E KIRK, A R.I.B.A. BLOCK PLAN.

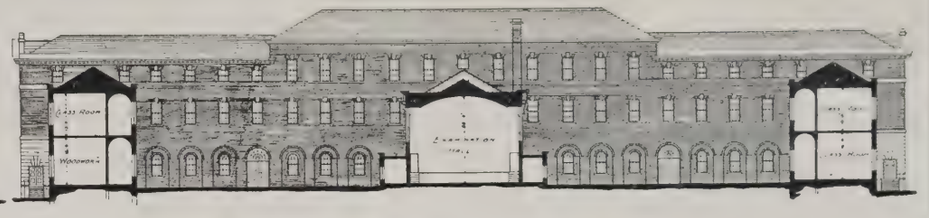
CITY OF LEEDS TRAINING COLLEGE.

KIRKSTALL GRANGE. FAR HEADINGLEY.

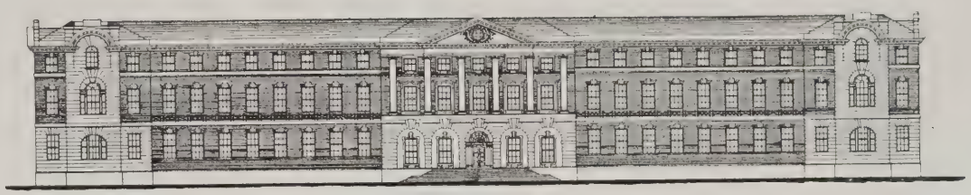
EDUCATIONAL BLOCK.



SECTION ON LINE AB.



SECTION ON LINE CD.



FRONT ELEVATION

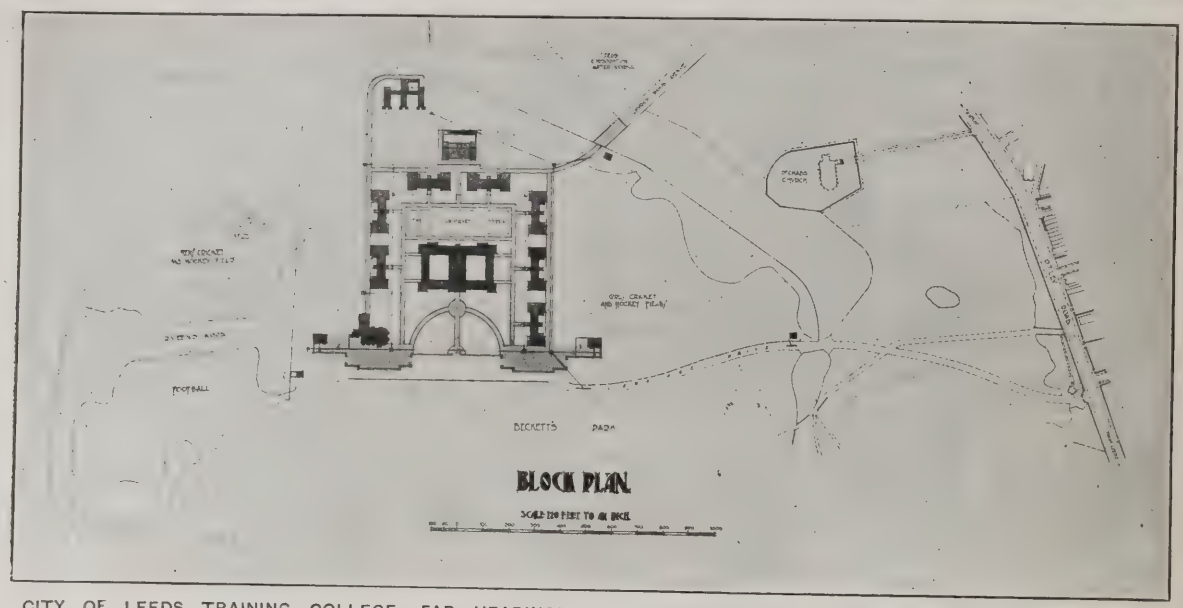


END ELEVATION



BACK ELEVATION

CITY OF LEEDS TRAINING COLLEGE, FAR HEADINGLEY. DESIGN SUBMITTED BY A. E. KIRK, A.R.I.B.A.



CITY OF LEEDS TRAINING COLLEGE, FAR HEADINGLEY. DESIGN SUBMITTED BY W. P. SCHOFIELD, A.R.I.B.A.

Mr. Robert J. Bennett, Glasgow, chairman, presiding. The secretary (Mr. George Cameron) submitted his report, showing a credit balance of £21 3s. 3d., which was adopted. The report of the committee, submitted by the secretary, stated that the membership of the branch as at December 31st last was 59, a decrease of 5 as compared with the total of the previous year. Two fellows and one associate had died, and there had been two resignations during the year. No new members had been enrolled, and this was a matter for regret, as there were many master-painters in Scotland who were eligible for membership. The committee was glad to be able to report that the funds of the branch were in a satisfactory condition. The Central Executive proposed a scheme for the formation of a capital fund, and the Scottish Branch agreed to contribute £15 for the year 1909 towards the fund, and this sum had been remitted to the general treasurer. The following officers were elected:—Chairman, Mr. Robert J. Bennett, Glasgow; vice-chairman, Bailie Dobbie, Edinburgh; secretary and treasurer, Mr. George J. Cameron; auditor, Mr. J. M. Orr, Glasgow. Mr. John Whyte, Aberdeen, was appointed representative of the district upon the General Council of the Institute. The following five members, along with the office-bearers, were appointed to constitute the District Committee:—Bailie Dobbie, Edinburgh; and Messrs. John Whyte, Aberdeen; John Scott, Glasgow; Henry Drummond, Dundee; and William Paterson, Girvan. The chairman, vice-chairman, and the secretary were appointed district delegates to meetings of members of the Institute.

The Tribunal of Appeal under the London Building Act, Mr. A. A. Hudson presiding, has reserved its decision in the appeal of the Berkeley Hotel Company against certain requisitions of the London County Council, under the London Building Act (Amendment Act, 1905). The proceedings mainly related to a requisition that the hotel company should provide swinging doors in certain of the corridors of the hotel, it being contended that in the event of an outbreak of fire such doors would tend to restrict the area which would be subject to fire and smoke risk. On behalf of the appellants it was urged that such doors were unnecessary, and that they would tend to render the service of the hotel inconvenient. Mr. R. Griggs and Mr. Percy Tubbs, F.R.I.B.A., were the expert witnesses appearing for the Hotel Company, while Mr. W. J. Ancell, architect, Mr. A. R. Dyer, of the London Fire Brigade, and Mr. J. C. Stransom, of the L.C.C. Architects' Department, gave evidence on the other side.

Notes and News.

The Blandford Town Council have in hand the question of repairs to the grave of Alfred Stevens, the sculptor, in Highgate Cemetery, in consequence of a letter received from the cemetery caretaker, stating that the grave was very much neglected and the bronze memorial damaged. The grave is vested in the name of a lady, who has signified her willingness to give way to the Corporation. A discussion took place on a proposal to raise a monument to Stevens in his native town of Blandford, but the subject was deferred until the committee has visited London.

* * *

The scheme of coast defence at Herne Bay proposed by the Working Colonies Committee of the Central (Unemployed) Body for London has been rejected by the Local Government Board on account of the large sums already advanced by Parliamentary grant for works in or in the neighbourhood of London, and on account of the sums that will be required to complete these works.

* * *

The examiners of standing order proofs, finding no proofs of the compliance with the standing orders, have struck out of the London County Council Tramways and Improvements Bill proposals for various tramways in Hammersmith, Hampstead, Islington, Paddington, and Lambeth. The bill, after report to the Standing Orders Committee, will now proceed to the first reading.

* * *

A memorial to the late Lord Grimthorpe, subscribed for by the parishioners, has been unveiled in Doncaster Parish Church. It was through the late peer's efforts that the church was rebuilt after destruction by fire, and in his will he bequeathed £4,000 for the care of the fabric.

* * *

Tenders for the new Quebec bridge will be advertised for after May 1st, and two months will be allowed for tendering. Plans have been provided for a cantilever bridge, but contractors may furnish alternative designs and estimates with their tenders. Particulars may be obtained from the Board of Trade, 73, Basinghall Street, E.C., but as only approved firms of bridge builders will be allowed to tender, it is advisable that they should move in the matter early, more especially as it may be necessary to send enquiries to Canada to ascertain the local conditions, etc.

* * *

Mr. Ronald P. Jones, M.A., architect, of London, an old student of the Liverpool School of Architecture, has given to the school a travelling scholarship for this year of £50, to be held at the British School at Rome. To this the British School has added a further £5. With these sums it is hoped that a student will be able to work at the British school for at least six months, and do a piece of restoration work under the director of the school, similar to that done at the French school, but of course of smaller scope.

* * *

With a view of demonstrating the advance that has been made in the machinery of the laundry and in the equipment of public baths and other institutions, the Society of Laundry Engineers is organising an exhibition at the Royal Agricultural Hall, London, in April next. This display of laundry machinery and sanitary appliances will include machinery in motion, practical work in progress, demonstrations of new processes, and other departments that should impress the public and educate the laundryman. Conferences on methods of work will be held, and altogether the exhibition is likely to prove an attractive event in the spring.

* * *

Messrs. Joseph Robinson and Co., Ltd., Carlisle, alabaster proprietors, and manufacturers of plaster of Paris, Keene's, Parian, and of Robinson's fireproof cement, have issued an illustrated list of these materials, which contains also two illustrations of the Irish International Exhibition, which was held in Dublin in 1907, which were constructed entirely of Robinson's plaster, and consumed more than 1,350 tons. The many testimonials as to the value of Robinson's cement include the convincing testimony of Mr. Henry Faija and the late Sir Eyre M. Shaw, who wrote: "I am of opinion that this cement would be much more effectual in preventing the spread of fire than any of the common plasters or cement generally used in this country."

* * *

The prospectus has been issued of the African Marble Colonial Company, of Hamburg, which has been formed with a capital of 3,000,000 marks (£150,000), to exploit the marble deposits in German South-West Africa. According to the prospectus, geologists have ascertained the presence of marble deposits in the Habis, Karibib, Navachab, Skakopmund, Kubas and Sphinx districts, which are described as unparalleled in the world.

* * *

An influential meeting was held recently at Edinburgh to consider the desirableness of federating in some manner a number of existing organisations all interested in the preservation of Old Edinburgh and the general amenity of the city. The Cockburn Association, it seems, is on the eve of being dissolved, but those who have been connected

with it and others think the time has come when a new organisation with the same objects in view should be formed on a wider and more popular basis. Among the speakers were Mr. W. B. Blaikie, Professor Baldwin Brown, Mr. Thomas Ross, architect, Professor Geddes, Sir James Balfour Paul, and Mr. Victor Paton. After a free interchange of views the meeting was of opinion that as a first step a conference of the several bodies interested in the subject should be called, and for this purpose a small executive was nominated to arrange preliminaries.

* * *

Mr. Henry Vivian, M.P., at a discussion at Sion College on "Co-partnership in Housing" (Canon Scott Holland in the chair), said the co-partnership in housing movement was designed to cope with the terrible evil of housing. Over half a million people were living at the present time in one-room houses, and two million in two-room houses. The co-partnership scheme stood for two ideas—first, that of laying out an estate so that it should for all time stand for the interest of the community as a whole, and, secondly, that of linking up the interest of the individual with a sense of possession in that estate. They felt that, so far as housing was concerned, their movement did make an advance towards the solution of the problem. The movement was based upon a long view of the profit to be gained, and not of the short view such as obtained on the ordinary building estate. They claimed for their co-partnership societies that the investor in them would get a safe return for his money, and they succeeded in so ordering the development of their estates that year by year the security of the investor would so increase that in 30 years' time, instead of being shunned, the property would rise in value and in demand.

* * *

The famous Rialto Bridge, Venice, is causing some anxiety to the authorities. Cracks have been detected in the vaulting of the arcade which covers the bridge. Steps are being taken to arrest the damage and to prevent further mischief; but the suggestions that the stalls should be removed or that the present wooden arcade should be replaced by one of iron have been indignantly rejected.

* * *

At a meeting of the Epping Rural District Council, Mr. R. F. Bury urged that the Council should endeavour to obtain some powers to prevent the indiscriminate building of bungalows on the banks of the Lea at Nazeing and Roydon. Not only did these flimsy erections depreciate the value of the neighbouring properties, but as a result of their great increase it would soon become necessary to have a special sewerage scheme. The chairman, Mr. Marsh, said he feared they could obtain no such powers, but it was decided to have a special report prepared by the council's surveyor.

* * *

Messrs. Wailes, Dove and Co. (1906), Ltd., of London (10 and 11, Lime Street, E.C.), Liverpool, Newcastle-on-Tyne, Cardiff, Glasgow, Birmingham, Leeds, Hull, and Philadelphia, U.S.A., proprietors of the patent "Bitumastic" anti-corrosive solution, announce that, owing to the increasing volume of business in the Lancashire district, they have opened an office in Manchester, at 49, Blackfriars Street, where Mr. W. Lawson, from the firm's London office, will now be their representative. Their Manchester telephone number is 2318 City.

* * *

A red-brick building in Queen Anne's Gate, now nearing completion, is to be utilised by its owner, Sir Edward Tennant, as an art gallery for the use of the public. The gallery, which contains some beautiful examples of British art, will probably be opened to the public in May. The collection was gathered by the late Sir Charles Tennant, and comprises several examples of Gainsborough, Hoppner, Romney, Reynolds, Constable, and Turner. It is proposed that an entrance to the gallery be made in St. James's Park, in which case the sanction of the Government will be necessary.

GARDEN PLANNING IN RELATION TO THE HOUSE.*

By Miss Lorrie G. Dunington.

The Origin of the Garden.

The true beauty of the garden is dependent on three main conditions, all of which are indispensable: 1st, excellence of design; 2nd, suitability of material; 3rd, harmonious planting. By what reason does a garden exist? Is its origin to be found in religion, utilitarianism, or mere æstheticism? Is it subservient to, or independent of architecture? In contemplating the history of the human race and its gradual evolution from primitive man up to that product of sociology and education which marks the progress of our own times, we find that the art of gardening like that of architecture follows closely the wave line of advancing civilisation.

Ancient Egypt supplies the prototype of modern Western architecture; and since gardens have ever been associated with buildings, the question arises, What primeval motives prompted their construction? Archaic architecture might almost be regarded as a compilation of local materials arranged conveniently to meet the need for which they were intended. That is to say, the form, construction, and decoration of the building were the direct outcome of the materials used. Therefore, modifications in style were the result chiefly of the importation of new materials as well as the evolution of ideas.

The First Gardens.

The Egyptian temple, though of massive stone construction, probably drew its inspiration from nature. The hillocks of sand rising out of the desert may have suggested its form, and the reed and the lotus its ornamentations. Although, the stone of which these temples were built was not always found *in situ*—on the contrary, it was frequently brought from a great distance—still its universal adoption gave rise to a national and racial style, and a uniformity approaching that of localism.

Surrounding these buildings of severe and rectangular outline were the first gardens of which we have any definite record. Their primary object was probably to serve as a barrier to keep at bay the ever-encroaching sands of the desert. Further than this, they provided shade from the scorching rays of the sun and seclusion from the eyes of the curious. The fertile and irrigated land which they comprised was used by the priest for the growing of plants for use in religious ceremonies. In design, these gardens were essentially formal, often little more than a mere repetition of straight lines, yet they were suited to their purpose, and were at least in harmony with the buildings they encompassed. They were, in fact, veritable oases in the desert, with their tanks of cool water, fresh green turf, and rows of slender cypress. Nor were they without their arbours and trellises. The avenues of sphinxes which lined the main entrances to the temples were religious symbols, and probably had nothing to do with garden design, though they may have suggested the introduction of statuary into the gardens of Greece and Rome.

The Garden and the Building.

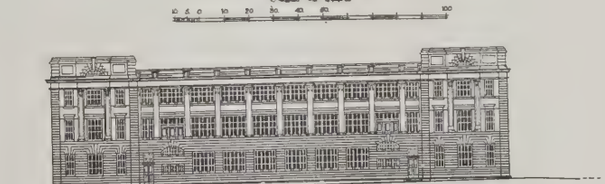
Thus we see that gardens in their origin were made to conform to the lines of the building, and were entirely subservient to it. Their first object was utility, and the degree of their æstheticism was indicative of the state of civilisation at the time. Abstract beauty is not greater to-day than it was then; but, by development of ideas, man has grown more conscious of its presence, and therefore is capable of giving it greater expression. So true is this, that

*Substance of a paper read before the Society of Architects on February 10th.

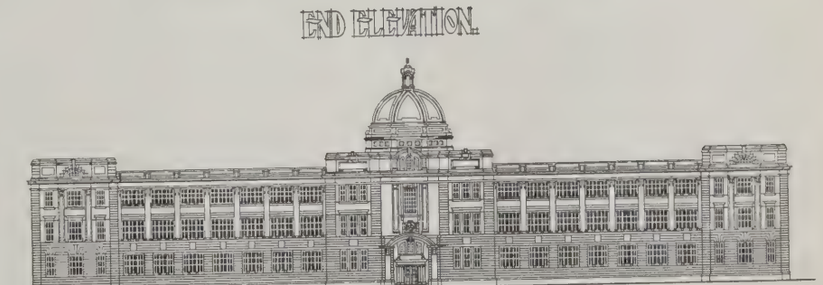


BACK ELEVATION.

SCALE OF FEET.



END ELEVATION.



FRONT ELEVATION.

CITY OF LEEDS TRAINING COLLEGE, FAR HEADINGLEY. DESIGNED SUBMITTED BY W. P. SCHOFIELD, A.R.I.B.A.

one can form a correct conception of the moral and intellectual condition of a nation by studying its art and architecture.

With the further development of art, gardens became the necessary adjunct of voluptuous public and domestic architecture. Pleasure grounds of considerable extravagance surrounded the palaces as well as the temples, and by the time gardening had spread westward to Greece and Rome, its original purpose was obscured by a reckless expenditure of wealth and an overwhelming indulgence in sensuous living. Gardens were regarded as a luxury, and were almost entirely confined to the rich.

There is every reason to suppose that the villas built in England during the Roman invasion possessed gardens, formal in design, and similar to those of Rome itself, though less pretentious. Owing to the subsequent invasion of barbarians, no evidences of these gardens now remain, the houses, on the other hand, being of more permanent construction, are still traceable in various parts of the country. With art once again at zero, in as far as Britain was concerned, we were forced to turn to religion for its revival. Christianity fostered and spread the garden, which was now more rigidly utilitarian and less æsthetic than its Egyptian ancestor. Treading on the heels of this revival came the peace and prosperity which resulted once more in artistic extension, and in gardens for pleasure as well as for use. But it is interesting here to note that the usefulness of the garden has never since been lost sight of, and the most successful 20th century garden is the one which displays the greatest amount of usefulness and beauty.

Formal Design.

If precedence alone could give superiority to one style over another, then the formal design holds an unassailable position. Anywhere between 2,000 and 4,000 B.C. up to the beginning of the 18th century, formality stamped and governed the planning of the gardens of the Aryan race. With the Mongolians it has been different, and it is stated that it is to China we owe the introduction of the so-called "Natural" style, which has played such havoc with our traditions and swept away so many of our beautiful English gardens.

The art of garden design in England was at its zenith during the seventeenth and early eighteenth centuries. Never before had there been gardens of such excellence in this country. The peaceful old manor-house garden of the sixteenth century was insufficient to meet the demands of the public, which was then feeling the influence of the Italian Renaissance, and the new ideas from the Continent wrought many changes in the English home and court circles. Yet something more than improvement of design was responsible for this sudden uplifting of garden-craft. Previous to this, it had been customary for the architect to design both house and garden, and the result was good up to a certain point. There was a general harmony of expression and unity of purpose between house and grounds, which could not fail to be reposeful and pleasing in effect. The science of horticulture was advancing with equal rapidity, and owing to the very numerous introductions of exotics, the materials at the disposal of the gardener were greatly enlarged. People began to take a keener interest in flowers, trees, and shrubs, and the garden became something more than a formal enclosure brightened haphazard by a limited number of old-fashioned flora. The garden of the future was to depend not only on architectural design, but also on the plants and trees it was intended to contain. Here was a difficulty to be overcome. The architect's knowledge of horticulture was not sufficient to meet the case, neither was the ordinary gardener competent to undertake the planning in addition to the planting. It was at this point that a French school of garden design came into existence, with Le Notre at its head. Here we had the horticulturist sufficiently trained in architectural design to enable him to plan the "lay-out" in sympathy with the building. I need not dwell on the causes or effect of the decadence which followed this period of brilliance, and which lasted for over a century. Suffice it to say that we are at this present moment undergoing to a certain extent a revival of that lost splendour. But we are accomplishing more than that. The greatest beauty the seventeenth century had to offer would not satisfy the twentieth century public. This is perhaps a bold statement to make, and the upholders of the "Good old Times" are possibly ready to dispute it. Humanity cannot for ever be supported by the memories of a past success, but rather should use it as a stepping-stone to higher achievements. The reason why the seventeenth century garden would not meet modern requirements is because we have outgrown it, just as the seventeenth outgrew the sixteenth century work, and to revive it in its entirety would be a retrograde step. The tangled and often empty flower border of a former age would not be tolerated to-day by those fastidious gardeners who demand leaf and blossom in unbroken succession for nine months in the year, and even make the midwinter months produce a modest contribution to the floral feast.

Principles of Design.

In England, at least, a garden continues to mean to most of us an enclosed retreat—a place for rest and mental refreshment, where we can enjoy, unobserved, the pure enchantments of nature. Its value does not lie in the intricacy of its design, nor upon the money expended on its construction, for beauty is no more a slave to wealth than is happiness. The modest cottage garden is frequently more soul-satisfying than its more pretentious neighbour within the park gates. On the other hand, the designer must bear in mind the extent of his client's purse when preparing his plan; for although, as we have seen, beauty transcends monetary considerations, yet the successful designer is a practical man as well as an artist. It is easier to bury gold unseen in excavations for a garden than in the bricks and mortar for the house, and what appears at first sight to be an inexpensive design may in reality prove a most costly one. Simplicity is seldom cheap in this world.

It is impossible to lay down any hard-and-fast rules regarding the planning of grounds. Each site suggests its own requirements, and each building its setting and style. But, broadly speaking, the skill of the designer lies chiefly in making the most of existing features, in the overcoming of difficulties and in preserving a sense of individuality untainted by affectation.

The most successful layout is the one which, when finished, looks so obvious and unobtrusive in arrangement that it would be difficult to picture it otherwise. It is, in short, the one which frequently calls forth the least praise from the uninitiated. There are some who, in their endeavours to produce a faultless design, will at start uproot every tree on the estate, exalt every depression, and lay low every mound, but what they gain by the abolition of a few obstacles does not compensate for loss of character and feeling. Any departure from convention is permissible, providing that the reason behind it is a good one. This is especially true of the remodelling of an existing garden of some maturity. Any who have undertaken such a task will have found innumerable hindrances to the carrying out of preconceived ideas. The size of the forecourt, the length of the paths, the width of the terraces, all may have to be readjusted in order to preserve some fine old timber or rare shrub. The "clean slate" method is undoubtedly the easier, but the inevitable sacrifice which it entails lays it open to just condemnation. Even when dealing with a new site, the designer should weigh carefully in the balance the removal of a single tree.

It is essential to pay considerable attention to the main entrance to the grounds from the road, as it is here that the visitors gain their first impression of house and garden. The drive and forecourt should be quiet and subdued in design, with just sufficient well-thought-out colour to suggest cheerfulness and good taste. Anything approaching ostentation should be strictly avoided. But when we come to deal with the garden proper, we can allow ourselves a greater licence, colour must abound, and the design, now less restricted, should offer peace and pleasure for every changing mood.

Garden Planning.

Garden planning does not begin and end at the draughtsman's table; indeed, that is the least important part of it. A house may be designed for to-day, and is complete when the last labourer has left it, but we make gardens for a future generation. We only begin the "layout"; others carry it on, and the work is never done, and fifty years of neglect will obliterate it from the face of the earth. Half the materials we use are inanimate, and the other half are living, and, therefore, ever changing. Who shall say that Bacon was wrong when he called gardening a more difficult art than building?

The overcrowding of ideas is the commonest fault of the beginner. Most plans from the 'prentice hand contain sufficient special features for half-a-dozen gardens. Moreover, a garden is not an architectural museum. It can be in perfect harmony with the house and still be devoid of masonry and statuary; and unless the latter be really good, it is better absent. There are few who realise to the fullest extent the value of a well-formed grass bank of geometric design, or who are conscious of the exquisite charm of the shadows it may cast in sunlight.

Gardens, being less permanent than buildings, are more influenced by passing fashions. At the moment no garden is considered complete without a "pergola," and so, with a happy disregard of all laws of design and good taste, we see this unfortunate alien from Italy erected in almost every plot of ground large enough to take it. If there be no south slope available for it and its roses and vines, then it is placed on the north and covered with ivy—a sad and useless object, leading from nowhere to nowhere. The sun-dial is another feature much misused. Savouring of a past age, it suggests itself as a centrepiece for an old-fashioned formal garden. Yet, how often do we see it set up in "Suburbia" with nothing to link it to its surroundings. But still more incongruous is it when one meets it in the forecourt of a public building, or in a London soot-laden garden.

Materials.

We have already seen that materials produce style. This is true, not only of buildings, but also of gardens. All architectural introductions into the garden should be, as far as possible, of similar materials to those used in the construction of the house. This may appear a mere platitude, and yet we not infrequently meet, in otherwise well-planned gardens, an absolute dissimilarity of materials.

Wherein lies the charm of a Surrey pine-wood garden? It certainly owes a deep debt of gratitude to both Miss Gertrude Jekyll and Mr. Lutyens, but even their joint skill could not have produced so distinct a style had they not had the assistance of local materials. Where would the Munstead gardens be without their Bargate walls and their pine and chestnut copses? With the house built of stone, quarried probably on the site, garden walls to match, paths of sand and flower beds of warm, light earth, what could be more harmonious in its conception? But what is suited to the Surrey pine-woods would be out of place on the chalk downs of Kent, or the clay of Middlesex. If the house be of London yellow



THE CHURCHILL COTTAGE HOMES. SILCOCK AND REAY, ARCHITECTS.

These Homes were built in the Cheddar Valley, Somerset, by the late Mr. Sidney Hill, J.P., whose object was to provide twelve comfortable homes for the deserving poor. The walls are of sand-faced brick, with roofs of red hand-made tiles, and window frames of oak,

brick, then let yellow bricks form the garden walls and steps. To import stone or other materials of greater refinement would be to accentuate the mediocrity of the building. In these days, however, of easy transits by road and rail, few people care to preserve a local style by the use of materials close at hand. They choose their gardens much as they do their carpets, by consulting a pattern book. Their fancy is caught by a fashion, and they succumb. The house is for the time being forgotten, as are also the surrounding conditions. Nor does the folly end here. Affectation creeps in in many subtle ways. At the present moment there is a revival of the gardens of a couple of centuries ago. There is a desire to reproduce ready-made antiquity. What is more delightful than a walk paved with old York flag-stones? Age has mellowed, and frost and rain broken it asunder. Vegetation has sprung up in the crevices and the whole is sweet with memories. Compare this with the handiwork of the modern man who first lays a discarded London flagstone, and then shatters it to bits with a hammer that it may present a crazy as well as an antique appearance. Will these paths we so construct live to be a joy to future generations? I think not. This is what I mean by retrogression in garden craft. Let us take the best of what has gone before, and then with sound materials proceed to greater attainments.

Harmonious Planting.

This last point I will touch upon but briefly, and it shall be more of the nature of a plea for greater attention to this branch of garden craft. Of what avail is a design, however beautiful on paper, if it is unsuited to the successful growing of flowers and trees? Materials control design. How then can anyone design successfully without knowledge of the materials which are necessary to the carrying out of ideas? I plead for a greater application to the study of horticulture by all those who aspire to the art of garden planning.

Trees and Shrubs

used in garden making fall under two headings:—(1) Those used architecturally, when they supplant more permanent materials, but at the same time are made to fulfil the same duties. Here we include the clipped hedge of yew or beech, the trim edging of box, the pleached alley and the topiary tree. To class these as unnatural, and therefore unsuitable features, is scarcely a fair criticism, since they are not intended to replace trees of natural growth, but act as foils to them. Most people will admit that the herbaceous border never looks so well as when backed by a wall of sombre green, and that the terrace gains much by the judicious use of trees of formal outline. (2) Under the second heading we have trees, shrubs, and flowers used exclusively for decorative purposes, and these are allowed to grow more or less as nature dictates. At the same time, due attention should be paid to the artistic grouping of colours, the value of light and shade, and the planting for bold effect; and it would seem that this is worthy of special study, in order to bring out the fullest possibilities of the garden. With higher ideals before us and an increase of knowledge and experience, we can look forward to achievements greater than those of the seventeenth and eighteenth century masters.

The Commissioner of Woods and Forests (whose powers are of wider extent than in his title implies) having declined to permit the erection of a theatre on the site of public baths in Orange Street, Charing Cross Road, the Westminster City Council has been unable to carry through a scheme for the sale of the baths. The refusal of the Commissioner of Woods and Forests is made "in view of the great importance of safeguarding the National Galleries in every possible way." The City Council has now decided to close the baths indefinitely.

Buildings in Progress and Completed.

CREWE.—The tender of Mr. C. W. Davenport, of Stockton Heath, Warrington, at £22,990, has been accepted by the Cheshire Education Committee for the erection of the Training College.

GATESHEAD.—The St. George's Parochial Hall and buildings, designed by Mr. Richard Wyllie, A.R.I.B.A., which were illustrated in our pages from the architect's drawings, have been opened. The buildings are of coursed rock-faced stone walling to main elevations, with chiselled bays and dressings, and are roofed with grey slates. The floor in the vestibule is of terazzo paving, and in the parish hall and elsewhere, wood boards on cement foundations. The windows are casements, fitted with Hall's patent pivots throughout. Fire-resisting materials are used as far as possible in all staircases and other constructional parts. The dado to large hall is of redwood cleading, which has also an open hammer-beam roof. The contractor was Mr. Alex Pringle, Cramer Dykes, and the principal sub-contractors were as follows:—Plumbing and gas-fitting, Messrs. T. A. Moffitt and Co.; ventilation, Messrs. J. Stott and Co.; heating and tiling, Messrs. Emley and Sons; painting and decorating, Messrs. Merrilees and Denton; and slating, Messrs. Nicholson and Son.

GLASGOW.—New club rooms have been completed for the Scottish Automobile Club in Blythswood Square, Glasgow. The rooms have been designed by Mr. A. Hunter, Edinburgh. The basement is occupied by the kitchen and a motor-house capable of storing from ten to a dozen cars; while the ground floor is taken up with dining-rooms, committee-rooms, smoking lounge, bathrooms, etc. On the first floor a common room is to the front, and another apartment is set apart for ladies. A comfortable billiard-room occupies the top floor.

LONDON.—The enlarged chancel and new reredos at St. Barnabas' Church, Kensington, has been consecrated. The main object of the work has been to extend the chancel by 15ft. to remedy the serious state of overcrowding experienced for many years past both by clergy and communicants. The new reredos has been erected by the parishioners and congregation as a memorial to their late vicar, the Rev. G. R. Thornton.

LONDON.—A scheme for the better protection of St. Paul's Cathedral from fire, which is estimated to cost about £20,000, is now in progress. The alterations affect chiefly the heating of the fabric. Up to the present the generating stations have been situated within the building itself. These are now being taken outside, and another improvement is the proposed removal of the workshops, which, as in the case of Westminster Abbey, form a permanent feature in the building. The cost of these alterations will, it is understood, be borne by the Dean and Chapter, who will receive assistance from the Ecclesiastical Commissioners and several of the wealthier of the City Livery Companies.

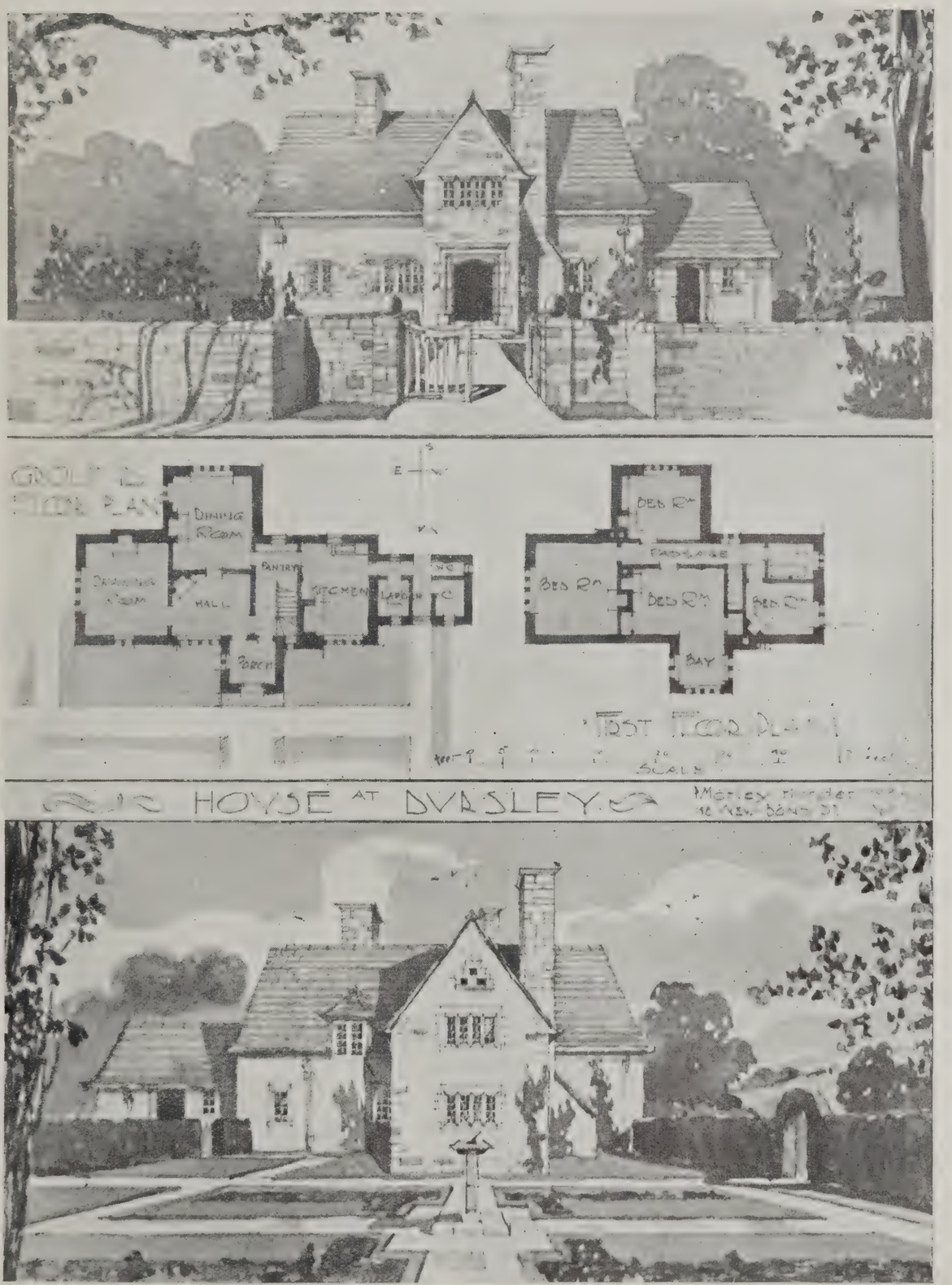
OXFORD.—The popularity of the Oxford Union Society and the growth of its magnificent library, has necessitated an immediate extension of the buildings. For this purpose that portion of the society's property now occupied by the steward's house and the billiard-room, will be utilised, and buildings erected in their place. The scheme that has received the approval of the Standing Committee is that prepared by Mr. W. E. Mills, A.R.I.B.A., of George Street, Oxford, and the work will be commenced at the end of the present term. The elevation shows, on the left or north side, the steward's house, which, by the way, will abut on St. Michael's Street. Due south of this will be the library and writing and smoking-room, whilst at right angles in the direction of Cornmarket Street, there will be a spacious billiard-room and reference library.

MANSELTON.—The new English Baptist Chapel, designed to seat 650, with school to accommodate 300, has been opened. The building is of local stone, faced on the outside with blue Welsh Pennant stone, with box ground Bath stone dressings. Internally the timber work is of the best selected pitch-pine. The total cost of the buildings is about £3,000. They have been erected by Messrs. E. Turner and Sons, Cardiff, from the designs and under the superintendence of Mr. W. Beddoe Rees, 3, Dumfries Place, Cardiff.

NEW KILPATRICK.—The reconstructed and enlarged Parish Church at Bearsden, New Kilpatrick, has been re-opened. The main features of the scheme are an increase in and reconstruction of the seating accommodation, the addition of a new chancel on the south, the extension of the nave on the north, the removal of the old circular gallery and the substitution of galleries over both transepts and the nave. The church is now cruciform in plan, and with the alterations which have been effected provides accommodation for a congregation of 1,260, an increase of 370. Oak has been utilised throughout. At the entrance of the chancel, an addition which has greatly enhanced the appearance of the building, a stone arch has been erected with small stone pillars. The ceiling is of oak, panelled with ribs which have gold bosses at the intersections. Marble has been used in the laying of the floor, in the centre of which is a diamond bearing the symbolic letters I.H.S. A brass railing has been placed in the chancel, in front of which stands the pulpit with a base of Caen stone and columns of alabaster marble. The upper part of the pulpit is of wainscot oak, and is richly panelled. In the chancel is a stained glass window gifted to the church by Mr. Matthew Henderson in memory of his wife. The organ has been reconstructed by Messrs. Norman and Beard, Ltd., London and Norwich, and is placed one half on each side of the chancel. The scheme of reconstruction, which has been carried out to plans by Mr. Henry Higgins, 248, West George Street, Glasgow, has cost over £5,000.

SUTTON-IN-ASHFIELD. — The new church of St. Michael's and All Angels', at Sutton-in-Ashfield, has been consecrated. The church provides seating accommodation for 650, and has cost £4,500, of which over £2,800 was in hand in July last. The church was commenced by the building of a stone chancel upon a site in Outram Street, an iron nave being added in 1892, with seating accommodation for 300 people. In 1905 plans were prepared by Mr. Louis Ambler, F.R.I.B.A., of London, for the permanent completion of the building. The present work consists of a nave about 80ft. long, 30ft. wide, and 50ft. high to the ridge, separated by arcades of five bays on the north side, terminating at the west end. The building has been designed in the 13th century (Early English) style. The external walls are of Bulwell stone, with Weldon stone dressings, and lined with brick, which is plastered, the internal arches and columns being of Ancaster stone. The roof is covered with red tiles. When completed, the tower and spire at the north-west angle near the main road will be the principal feature of the exterior.

TURRIFF.—The new municipal buildings are situated on the south side of High Street, next the post office. Externally, a free Renaissance treatment has been adopted for the front elevation of the building, which has a frontage of about 54ft. to the street. The front is built of selected and finely dressed red freestone ashlar from the Delgaty quarry. Though all on one floor, the building has a massive and well-proportioned appearance. Internally, the accommodation provided consists of a Council Chamber and Court Room, each measuring 23ft. by 18ft. at either side of a spacious entrance hall, and in the rear of the Court Room there are suitable witness and committee rooms and lavatories,



This house is an attempt to get all the varying conveniences of a small modern house and yet preserve the simplicity and character of the vernacular Cotswold style, with its random stone walling mullioned windows, and stone slab roof covering. The plans of the house explain themselves, and the general economy of space should be noted, especially in the matter of the position of the staircase.

etc. The Council Chamber is a finely proportioned room, with polished wood block floor, and has a finely moulded arch plaster ceiling, and the walls throughout have been treated in beautiful light tints. Mr. W. L. Duncan, Turriff, is the architect.

WHALEY BRIDGE.—The Derbyshire County Education Committee has accepted the contract of Messrs. Clayton Brothers, Poynton, for the erection of the new schools at Whaley Bridge. The cost will be over £6,000 for 340 scholars.

WIMBLEDON.—A new theatre is in course of erection for Mr. J. B. Mulholland.

Views and Reviews.

Heavy Timber Framing.*

It is surprising how in ordinary constructing work the design of timber framing is left to the ordinary workman. He works mostly by rule of thumb; the timbering may often be much too heavy, and, on the other hand, it may be too light, so that accidents or considerable loss may ensue. By long experience, of course, the workman obtains a knowledge of what will serve for various circumstances, but it is distinctly unwise to continue the present haphazard system, for no reliance can be placed upon such work. The construction of timber work ought to be designed by engineers as much as steelwork or reinforced concrete. Small details are very important, and the stresses have to be determined; therefore this book of Prof. Jacoby is very welcome. We may expect that in a few years it will be insisted that timber work, whether permanent or merely for the execution of other work, such as shuttering, shall be designed by the engineer. The author during the past nineteen years, in his course of structions in the College of Civil Engineering, Cornwall University, has taught by reference to problems involving timber construction, as well as those dealing with structural steel. This book is, in a way, a development of such study, and in it considerable attention is given to details in the design of joints, beams and trusses, though, as the author points out, it is the exception rather than the rule to give the same attention to timber structures as to those of steel, although it is essential in sound engineering practice that all connections and details should have the same degree of security as the framed members. Such details, for instance, as nails, their holding power, driven in various ways and in different forms; the distribution of stresses in the lateral resistance of spikes; the holding power of bolts and screws; the bending moment on a wooden pin; compression on a key; the proportion of washers and other such seemingly small matters are gone into fully, and the importance they have in rendering the work strong and efficient is clearly brought out. The work provides much valuable information on many practical points connected with timber construction, and the illustrations are distinctly of service, for, in many cases, they relate to actual examples that have been constructed. For instance, we find centres for various well-known bridges illustrated, and their design carefully explained in detail. There is a useful list of references to the illustrated articles on various timber constructions, in which we note reference to some centres for reinforced concrete bridges, but we find that no particular mention is made to the construction of forms for ordinary reinforced concrete work, and we think, in view of the important financial bearing that this has upon modern construction, the author might do well in future editions to treat this more extensively. Though there is one American book we know of published on the subject of timbering and cofferdamming and piledriving, the author of this book might also with advantage deal a little more fully than he has done with the subject. The theory particularly could be advantageously worked out and practical design and construction assisted by the provision of diagrams for reference as to the size of timbers necessary to resist various heads of water, the spacing of whalings of various thickness of laggings, and so on. In short, though the book contains much that is very useful, we urge the author to continue with his work, and furnish us, in future editions, with much more information in many other branches of construction in which timber is used. If he will analyse ordinary contractor's timbering in the same way as he has dealt with the aspects of many branches of the subject in this book, he will do very good service.

*"Structural details or elements of design in heavy framing." By Henry S. Jacoby, Professor of Bridge Engineering in Cornell University. London, Chapman & Hall, Ltd. Price 9s.

The "Diary and Handbook of the London Master Builders' Association" is issued with the object of providing useful information for those actively engaged in building operations throughout the metropolitan area. Its circulation is not confined to members of the association. There is, however, a useful list of officers and members, and a very interesting short history of the association. Among the useful information appended to the specially ruled diary, the National Form of Building Contract is included, as well as the revised N.A.O.P. agreement. The text of the London Building Acts (Amendment) Act, 1905, is given, as well as a list of district surveyors under the Act of 1894. The Government of London, so far as it specially concerns builders, is summarised, and there are several tables of money and measurement, besides postal information and other useful items. There is also a glossary of electrical terms. The list of building trade newspapers on p. 320 of this very handy book is in need of drastic revision. The Diary is issued from 31 and 32, Bedford Street, Strand, W.C.

Trade and Craft.

Messrs. Bayliss, Jones, and Bayliss.

With reference to the disastrous fire which occurred in the large electric power station at the works of Messrs. Bayliss, Jones, and Bayliss, completely destroying the building, and the very valuable plant it contained, we are informed by the firm that fortunately they have been able to arrange for a large and immediate supply of electric energy which enable them to resume work within a week of the fire. Customers, therefore, need not hesitate to entrust them with orders. The London offices and showrooms are at 139 and 141, Cannon Street, E.C., and the works at Wolverhampton.

Carron Rainwater and Sanitary Pipes and Castings.

The Carron Company, of Carron, Stirlingshire, have issued a useful catalogue of rainwater pipes and gutters, soil pipes, sanitary, general, and special castings, in which it is shown that the Carron Company have excellent facilities for the production of castiron goods, which they supply fine cast, galvanised, porcelain enamelled, or coated with Dr. Angus Smith's solution. Sink traps, drain traps, cisterns, gratings, and panels, door scrapers, stair tread protectors, wall plates, skid irons, window-frames, sash weights, and many other details in which the architect, builder, estate agent, and houseowner are interested, are included in considerable variety of form and pattern.

"Medusa" Waterproof Compound and White Portland Cement.

An attractive booklet issued by the Cubitt Concrete Construction Company, 260, Gray's Inn Road, London, W.C., shows that the "Medusa" Waterproof Compound was patented in 1907, and has now been employed in every part of the world, under every condition and in every character of construction in which Portland cement is used. The compound, when added in very small quantity to Portland cement, makes mortar, or other mixtures of sand and cement when used as a rendering, impervious to water. It thus extends the utility of cement, and enlarges the field of concrete construction. A mixture of two parts sand and one part cement with two per cent. of "Medusa" gives an impervious mortar, and the mixture need only be applied as a rendering coat 1in. thick. Again, hollow concrete blocks, made with cement to which one per cent. of the compound has been added, with five parts sand and gravel, are said to resist water better than blocks made in the proportion of 1 to 2 without the compound. The compound is recommended as being especially useful in making building blocks, cement plastering, roofing tiles, cellar walls, cistern and reservoir linings, conduits, sewer pipes, elevator pits, and in many other applications in which resistance to percolation is an object. It is declared that the compound, so far from lessening the hardening qualities of cement, may in many instances actually increase them.

The White Portland cement described in the same booklet differs in no respect, it is stated, from ordinary Portland cement, except as to colour. It is a pure white; and in order to preserve this purity, the cement should be mixed with white sand, crushed white quartz, ground marble, or ground white limestone. Whether used as stucco or in the form of concrete building blocks, white Portland cement obviously makes a very estimable addition to the architect's resources. The booklet contains several illustrations, and many convincing testimonials from users of "Medusa" and of White Portland.

Muribloc Partition Slabs.

Clean crushed clinker and the best English Portland cement, gauged to a set standard by special machinery, constitute the substance of the Muribloc partition slabs, the machinery used for mixing the materials ensuring uniformity of density and strength for every slab. The slabs are all true to shape, with sharp arrises, so that fixing and finishing are carried out with the utmost speed and economy. Every slab is tongued and grooved on all edges, the faces have a natural key, and will take nails and screws with ease and safety, so that they afford an effectual means of erecting partitions quickly and accurately, and the work can be finished with one coat of plaster, ⅛in. thick. Being innocent of any material that would cause expansion or harbour vermin, these slabs are peculiarly suitable for horticultural or bungalow work. They are nevertheless as strong as brick set in mortar, Messrs. David Kirkaldy and Son having certified that the crushing stress of the 4¼in. Muribloc slabs is 28.2 tons per foot square. Full particulars may be had from Muribloc (Partition Slabs), Ltd., Princes Wharf, Wandsworth, London, S.W.

It is stated in the firm's circulars that Muribloc partition slabs are manufactured with the utmost care, and that only clean crushed clinker and the best English Portland cement are used, which are gauged to a set standard by special machinery. A visit to the works substantiates these claims in the fullest possible manner. Mr. J. C. Snelling, the manager of the firm, is an enthusiast in all that pertains to cement. His father and grandfather were in the cement trade; and Mr. Snelling's very earliest memories and impressions are of that material, in which he has the profoundest belief. He thinks that almost everything could be made of cement or concrete; and in proof of his faith in it, he has constructed of concrete a lathe that has turned out excellent work.

The Muribloc factory at Princes Wharf, Wandsworth, is conveniently situated and admirably organised. The materials of which the blocks are made come mostly on barges, the cement from a distance, but the coke-breeze from plentiful sources of supply that are near at hand. The cement is of first-class quality, is selected and tested with the utmost care, and the supply on hand is always open to inspection by the visitor; and the breeze is subjected to a most elaborate process of screening, which the visitor may follow in detail.

The nicely adjusted mixture of materials is fed to a most ingeniously devised machine



THE MURIBLOC SLAB-MAKING MACHINE.

Its Inventor, Mr. Snelling, is seen in the background.

of which Mr. Snelling is the inventor, and for which he has secured, at home and abroad, about twenty-seven patents. In less time than it takes to summarise the operation, this machine moulds, shapes, and compresses the material into a slab of perfect shape and consistency. The working of this machine Mr. Snelling explains very lucidly by means of a small-scale model; and it is astonishing with what speed and precision the required amount of material for one slab is cut off, pressed top and bottom, laterally and internally, and the complete slab, with tongues and grooves, is pushed out on a board ready for the setting racks.

The operations throughout are automatic, the elimination of "human error" being as nearly perfect as can well be. Behind all the machinery, however, there are the brains and the personal equation of the highly trained concrete expert, whose knowledge of his subject is the result of lifelong study and experiment, and whose keen enjoyment of it all is manifest and infectious; and especially admirable is the strong insistence on quality, which, backed up by sedulous attention to every detail of mixing and manufacture, results in a product of the first class. The blocks are, as the circulars express it, manufactured and matured on scientific principles.

In the small bungalow which has been constructed at the works, the stability as well as the adaptableness of the blocks are clearly demonstrated. Muribloc walls and partitions are there seen hung with tiles, and faced with glazed tiling and with various kinds of cement. For all these and for any other finishes, the blocks present a perfect key.

Coming Events.

Wednesday, February 23.

CARPENTERS' HALL LECTURES. — Mr. Geo. P. Bankart on "The Art of the Plasterer," 7.30 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Students' Meeting. Mr. W. Milburn, jun., on "Notes on Continental Hospitals," 7.30 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Students' visit to the London Hydraulic Power Co., Grosvenor Road, Westminster.

ROYAL SOCIETY OF ARTS.—Mr. H. S. Smith on "Oxy-Acetylene Welding," 8 p.m.

Thursday, February 24.

LONDON MASTER BUILDERS' ASSOCIATION.—Annual Dinner, Whitehall Rooms, Hotel Metropole, 6.30 p.m.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Mr. J. B. Fulton on "The Church of Santa Sophia."

ROYAL INSTITUTION.—Professor Silvanus P. Thompson's 2nd Lecture on "Illumination, Natural and Artificial," 3 p.m.

Friday, February 25.

THE ARCHITECTURAL ASSOCIATION DEBATING SOCIETY.—"That the Employment of a Quantity Surveyor is to the Interest of the Building Owner," Mr. Percy Gleed, R.A.S.I., for; Mr. S. L. Dale, A.R.I.B.A., against, 7 p.m.

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS (Southampton Row, W.C.).—Mr. W. W. Watts' First Lecture on "The History and Development of English Silversmiths' Work," 6 p.m.

CAMBERWELL SCHOOL OF ARTS AND CRAFTS.—Annual Exhibition of Students' Work at South London Art Gallery, closes at 10 p.m.

ROYAL SANITARY INSTITUTE.—Provincial meeting, Derby, at County Offices, St. Mary's Gate. Mr. G. H. Widdows, on "Derbyshire Elementary Schools: Principles of Planning," 7.30 p.m.

L.C.C. SCHOOL OF BUILDING, BRIXTON.—Mr. A. C. Davis (Saxon Cement Co.), on "Portland Cement," 7.30 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Students' Meeting. Sir R. Hanbury Brown on "Irrigation Works," 8 p.m.

PHYSICAL SOCIETY (Imperial College of Science).—Professor Perry on "Telephone Circuits." Professor Lees on "The Laws regarding the Direction of Thermo-Electric Currents Enunciated by M. Thomas," Mr. H. R. Nettleton on "A New Method of Determining Thermal Conductivity," 5 p.m.

Saturday, February 26.

ROYAL SANITARY INSTITUTE.—Provincial meeting, Derby. Visits to Derbyshire County Schools at Langley Mill, Sandiacre and Long Eaton; also in Borough of Derby.

JUNIOR INSTITUTION OF ENGINEERS.—Visit to premises of Royal Automobile Club, Pall Mall, in course of erection, 3 p.m.

ROYAL INSTITUTION.—Professor Sir J. J. Thomson on "Electric Waves and the Electro magnetic Theory of Light" (3rd lecture), 3 p.m.

Monday, February 28.

THE ROYAL SANITARY INSTITUTE LECTURES.—Mr. E. J. Steegmann on "Elementary Science," 7 p.m.

R.I.B.A.—General and Business Meeting. Election of the Royal Gold Medallist. Election of members.

THE SURVEYORS' INSTITUTION. — Junior meeting. Mr. E. A. Rogers, on "Prospects in Municipal Surveying," 7 p.m.

Tuesday, March 1.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCHITECTURE. — Mr. Banister Fletcher on "Early Christian Architecture (A.D. 4th century to A.D. 6th century)," British Museum, 4.30 p.m.

INSTITUTION OF SANITARY ENGINEERS.—Students' lecture. Mr. Nandy Hoskins on "Sanitary Law," 7 p.m.

Wednesday, March 2.

CARPENTERS' HALL LECTURES.—Mr. C. F. A. Voysey, on "Castles in the Air," 7.30 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Council meeting, 7 p.m. Ordinary meeting, 7.30 p.m. Paper by Mr. Joseph Oswald.

THE ROYAL SANITARY INSTITUTE LECTURES.—Mr. E. J. Steegmann on "Elementary Science," 7 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. J. H. Stevenson on "Heraldry as Applied to Architecture," 8 p.m.

R.I.B.A.—Art Committee Meeting.

ROYAL SOCIETY OF ARTS.—Mr. E. Cooke on "The Teaching of Design," 8 p.m.

Friday, March 4.

ARCHITECTURAL ASSOCIATION.—Mr. J. A. Gotch on "The Mediæval House," 7.30 p.m.

ROYAL SANITARY INSTITUTE.—Mr. E. J. Steegmann on Elementary Science, 7 p.m.

LEICESTER AND LEICESTERSHIRE SOCIETY OF ARCHITECTS.—Mr. J. Armitage on "Wood-Carving," 8 p.m., at 5, St. Martin's East.

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS, Southampton Row.—Mr. W. W. Watts' 2nd Lecture on "The History and Development of English Silversmiths' Work," 6 p.m.

L.C.C. SCHOOL OF BUILDING, BRIXTON.—Mr. E. P. Wells on "Reinforced Concrete," 7.30 p.m.

Saturday, March 5.

ABERDEEN ARCHITECTURAL ASSOCIATION.—Exhibition of Sketches and Criticism of Designs.

Monday, March 7.

ROYAL SANITARY INSTITUTE.—Mr. E. J. Steegmann on "Elementary Science," 7 p.m.

Tuesday, March 8.

ROYAL SOCIETY OF ARTS (Cantor Lectures).—Mr. Lawrence Weaver's First Lecture on "Lead Work," 8 p.m.

COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about **five days** or longer after the date of this issue.
Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders.
The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Feb. 16—March 8. **BIRMINGHAM.**—Erection of a Council school in Sladefield Road, Washwood Heath, for the Education Committee. Applications for forms of tender and bills of quantities may be made on or before Feb. 16, in the Finance Office at the Education Department, Edmund Street, Birmingham, accompanied by deposit of £2. Drawings may be seen in the Architect's Office at the Education Department. Tenders must be delivered to Jno. Arthur Palmer, Secretary of Education, Education Department, Edmund Street. Fair wages clause.

Feb. 23—March 7. **LICHFIELD.**—Erection of 16b married soldiers' quarters, in one block, for the Secretary of State for War. Plans, specification, and conditions of contract, may be inspected at the Office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., or at the Barrack Construction Office, Whittington Heath Barracks, Lichfield, up to this day. Those desirous to tender and to receive a copy of the bills of quantities must apply to the Director of Barrack Construction not later than Feb. 25,, accompanied by a deposit of [illegible]. Cheques or orders to be made payable to the Assistant Financial Secretary, and crossed "Bank of England for Credit to Army Funds.' Tenders must be delivered to H. De La Bere, Director of Army Contracts, War Office, Whitehall, London, S.W.

Feb. 26. **LLEDROD.**—Persons desirous of tendering for the erection of a residence at Lledrod, near Llanilar, Aberystwyth, for Mrs. Thompson, are requested to send in their names to W. D. Jenkins, A.R.I.B.A., Architect, George Street, Llandilo, by above date.

Feb. 28. **YARMOUTH (I.W.).**—Extension of the Town Quay. Particulars may be obtained from J. A. Cole, Clerk Town Trust, Yarmouth, I.W., to whom tenders are to be sent.

Feb. 28. **MIRFIELD.**—Erection of four dwelling-houses, Coppinhall Road, Mirfield. Plans may be seen and quantities obtained of Ainley and Hirst, Architects, Surveyors, and Valuers, Slaithwaite, near Huddersfield, to whom tenders are to be sent.

Feb. 28. **SUNDERLAND.**—Re-construction of the roof of the Hallgarth Square Public Washhouse, for the Corporation. Drawing may be seen, and specification and form of tender obtained at the Borough Engineer's Office, Town Hall. Tenders must be delivered to Fras. M. Bowey, Town Clerk, Town Hall, Sunderland.

Feb. 28. **BURY ST. EDMUNDS.**—Erection of a new chemical laboratory and demonstration room, at King Edward VI. Grammar School. Plans, specification, and form of tender, can be obtained at the offices of Ainsworth Hunt, Architect, 51, Abbeygate Street, Bury St. Edmunds. Tenders to be delivered to John W. Greene, Solicitor, Clerk to the Governors, Bury St. Edmunds.

Feb. 28. **BELFAST.**—Erection and completion of Rosario male and female national schools, Ballynafeigh, Belfast, for the Very Rev. R. Crickard, P.P., V.F. Bills of quantities by W. H. Stephens and Sons, Donegall Square North, can be obtained from them on deposit of £1 1s. Tenders are to be delivered to J. J. M'Donnell, Architect, 27, Chichester Street.

Feb. 28. **LONDON.**—Execution of artificers' work at Salisbury Plain (Western Section), for one year from April 1, 1910, for the War Department. Forms of tender, conditions of contract, and all necessary information may be obtained on application by letter to the Commanding Royal Engineer, Royal Engineer Office, "C" Lines, Bulford Camp. Tenders are to be forwarded to the Director of Army Contracts War Office, Whitehall, London, S.W.

Feb. 28. **DUBLIN.**—Erection of station building at Creaghanroe, near Castleblayney, goods office at Keady, goods shed at Smithboro, for the Great Northern Railway Company (Ireland). Plans and specifications at the office of F. A. Campion, Chief Engineer, Amiens Street Terminus, Dublin, or copies at the office of the District Engineer, Belfast, and forms of tender on payment of 1s. each (not returnable). Tenders should be delivered to T. Morrison, Secretary, Secretary's Office, Amiens Street Terminus, Dublin.

Feb. 28. **NEWBURN.**—Erection of proposed Council Offices at Newburn, for the U.D.C. Drawings, bills of quantities, and conditions of contract may be seen and form of tender obtained at the office of Edward Cratney, Architect, 88, Station Road, Wallsend, by whom bills of quantities will be supplied on deposit of £2 2s. Tenders, addressed to the Chairman of the Newburn U.D.C., Clerk's Office, 1, Mosley Street, Newcastle, must be delivered to George Wilkinson.

Feb. 28.— **MERTHYR TYDFIL.**—Erection of twenty-two terrace houses in three blocks and six pairs of semi-detached villas, together with the construction of roads, sewers, and surface water drains, on the Meyrick Estate, Gwaelodygarth Field, Merthyr Tydfil, for the Grove Building Club. Drawings and specifications can be seen and forms of tender obtained at the office of T. Edmund Rees, Architect and Surveyor, Merthyr Tydfil. Tenders to be sent to Martin Evans, Solicitor, High Street, Merthyr Tydfil.

Feb. 28. **DARTFORD.**—Construction of an open-air swimming bath, for the U.D.C., in accordance with plans and specification, which may be seen at the office of the Surveyor, Council Offices, Dartford. Tenders must be delivered to W. Kay, clerk, Council Offices, Dartford.

Feb. 31. **MIDDLESBROUGH.**—Builders desiring to tender for the various works required in alterations to 59½, Linthorpe Road, Middlesbrough, can obtain particulars from Moore and Archibald, architects, 27, Albert Road, Middlesbrough.

March 1. **NAAS NO. 1.**—Erection of labourers cottages and fencing plots throughout the Rural District, according to plan and specification at the office of D. J. Purcell, Clerk of Council, Naas, when forms of tender and any further information required can be obtained.

March 1. **COLWYN BAY.**—Erection of a temporary pavilion for the Royal National Eisteddfod. of Wales. Those desiring to tender are requested to send their names and addresses to Darbyshire and Smith, Architects, 17, Brazennose Street, Manchester, not later than March 1.

March 1. **CHESTER.**—Alterations and additions to a public elementary school in Victoria Road, Chester, for the Corporation. Plans and specifications can be seen at the office of the Architect, Philip H. Lockwood, St. Werburgh Street, Chester, and quantities obtained on deposit of £1. Tenders are to be sent to J. H. Dickson, Town Clerk, Town Hall, Chester.

March 1. **EPSOM.**—Supplying and fixing complete (including all builder's and other work) a self-registering 10-ton weighbridge, of the size of 12ft. by 7ft. in the roadway at the Workhouse, Epsom. Further particulars can be obtained on application to the Master of the Workhouse. Tenders, on forms to be obtained of Alick G. Ebbutt, Clerk, must be delivered at the offices of the Guardians, "Gynsdale," Waterloo Road, Epsom.

March 2. **LUCAN.**—Erection of new shop and offices for Lucan and District Co-operative Society, Ltd., according to plans and specifications to be seen at the Society's premises, 3, The Mall, Lucan. Tenders to be addressed to the committee.

March 2. **KINGSTOWN.**—Construction of additional bathing boxes at the Royal Victoria Baths, Kingstown, for the U.D.C. Plans can be examined in the Town Surveyor's Office, Town Hall, Kingstown. Tenders will be received by J. Sherlock Vaughan, Town Clerk. Sureties required.

March 2. **SALISBURY.**—Carrying out certain structural alterations at the Municipal Offices, Endless Street. Plans and specifications can be seen, and bills of quantities with form of tender obtained, on application to W. J. Goodwin, A.M.Inst.C.E., City Engineer and Surveyor, Municipal Offices, Salisbury. Tenders must reach Francis Hodding, Town Clerk, Municipal Offices, Salisbury.

March 3. **HARWICH.**—Restoring the east windows, and other glazing, painting, and cleaning, to be done to St. Nicholas parish church, Harwich. Specifications and particulars may be obtained at Mr. Groom's Office, Harwich. Applications to be addressed "Renovation."

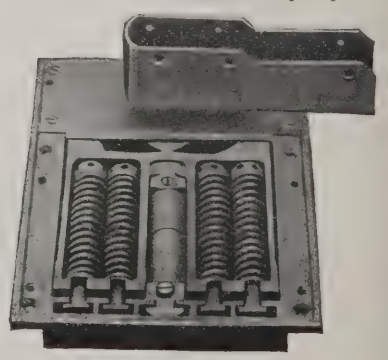
March 3. **PENDLETON.**—Structural alterations at the Union Infirmary, Hope, Pendleton, for the Salford Union. Specification and all particulars may be obtained from H. Lord, F.R.I.B.A., 42, Deansgate, Manchester, on deposit of £2. Tenders must be delivered to F. Townson, Clerk to the Guardians, Union Offices, Eccles New Road, Salford.

March 3. **CAMBRIDGE.**—Execution of the undermentioned work at Sheep's Green, Cambridge, for the Corporation:— (i.) Erection of additional dressing boxes at the women's bathing place, and (ii.) erection of a steel bridge over the river from Coe Fen to the bathing place. Plans and specification may be seen, and forms of tender obtained, at the office of the Borough Surveyor, Guildhall, Cambridge. Tenders to be delivered to J. E. L. Whitehead, Town Clerk, Guildhall.

March 3. **CHIPPING BARNET.**—Erection and completion of a new manual instruction and cookery centre at Byng Road, Chipping Barnet, for the Hertfordshire County Council. Drawings, specification, agreement, etc., at the County Surveyor's Office, Hatfield. Schedule of works (quantities) and a form of tender can be obtained at the County Surveyor's Office, upon deposit of £2 2s. Tenders must be delivered to Urban A. Smith, County Surveyor, County Surveyor's Office, Hatfield.

(*Continued on next page.*)

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March 4. **BRISTOL.**—Erection of a garage and workshop at 138, Victoria Street, Bristol, for the Bristol Wagon and Carriage Works Co., Ltd., Plans and specifications can be seen and quantities obtained at the offices of Henry Williams, Architect, Alliance Chambers, Corn Street, Bristol. Tenders to be sent to J. C. Chetwood-Aiken, Secretary, The Bristol Wagon and Carriage Works Co., Ltd., Lawrence Hill, Bristol.

March 4. **WAKEFIELD.**—Execution of the following works, for the West Riding Education Committee: Saddleworth Uppermill New School (builder, joiner, slater, plasterer, plumber, painter, road maker). Plans may be seen, and specifications with quantities obtained, on application to the Education Architect, County Hall, Wakefield. Deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders to be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

March 5. **DOWLAIS.**—Erection of a schoolroom at Caeracca, Pant, Dowlais, for the Bethania Congregational Church, Dowlais. Plans and specifications may be seen at 47, Winifred Street, Dowlais, where tenders are to be delivered.

March 5. **DISS.**—Erection of new stables, with fire engine house and harness house, in the Council's yard, in Chapel Street, for the U.D.C. Plans may be seen, and specifications obtained on deposit of 5s. Tenders must be sent to Alfred Cooper, Surveyor, The Terrace, Diss.

March 5. **SALE.**—Erection of a new County high school for girls at Sale, for the Chester C.C. Plans and specifications can be seen at the office of H. Beswick, F.R.I.B.A., County Architect, Newgate Street, Chester, and quantities obtained on deposit of £2. Tenders are to be delivered to W. Egerton Smith, F.C.A., Clerk to the Governors, 46, Brown Street, Manchester.

March 5. **TOTTENHAM.**—Erection of a permanent school to accommodate 1,636 children on the Down Lane site, for the Education Committee. Applications for quantities to be made to the Architect, G. E. T. Laurence, A.R.I.B.A., 22, Buckingham Street, Adelphi, W.C. Plans and specification may be seen at his office on deposit of £2 2s. Persons tendering will be required to deposit with the Clerk, when handing in their tenders, in Bank of England notes or cash, the sum of £10. Fair wages clause.

March 5. **NEW ROSS.**—Sanitation and alteration to Workhouse, comprising:—1, drainage and water supply; 2, erection and completion of sanitary annexes, etc.; 3, plumbing and hot water circulation; 4. erection of a new kitchen and annexe at the fever hospital, for the Union. Plans and specifications may be seen at the Boardroom, New Ross, and at the office of the Architect, J. A. Ryan, 33, Catherine Street, Waterford. Forms of tender are to be obtained from P. A. Pope, Clerk of the Union, New Ross, to whom tenders are to be sent.

March 7. **ABERDARE.**—Erection of a Workmen's Hall Institute and Free Library, at Cwmbach, Aberdare. Plans and specifications can be seen, and bills of quantities obtained, upon application to Thomas Roderick, Architect, Clifton Street, Aberdare. Tenders to be sent to G. J. Davies, Osborne Villa, Cwmbach, near Aberdare.

March 7. **EXETER.**—Additions and alterations at St. Luke's College, Heavitree Road, Exeter, for the Diocesan Board of Education. Particulars can be obtained on application to the Architect, James Jerman, F.R.I.B.A., 1, Bedford Circus, Exeter, to whom tenders are to be sent.

March 7. **HALIFAX.**—Alteration of the Old Riding School, Halifax, into an electric theatre for the National Electric Theatres, Ltd. Plans and specifications can be seen and quantities obtained of Richard Horsfall and Son, Architects and Surveyors, 22a, Commercial Street, Halifax, to whom tenders are to be sent.

March 8. **NEWPORT (Mon.).**—Supply of certain decorative oak fixtures, oak panelling, and other works, for Stevens, Confectioners, Limited, Cardiff, at the new premises, Davis Buildings, High Street, Newport, Mon. Plans can be seen and bills of quantities obtained of G. E. Halliday, F.R.I.B.A., 19, Castle Street, Cardiff, to whom tenders are to be sent.

March 8. **DARLINGTON.**—Erection of offices for the Locomotive Department at Stooperdale, Darlington, for the N.E.R. Plans and specification may be seen and quantities and further information obtained upon application to William Bell, the Company's Architect at York. Quantities supplied on personal application to parties tendering for the whole of the works. Tenders to be sent to R. F. Dunnell, Secretary, York.

March 9. **WINCHESTER.**—Repairs to some 46 cottages in different parts of Winchester. Specifications can be obtained of J. Ashton Sawyer, Chartered Surveyor. Tenders should be delivered to Walter Bailey, 19, St. Peter Street, Winchester.

March 9. **HUDDERSFIELD.**—Erection of an elementary school at Birkby, Huddersfield, for the Corporation. Plans, specification, and general conditions may be seen, and bills of quantities and forms of tender obtained on application at the offices of K. F. Campbell, M.Inst.C.E., M.I.E.E., Borough Engineer, 1, Peel Street, on deposit of £2 2s. Tenders to be sent to J. Henry Field, Clerk to the Local Education Authority, Town Hall, Huddersfield.

March 12. **SOWERBY BRIDGE.**—Mason and bricklayer, carpenter and joiner, slater and plasterer, plumber and glazier, cast-iron and steel, concreter, and painter's work required on the erection of a 5-storey cotton mill, Walton Street, Sowerby Bridge, for Mitchell Bros., Cotton Co., Ltd. Plans may be seen and bills of quantities obtained upon application, up to March 12, to Thos. Kershaw, A.R.I.B.A., Architect, L. and Y. Bank Chambers, Halifax, to whom tenders are to be sent.

March 14. **MEXBOROUGH.**—Erection of six almshouses, and other works incidental thereto, at Church Street, Mexborough, for the U.D.C. Plans may be seen and a copy of the particulars and bills of quantities obtained at the Council offices on deposit of £1. Tenders are to be sent to G. Fenwick Carter, C.E., Surveyor to the Council, Council Offices. Fair wages clause.

March 14. **HULL.**—Erection of a school in Southcoates Lane, for the Corporation. Drawings and specification may be seen, and quantities obtained upon deposit of £2 2s. with Joseph H. Hirst, City Architect, Town Hall, Hull. Remittances to be made payable to the City Treasurer. Tenders are to be addressed to the Secretary of Education, and delivered at the Education Offices, Hull.

March 15. **NEWBRIDGE (Mon.).**—Erection of a new church at Newbridge, Mon., for the trustees of the Zoar Welsh Congregational Church. Plans and specification may be seen with John W. Aldiss, M.S.A., Architect and Surveyor, Newbridge, Mon., and bills of quantities obtained by a deposit of £1 1s. Tenders to be sent in to Philip Parry, 19, Panteg Terrace, Newbridge, Mon.

March 21. **WATERLOO-WITH-SEAFORTH.**—Erection of a secondary and technical school in Cambridge Road, Seaforth, for the U.D.C. Plans may be seen and bills of quantities obtained at the office of the County Architect, Henry Littler, No. 16, Ribblesdale Place, Preston, by deposit of £3. Tenders must be delivered to John I. Thompson, Clerk to the Council, Town Hall, Waterloo.

March 21. **ST. HELENS.**—Erection of a new school, in North Road, St. Helens, for the C.C. On deposit of £1 1s. plans and specifications may be inspected and bills of quantities and conditions obtained at the office of the Architect, Frank S. Biram, George Street, St. Helens. Tenders must be delivered to Percival Sharp, Secretary for Education, Education Office, St. Helens.

No date. **SALISBURY.**—Repairs, cleaning, and painting, with new counters, shelving, etc. Specifications and plans now to be seen with C. Lane's, Ironmonger, Cranborne Salisbury.

No date. **BOSTON.**—Tenders are invited for the new Wesleyan Church Boston. Applications for quantities to be made to Gordon and Gunton, architects, Finsbury House, Blomfield Street, London, E.C.

No date. **DOVERCOURT.**—Execution of the following works in Dovercourt:—Erection of detached residence, garage, entrance gates, and fences, etc., Rookery Estate; erection of detached residence, main road; erection of detached residence, Fronks Road; erection of detached residence, St. Michael's Road. Plans, specifications, and full particulars upon application to the Architect, H. Steward Watling, F.S.A., High Street, Dovercourt.

ENGINEERING.

Feb. 28. **LEEDS.**—Execution of (1) reconstruction of portions of tramway track; (2) cartage required by the Department during the twelve months ending March 31, 1911, for the Corporation. Specifications and forms of tender may be had upon application to J. B. Hamilton, General Manager, Standard Buildings, City Square, Leeds. Tenders to be delivered to the Town Clerk, Town Hall, Leeds.

Feb. 28. **WIMBLEDON.**—Supply and execution during the year ending March 31, 1911, of the following materials, works, etc., for the Corporation:—1, engine room stores; 2, cables and earthenware conduits 3, joint boxes and jointing materials; 4, transformers; 5, meters and prepayment meters; 6, oils; 7, incandescent electric lamps and accessories; 8, flame arc carbons; 9, castings; 10, firebricks and fireclay. Forms of specification and tender, with conditions of contract, may be obtained, and samples inspected on application to the Borough Electrical Engineer, Electric Light Works, Durnsford Road, Wimbledon. Tenders to be delivered to A. Steele Sheddon, Town Clerk, Wimbledon.

March 1. **LONDON.**—The Secretary of State for India in Council is prepared to receive tenders for the supply of (1) pillar water cranes; (2) bridgework. Conditions of contract may be obtained on application to the Director-General of Stores, India Office, Whitehall, S.W., to whom tenders are to be sent.

March 2. **FORFAR.**—Supplying and laying about 1¾ miles of cast-iron pipes, chiefly 3in. and 4in. diameter, and constructing a meter house, together with the construction of incidental and relative works, for the C.C. Plans may be seen at the office of the undersigned, and at the office of the Engineer, John M. Hogg, C.E., 14, Blythswood Square, Glasgow. Specification, schedule of quantities, and form of tender may be obtained from the Engineer on deposit of £1 1s. Tenders must be lodged with W. K. Macdonald, District Clerk, Arbroath.

March 7. **BUCKIE, N.B.**—Construction of an extension of the Buckie (Cluny) Harbour, and the improvement of the existing harbour, for the T.C. The work includes the construction of concrete piers and quays, rock excavation, dredging, etc. Contract drawings, terms, and conditions of contract, specification, and bills of quantities, may be seen on application to the undersigned, or at the office of the Engineer to the Council, W. T. Douglas, 15, Victoria Street, Westminster, S.W. Copies of the form of tender, terms and conditions of contract, specification, and bills of quantities, may be obtained on application to the Engineer upon deposit of £3 3s. Copies of certain of the plans may be obtained from the Engineer on payment of 10s. 6d., which is non-returnable. Tenders to be delivered to John L. M'Naughton, Town Clerk, 4, Cluny Square, Buckie, N.B.

March 12. **MERTHYR TYDFIL.**—Construction of a ferro-concrete public road bridge, 76ft. span, over the River Taff, at Merthyr Vale, and other work in connection therewith. Specification, together with a general drawing, giving plans, elevation, section and cross-sections, may be obtained from T. Fletcher Harvey, Borough Engineer, Town Hall, Merthyr Tydfil, upon deposit of £2 2s. Tenders must reach T. Aneuryn Rees, Town Clerk, Town Hall, Merthyr Tydfil.

IRON AND STEEL.

Feb. 28. **GILLINGHAM.**—Supply and delivery at the electricity works of a new or second-hand cylindrical iron tank, suitable for the storage of crude oil, capacity 4,500 gallons, for the Corporation. Tenders to be delivered to F. C. Boucher, Town Clerk, Corporation Offices, Gardiner Street, Gillingham, Kent.

March 1. **TYLDESLEY (Lancs).**—Supply of about 1,000 yards of 6in. pipe, to be delivered during June or July, either on the Chaddock Lane siding of the Tyldesley Coal Company, or at the Astley wharf on the Bridgwater Canal, for the Gas Committee. Tenders to be delivered to W. J. Matthews, Clerk, Tyldesley. Any further information on application to H. R. S. Williams, Gas and Water Manager, Gas Works, Tyldesley.

March 3. **LONDON, S.E.**—Erection and completion of two iron fire escape staircases at the Greenwich Infirmary, for the Guardians. Dfawings and specifications can be seen, bills of quantities and form of tender obtained, upon deposit of £2 2s. at the office of Louis Jacob, F.S.I., Quantity Surveyor, Raymond House, 32 to 34, Theobalds Road, Grays Inn, W.C. Tenders must be delivered to Samuel Saw, Clerk to the Guardians, Guardians Offices, Greenwich, S.E.

March 7. **LONDON, W.C. (for Australia).**—Supply and delivery at one of the railway piers at Williamstown, Melbourne, of the following rails and (or) fish-plates, for the Agent General for Australia:—Schedule A: 1,647 tons of 100lb. steel rails. Schedule G: 151 tons of steel fish-plates for 100lb. rails; or alternatively for half these quantities. Specification, conditions of contract, and form of tender may be obtained at the office of the Agent-General for Victoria, at Melbourne Place, Strand, London, W.C., to whom tenders are to be sent. A preliminary deposit of £500 must accompany each tender.

March 15. **MANCHESTER.**—Supply of:—Manual valves, 40ins. and 36ins. diameter; automatic valves, 36ins. diameter; reflux valves, 40ins. diameter; sluice valves from 18ins. to 3ins. diameter; air valves; and miscellaneous ironwork, for the Corporation. Specification and form of tender may be obtained on application to G. H. Hill and Sons, Civil Engineers, Albert Chambers, Albert Square, Manchester, and 3, Victoria Street, Westminster, upon receipt of cheque deposit £2 2s. Tenders addressed to the Chairman of the Waterworks Committee, must be forwarded to the Secretary, Waterworks Offices, Town Hall, Manchester.

PAINTING.

Feb. 28. **BOURNEMOUTH.**—Painting the exterior of the refreshment rooms near Bournemouth and Boscombe piers, for the Town Council. Full particulars, form of tender, and specifications can be obtained on deposit of £1 1s. with F. W. Lacey, M.Inst.C.E., Borough Engineer and Surveyor, Municipal Offices, Bournemouth. Tenders to be sent to the Town Clerk, Geo. Wm. Bailey.

Feb. 28. **LONDON, W.**—Repairs, painting, distempering, whitewashing, and other works at the Infirmary, Rackham Street, Notting Hill, W., for the St. Marylebone Board of Guardians. Specifications and forms of tender upon application to the Steward of the Infirmary, up to Feb. 26. Tenders to be delivered to Henry T. Dudman, Clerk to the Guardians, Guardians' Offices, Northumberland Street, Marylebone Road, W.

March 1. **LARBERT.**—Painting and decorating the Dobbie Hall, Larbert, for the Council. Specifications may be had on deposit of 10s., from Alex Smith, Clerk, Larbert, to whom tenders are to be sent.

March 2. **STAFFORD.**—Painting the exterior and portions of the interior of the public baths, for the Corporation. Specification may be seen and forms of tender obtained on application to W. Plant, Borough Engineer and Surveyor, Borough Hall, Stafford. Fair wages clause.

(*Continued on next page.*)

March 2. **LONDON.**—Cleaning, painting, and repairing work at (1) Park Fever Hospital, Hithergreen, Lewisham, S.E.; (2) Eastern Fever Hospital, Homerton Grove, Homerton, E., for the Metropolitan Asylums Board. Conditions of contract and specifications prepared by W. T. Hatch, M.I.C.E., M.I.M.E., Engineer-in-Chief, may be inspected at the office of the Board, Embankment, E.C., and obtained on deposit of £1 1s. each. Tenders must be delivered at the office of the Board.

March 3. **SALFORD.**—Painting, etc., the whole of the interior of the cottage homes at Culcheth, near Kenyon Junction, for the Guardians of the Union. Specification and form of tender may be obtained from F. Townson, Clerk to the Guardians, Union Offices, Eccles New Road, Salford, to whom tenders are to be sent.

PLUMBING AND SANITARY

Feb. 28. **PENARTH.**—Construction of an outfall chamber and laying about 26 lineal yards of 30in. storm-water outfall pipes, etc., into the River Ely, for the U.D.C. Plans may be seen and copies of specifications and bills of quantities obtained on application to Edgar I. Evans, A.M.I.C.E., Surveyor, Council Offices, Penarth, to whom tenders are to be sent.

Feb. 28. **ALNWICK.**—Execution of the following works, for the R.D.C.:—1, providing and laying about 1,800 yards of 4in. sanitary pipes, in 3ft. lengths, and construction of open reservoir to hold 50,000 gallons, near Shilbottle Wood House; 2, furnishing and laying about 1,006 yards 3in. cast-iron socket pipes and fittings from Heather Leazes to Warkworth. Plans and specifications may be seen at the office of the Rural District Council, Alnwick, and copies at 94, Queen Street, Amble. Tenders to be delivered to the Clerk, H. W. Walton, Alnwick.

March 1. **BROMLEY.**—Sewering, levelling, paving, metalling, channelling, and making good portions of Wendover and Langdon Roads, for the Corporation. Plans, sections, and specifications, may be seen, and bills of quantities, etc., obtained, at the office of the Borough Engineer, on deposit of 10s. with Fred. H. Norman, Town Clerk, Municipal Offices, Bromley, Kent, to whom tenders are to be sent.

March 2. **LONG DITTON.**—Laying about 1,100ft. of concrete tubes, together with the necessary manholes, gullies, and other works connected therewith, in Ditton Hill Road, Long Ditton, in accordance with plans and specifications prepared by H. C. Fread, Engineer and Surveyor, for the Urban District Council of Esher and the Dittons. Tenders are to be sent to E. A. Everett, Clerk, Council Offices, Brabant Villa, Portsmouth Road, Thames Ditton.

March 2. **PRESTWICH.**—Work and materials required in the construction of No. 6 distributing chambers, No. 6 percolating beds, supply main, etc., in accordance with the detail drawings, specification, and instructions of the engineer, Sydney H. Morgan, A.M.Inst.C.E., for the U.D.C. Drawings may be seen and copies of the specification, bill of quantities, and general conditions of contract obtained at the office of Sydney H. Morgan, A.M.Inst.C.E., the Council Offices, Prestwich, Lancashire, upon deposit of £2 2s. Tenders must be sent to Lewis A. Ortord, Law Clerk to the Council, Council Offices, Prestwich.

March 2. **TULLAMORE.**—Extension of the public water mains, for the U.D.C. Contractor to execute all works, including excavations, supply of pipes, laying and covering of same, all connections, fountains, valves, hydrants, fittings, plumbing, building, and concrete work, and all materials and workmanship necessary, in full accordance with the maps, plans, specification, and directions of the Town Surveyor, A. B. Ashe, C.E., or the Engineer, Copies of the maps, plans, and specification may be inspected at the Boardroom, Tullamore Workhouse. Contractors shall furnish the names and addresses of two solvent sureties who will enter with the contractor into a bond.

March 2. **WORKINGTON.**—Provision and laying of about 2,900 lineal yards of 18in. diameter stoneware pipe sewer, with sea outfall, consisting of about 714 lineal yards of 18in. diameter cast-iron pipes, supported on timber piling, together with manholes, lampholes, stormwater overflow chambers, and other works, for the Corporation. Drawings may be seen at the offices of H. Bowman Williams, Borough Engineer and Surveyor, Town Hall, Workington, from whom copy of the specification, bill of quantities, and form of tender can be obtained, on deposit of £3 3s. Tenders to be delivered to the Town Hall, addressed to John Warwick, Town Clerk, Workington.

March 3. **HUDDERSFIELD.**—Construction of stoneware and cast-iron pipe sewers in various parts of the Borough, and the installation of a system of sewage disposal works at Bradley. Drawings and specifications, bills of quantities, forms of tender, and other particulars upon application to the Engineer, K. F. Campbell, M.Inst.C.E., M.I.E.E., on deposit of £3 3s. Tenders must be sent to J. Henry Field, Town Clerk, Town Clerk's Office, Town Hall, Huddersfield.

March 7. **BEDLINGTON.**—Construction of the following length of sewer, inclusive of manholes, gullies, connections, and other works, for the U.D.C.—816 yards 12in. glazed earthenware pipe sewer, from 5ft. to 12ft. in depth. Drawings and specifications may be seen, and quantities, form of tender, and all other particulars obtained, by appointment at the office of the Surveyor of the Council, J. E. Johnston, Front Street, Bedlington. Tenders to be sent to Charles D. Forster, Joint Clerk of the District Council, 24, Grainger Street West, Newcastle-on-Tyne.

March 19. **HALIFAX.**—Construction of fourteen percolating filters (8 90ft. and 6 85ft. diameter), at the sewage disposal works, for the Corporation:—22, excavators', masons', and bricklayers' work; 23, cast-iron pipes and sluice valves; 24, distributors (revolving); 25, filtering medium; 26, unloading and filling filtering medium. Plans and specifications may be seen and forms of tender obtained on application to James Lord, M.I.C.E., Borough Engineer, Town Hall, Halifax, upon deposit of £10 for each set of quantities. Tenders must be sent to Herbert Ashling, Town Clerk. Fair wages clause.

March 4. **LONDON (for Malta).**—Supply of stoneware pipes and specials, for the Receiver-General and director of Contracts, Valletta, at whose office tenders will be received. Tenders are to be accompanied with a deposit of £300, to be made in the Office of the Crown Agents by tenderers residing in Great Britain not having a representative in Malta. Particulars, specification, etc., may be obtained on application at this office or to the Crown Agents for the Colonies, Whitehall Gardens, London.

March 14. **STANHOPE.**—Laying 3,160 yards or thereabouts of main sewer and the construction of tanks, filters, and irrigation area for sewage disposal purposes at Stanhope, for the U.D.C. Plans and specifications may be seen and quantities and forms of tenders and other information obtained on application to the Council's Engineer, J. S. Parker, A.M.I.C.E., Post Office Chambers, St. Nicholas Square, Newcastle-on-Tyne, or the Council's Surveyor, J. R. Ridley, Town Hall, Stanhope. Deposit of £1 required. Tenders should be sent to F. H. Thompson, Clerk to the Council, Stanhope.

ROADS AND CARTAGE.

Feb. 28. **PENARTH.**—Supply of road metalling and gravel up to March 31, 1911, for the U.D.C. Forms of tender and further particulars may be obtained on application to Edgar J. Evans, A.M.I.C.E. Surveyor, District Council Offices, to whom tenders are to be sent.

Feb. 28. **PENARTH.**—Execution of private improvement (street) works in West Terrace Lane, for the U.D.C. Plans may be seen and copies of specifications and bills of quantities obtained on application to Edgar J. Evans, A.M.I.C.E., Surveyor, Council Offices, Penarth, to whom tenders are to be sent.

(Continued on next page.)

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Agents for Nottinghamshire and Lincolnshire:
W. Robinson, (Nottingham) Ltd., 7 & 9, Victoria Street, NOTTINGHAM
Agents for Leicestershire:
W. Robinson, (Nottingham) Ltd, Churchgate, LEICESTER

Feb. 28. **TENTERDEN (Kent).**—Supply of granite or other approved macadam, and Kent rag stone; carriage and steam rolling of the above; mason's work in the Borough, for the Corporation. Particulars and forms of tender may be obtained of W. L. C. Turner, Borough Surveyor, Tenterden, to whom samples should be sent. Tenders to be sent to J. Munn Mace, Town Clerk, Tenterden, Kent.

Feb. 28. **STREATHAM.**—Making-up and paving of part of Greyhound Lane, Streatham, for the Corporation of Wandsworth. Specification and drawings may be seen and forms of tender obtained at 56, East Hill, Wandsworth, S.W., upon deposit of £5 5s. Tenders must be delivered at the Council House, East Hill, Wandsworth, S.W. Fair wages clause.

Feb. 28. **STEYNING.**—Supply of flints, to be delivered on the roads of the several parishes in the district before Oct. 1, for the R.D.C. Forms of tender can be had on application to the undersigned, or the Surveyor of the Council, G. W. Warr, Town Hall, Southwick. Tenders to be sent to Arthur Flowers, Solicitor and Clerk to the Council, Council Offices, New Shoreham.

Feb. 28. **LITTLE HULTON.**—Supply of broken granite, grit setts, granite and limestone chippings, grit kerbs, artificial flags, stoneware pipes, and gullies, cement, steam road rolling, and scarifying, disinfectants, pitch, and oil, for the U.D.C. Forms of tender and particulars can be obtained from the undersigned. Tenders are to be delivered to James H. H. Heyes, Clerk, Council Offices.

Feb. 28. **YEOVIL.**—Supply, delivery, and laying of Keinton and other stone paving, kerbing, water table, and block pitching, at Yeovil, for the Corporation; also for the supply of flints (hand picked and quarried), broken granite and basalt, gravel, and asphalte, during the one or three years ending March 31, 1911 or 1913 respectively. Copies of specifications and forms of tender may be obtained of A. Oddy, Borough Surveyor, Municipal Offices, Yeovil, to whom tenders are to be sent.

Feb. 28. **EPSOM.**—Supply of (a) broken granite and chippings (Guernsey, Quenast, Leicester, or Welsh), flints, fine gravel, hoggin and shingle, Portland cement, stoneware pipes, granite kerb, blue brick kerbs and coal tar; (b) carting materials; and (c) watering during the year ending March 31, 1911, for the R.D.C. Particulars and forms of tender may be had on application to T. E. Ware, Surveyor to the Council, Waterloo Road, Epsom. Tenders must be sent to Arthur R. Cotton, Clerk, Gynsdale, Waterloo Road, Epsom.

Feb. 28. **CLAYPOLE.**—Supply of about 2,200 tons of granite and 2,500 tons of slag, for the R.D.C., to be delivered as the Council or the District Surveyor shall require and direct. Tenders to be delivered to A. J. Franks, Clerk, Union Offices, 24, Lombard Street, Newark. Samples must be delivered free of expense at the Board Room, The Ossington, Newark. Further particulars may be obtained upon application to the District Surveyor, F. C. Meyrick, Beckingham Rectory, Newark, upon receipt of a stamped addressed foolscap envelope.

Feb. 28. **WHITLEY AND MONKSEATON.**—Forming and completing the following streets, for the U.D.C.:—Portion of back street at the rear of Whitley Road; portion of back street at the rear of Roxburgh Terrace; portion of back street between North and South Parade. Plans and specification may be seen and bill of quantities and form of tender obtained on application at the office of A. J. Rousell, A.M.Inst.C.E., the Council's Surveyor, Council Offices, Whitley Bay. Tenders to be sent to Augustus Whitehorn, Clerk to the Council, 60, Saville Street, North Shields.

Feb. 28. **GOOLE.**—Supply of the undermentioned stores and materials, the contracts to commence on April 1, and to terminate on March 31, for the U.D.C.:—Road metal (Guernsey granite and Belgian granite chippings), setts, slag (broken and unbroken for foundations), concrete flags, York flags, kerb, channel, stoneware pipes, etc., Portland cement, tar macadam, Brough gravel, coal, paints, oils, grease, ets., bricks, and disinfectants. Specifications, forms of tender, and all other information may be obtained on application to the Town Surveyor. Tenders must be sent to the Chairman of the Highways Committee, Council Offices.

March 1. **LANGLEY MOOR.**—Making-up Side Station Avenue, Langley Moor, for the Brandon and Byshottles U.D.C. Plans may be seen with Geo. G. Donkin, Surveyor, Langley Moor. Tenders to be sent to J. G. Wilson, 5, North Bailey, Durham.

March 2. **LAINDON (Essex).**—Repairs to a roadway at the branch workhouse, Dunton, near Laindon, Essex, for the Poplar Guardians. Tenders to G. Herbert Lough, Clerk to the Guardians, Guardians' Offices, 45, Upper North Street, Poplar, E.

March 2. **CHARD.**—Repair and maintenance of main and district roads for the three years ending March 31, 1913, for the R.D.C. Forms of tender and full particulars of lots and quantities can be obtained on application to R. Stephens, of Ilminster, District Surveyor, or F. Gordon Ross, Clerk, Council Office, Chard. Tenders must be delivered at the Union Office. Security for the due performance of all contracts will be required.

March 3. **CASTLE WARD.**—Supplying, quarrying, breaking, leading, and laying on materials required for highways in the district, from April 1, 1910, to March 31, 1911; also supplying broken whinstone and delivering same at the several rail way stations and sidings for the same period. Full particulars, with forms of tender, with conditions and specifications, may be obtained from the Surveyor, David Hope, Ponteland. Tenders to be sent to George Wilkinson, Clerk to the Council, 1, Mosley Street, Newcastle-upon-Tyne.

March 4. **STAFFORD.**—Supply and cartage of road materials, tools, and road implements, for the six districts in the County, viz., Leek, Newcastle, Uttoxeter, Stafford, Lichfield, Sedgley, to March 31, 1911. Specification's and forms of tender can be obtained on application to James Moncur, Chief Surveyor of Main Roads, County Buildings, Stafford, to whom tenders are to be sent.

March 5. **WILLINGTON.**—Execution of A, carting and horse hire; B, repairs, etc., of street lamps; C, mason work; D, supply of road metal; E, scavenging ashpits, privies, etc.; for the U.D.C. Conditions, with form of tender, and further particulars, may be had on application to J. H. Gardner, Surveyor to the Council, Oxford House, Willington, Durham. Tenders to be sent in to J. G. Wilson, clerk, 5, North Bailey, Durham.

March 7. **BOURNE.**—Supply of 750 tons of XX granite and 250 tons of X granite, to be delivered at the railway stations, for the U.D.C. Tender forms can be obtained from the Surveyor, A. R. Agnew, Bourne, to whom tenders and samples of materials are to be delivered.

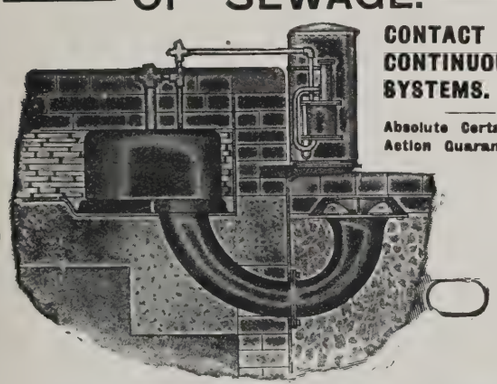
March 7. **SLEAFORD.**—Supply of 1,000 tons of broken X and XX granite, and 200 tons slag, at per ton, to be delivered free at Sleaford Station, for the U.D.C. Forms of tender may be obtained on application to Edmund Clements, Clerk, Council Offices, Sleaford, to whom tenders are to be sent.

March 7. **BEVERLEY.**—Supply of about 7,000 tons of stone for macadamising the main roads, to be delivered at railway stations and wharfs, for the East Riding C.C. Conditions, forms of tender, and further particulars, may be obtained on application to the County Surveyor, Beverley. Tenders to be sent to John Bickersteth, Clerk of the Council, County Hall, Beverley.

March 7. **BATLEY.**—Supply of:—(a) Flagstones, setts, pavors, and kerbs; (b) sanitary tubes; (c) pitch and oil; (d) cement; (e) broken granite for the Corporation. Forms of specification and tender may be obtained from the Borough Engineer Oscar J. Kirby, Town Hall, Batley. Tenders addressed to J. H. Craik, Town Clerk.

(*Continued on next page.*)

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March 7. **HENDON.**—Execution of certain works of kerbing, channelling, metalling, paving, surface water drainage, and other works, in Victoria Road, Mill Hill, N.W., for the U.D.C. Drawings and specifications may be seen and forms of tender obtained of F. Flater Grimley, Engineer to the Council, at the Council Offices, The Burroughes, Hendon, N.W. A deposit of £10 will be required for form of tender. Tenders, addressed to the Chairman of the Council, to be sent to Henry Humphris, Clerk to the Council, The Burroughes, Hendon, N.W.

March 7. **PONTYPRIDD.**—Supply of the following stores and materials for 12 months ending March 31, 1911, for the U.D.C.:—1, hauling stone; 2, granite and basalt metalling; 3, broken limestone and gravel; 4, broken pennant stone and gravel; 5, paving, kerbing, and channel stone, etc.; 6, cement and lime; 7, slates, bricks, etc.; 8, sewer pipes; 9, smith and cart work; 13, oil and colourman's sundries; 14, engineer's stores; 16, ironmongery, stores, etc.; 18, iron castings; 19, tar, macadam, stone, and gravel; 20, sand and gravel; 21, wheelwright work. Forms of tenders and specifications may be obtained on application to W. E. Lowe, Engineer and Surveyor, Municipal Buildings Pontypridd. Tenders must be received by J. Colenso Jones, Clerk to the Council, Municipal Buildings, Pontypridd.

March 8. **MALDON (Essex).**—Making-up new road in the parish of Tollesbury, for the R.D.C. Plans and specifications may be seen and forms of tender obtained of Wm. Almond, Surveyor, 6, Market Hill, Maldon, Essex, to whom tenders are to be sent.

March 12. **BELPER.**—Supply of various materials required for the maintenance of 162 miles of highways during year ending 31st March, 1911, for the R.D.C.:—Granite, 1,200 tons; furnace slag, 1,300 tons; limestone, 2,000 tons; also carting the same in the different parishes. Specification and form of tender may be obtained upon application to Robert C. Cordon, Engineer and Surveyor, Duffield, near Derby.

March 15. **BRISTOL.**—Construction of a new road, about 800 yards in length, in the parishes of Nempnett and Winford, for the Clutton R.D.C. Specification on application to the Council's Surveyor (T. Orchard, The Grange, Haliatrow, near Bristol), by deposit of £1 1s. Tenders must be sent to J. Sumner Dury, the Clerk to the Council, Temple Cloud, near Bristol. For further information apply to the Surveyor.

March 16. **MIDDLESEX.**—Supply of about 12,000 tons (more or less) of 2in. and 1½in. basalt or granite; 2,000 tons (more or less) of ½in. chippings, to be delivered free to various stations in Middlesex, for the C.C. Particulars, with specification and form of tender, may be obtained of H. T. Wakeham, M.Inst.C.E., County Engineer and Surveyor, Middlesex Guildhall, Westminster, S.W. Tenders must be sent to the Clerk of the County Council, Middlesex Guildhall, Westminster, S.W.

March 16. **MIDDLESEX.**—Cartage of about 12,000 tons (more or less) of broken stone, 2,000 tons of chippings, and about 4,000 tons (more or less) of gravel, from various railway stations and local pits in the districts of Barnet, Bedfont, Cowley, Cranford, Edgware, Enfield, Hampton, Harlington, Harmondsworth, Harrow, Hayes, Hillingdon, Potter's Bar, Southall, Stanmore, Wembley, and Wood Green, for the C.C. Particulars and forms of tender may be otained of H. T. Wakeham, M.I.C.E., County Engineer and Surveyor, Middlesex Guildhall, Westminster, S.W. Tenders must be sent to the Clerk of the County Council, Middlesex Guildhall, Westminster.

March 30. **HOO (Kent).**—Supply of the following materials to be delivered on the roads, for the R.D.C.:—Broken granite, unbroken Kentish ragstone, unbroken surface picked flints, unbroken pit flints and hoggin, also carting (day work), and steam road rolling and scarifying. Forms of tender may be obtained of Richard Phillott Smyth, Clerk, Strood, Kent.

MISCELLANEOUS.

Feb. 28. **SOUTHEND-ON-SEA.**—Supply of the following articles (among others) for a period of two years from April 1, 1910, for the Corporation:—1, stoneware pipes, bends, etc.; 2, flints, bricks, gravel, etc. 3, timber; 4, ironmongery; 5, paints, oils, and colours; 7, cement, lime, and chalk; 10, tar paving and tar macadam; 11, iron castings; 12, granite kerb and channel; 13, broken Guernsey granite; 14, broken granite; 15, pitch and creosote oil; 18, iron and steel. Forms of tender may be obtained upon application to E. J. Elford, M.I.M.E., Borough Surveyor, Southend-on-Sea. Tenders to be delivered to H. J. Worwood, Town Clerk, Town Clerk's Office, Southend-on-Sea.

Feb. 28. **SALFORD.**—Supply of the following materials, and work to be carried out, between April 1, 1910, and March 31, 1911, for the Corporation:—1, cables; 2, cable accessories; 3, refined Trinidad bitumen; 4, cable conduits, stoneware and fibre pipes, asphalte bridges, etc.; 5, wood troughing, bends, etc.; 6, cement, lime, bricks, etc.; 7, house service cutouts; 8, electricity meters; 9, maximum demand indicators; 10, gravity type ammeters; 11, circuit breakers; 12, soda ash; 13, switches, porcelain cutouts, and arc lamp globes, 14, carbon filament glow lamps; 15, arc lamp carbons and motor carbon brushes; 16, electric motors; 17, motor starters; 18, iron castings; 19, brass and gunmetal castings; 20, iron and steel bars, plates, etc.; 21, ironmongery; 22, wrought-iron tubes and fittings; 23, drysalteries and chemists' sundries; 24, timber; 25, wood fittings; 26, engine-room stores; 27, engine oils; 28, carting; 29, economiser cleaning; 30, removing cinders; 31, purchase and removal of empty casks; 32, window cleaning. Specifications, forms of tender, etc., may be obtained from Victor A. H. M'Cowen, M.I.E.E., the Borough Electrical Engineer, Electricity Works, Frederick Road, Pendleton. A deposit of 10s. is required on 1, 4, 7, 8, 9, 10, 11, 14, 16, and 17. Duplicate copies of any specification will be supplied at a charge of 2s. each. Tenders must be delivered at the offices of the Borough Electrical Engineer.

March 1. **LONDON (for Madras).**—Supplying (1) paints, etc.; (2) miscellaneous tools and stores, for the Madras and Southern Mahratta Railway Company, Limited. The charge for each specification is £1 1s., which will not be returned. Tenders must be sent to H. Bonham Carter, Secretary, 91, York Street, Westminster, S.W.

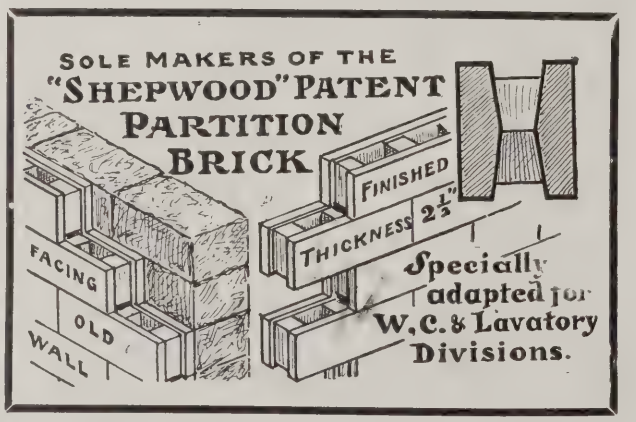
March 2. **RHONDDA.**—Supply of lime, acid, oxide of iron retorts, and fire-bricks, silica bricks, oils and paints, ironmongery, etc., wrought-iron tubes, gas, water, gun-metal fittings, gas-meters, hauling, books, and stationery, for the year ending March 31, 1911; lead and compo. pipes, for the half-year ending Sept. 30, 1910, for the U.D.C. Forms of tender may be obtained (except those for gas, water, and gun-metal fittings, lead and compo. pipes, books, stationery, and ironmongery, which will only be supplied to those inspecting the samples), on application to Octavius Thomas, Engineer and Manager, Gas and Water Offices, Pentre, Rhondda. Tenders to be sent to Walter P. Nicholas, Clerk to the Council, Public Offices, Pentre, Rhondda. Fair wages clause.

March 3. **SMETHWICK.**—Supply of the undermentioned materials and articles (among others) for the year ending March 31, 1911, for the Corporation:—Broken Clee Hill granite; broken and unbroken Rowley ragstone kerbs, circles, elbows, and setts, steel shovels, and steeled picks, scrapers, mud scoops, digging forks, galvanised sanitary ash bins, all Smethwick pattern; bricks, Staffordshire, brindled and common; scavenging and dandy brushes and pick helves; gully grates, frames, and weirs; manhole and lamphole covers, and cast-iron trunks, all Smethwick pattern; glazed earthenware pipes; cement, best heavy Portland; lime, firewood. Forms of tender may be obtained from C. J. Fox Allin, Borough Surveyor, Council House.

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Tenders.

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Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Carshalton.—For the construction of four quiescent settlement tanks and roof over existing tanks, four percolating filters, seven secondary filters, distributing chamber, valve chambers, manholes, cast-iron mains, stoneware pipe sewers, drains, paths, roads, etc., at their existing sewage farm, Carshalton, for the Urban District Council.

S. Kavanagh and Co., Surbiton	£10,978 14 7
A. Hill and Co., Kidderminster	10,901 16 2
O. Wright and Co., S. Wigston, near Leicester	10,291 6 10
G. G. Rayner, Wallington	10,182 10 10
R. C. Brebner and Co., Edinburgh	10,134 0 4
W. Muirhead and Co., London	10,076 10 1
E. and E. Iles, Wimbledon	9,685 0 0
Jarman and Co., Richmond	9,682 0 0
J. Moran and Son, Kensington	9,368 18 2
G. Bell and Son, Ltd., Tottenham	9,312 18 6
J. Mackay, Derby	9,306 16 1
J. May, Ashstead	8,827 19 0
W. Morley and Sons, Keighley	8,744 13 2
J. B. Wickstead and Co., London	8,732 17 10
W. Cunliffe and Sons, Ltd.,* 39, Corporation Street, Birmingham	8,531 10 6

*Accepted.

Dartford (Kent).—For secondary school for girls (to accommodate 250 children), for the Kent Education Committee. Mr. W. H. Robinson, architect.

Pethick Bros.	£10,999
J. T. Jarvis and Sons	10,540
S. E. Moss and Co.	9,765
G. H. Gunning and Sons	9,642
J. and M. Patrick	9,585
B. E. Nightingale	9,480
C. E. Skinner	9,392
T. Knight	9,309
F. Webster and Son	9,219
W. Wallis, Ltd.	9,195
Spencer, Santo and Co., Ltd.	9,186
A. S. Ingleton	9,180
R. G. Lowe and Co.	9,139
Thomas and Edge	9,100
G. E. Wallis and Sons, Ltd.	9,074
F. G. Foster	8,988
J. Podger and Son	8,900
J. Parren and Sons	8,899
J. W. Ellingham	8,840
W. F. Blay, Ltd.	8,677
Friday and Ling, Northend Works, Erith	8,500

Exmouth.—For the erection of a new general post office, together with a block of three shops and dwelling houses, at Exmouth, for Messrs. Blackmore and Sons. Mr. Ernest E. Ellis, architect, Exeter and Exmouth.

Yeo and Sons, Torquay	£5,798
Stephens and Bastow, Bristol	5,792
H. J. Gay Lang	5,780
Lacey	5,250
Wilkins, Bristol	4,755
Brealey, Exeter	4,668
Cooper and Sons	4,390
Hayman*	4,322
Gluyas, Bristol	4,300

Rest of Exmouth.

*Accepted.

Exmouth.—For alterations and additions to the Exeter Road Council schools, Exmouth (boys' and girls' departments), for the Devon County Education Committee.

Wakeham Bros., Plymouth	£1,994 0 0
G. Setter and Son, Exeter	1,892 0 0
Pethick Bros., Ltd., Plymouth	1,836 0 0
N. Pratt, Clyst St. Mary	1,703 12 7
F. J. Stanbury, Devonport	1,640 12 0
Cooper and Son, Exmouth	1,639 11 0
W. H. Perry,* Exmouth	1,615 12 0

*Accepted.

London.—For erection of trade school for girls (brick building), for the London County Council.

Rowley Bros., Tottenham	£2,321 9 0
H. L. Holloway, Church Street, Deptford	1,487 0 0
C. Wall, Ltd., 4, Lloyd's Avenue	1,473 12 0
J. Carmichael, 331, Trinity Road, Wandsworth	1,352 0 0
A. Roberts and Co., Ltd., 74, Earl's Court Road	1,312 10 0
J. and C. Bowyer, Ltd., Upper Norwood	1,271 0 0
W. Johnson and Co., Ltd., Wandsworth Common	1,270 0 0
Holloway Bros. (London), Ltd., Belvedere Road	1,237 0 0
Spencer, Santo and Co., Ltd. Earl Street, Westminster	1,233 0 0
F. and H. F. Higgs, Station Works, Loughborough Junction	1,199 0 0
G. Munday and Sons,* Muscovy House, Trinity Square	1,084 0 0

*Accepted.

London.—For supply and delivery of (1) abo 3,000 tons of track rails and fastenings, and (about 1,500 tons of slot rails and conductor te required for the construction or reconstruction lines included in the programme of tramway wor for 1910-1911, for the London County Council.

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Lorain Steel Company, U.S.A.	£31,010 0 0
Barrow Hæmatite Steel Company, Ltd., Barrow-in-Furness	22,007 10 0
P. and W. Maclellan, Ltd., Glasgow	21,981 5 0
W. Scott, Ltd., Leeds	21,118 15 0
Bolckow, Vaughan, and Co., Ltd.,* Middlesbrough	21,065 0 0

Slot rails and conductor tees.

W. Scott, Ltd., Leeds	£13,004 0 0
Frodingham Iron and Steel Company, Ltd., Scunthorpe, Lincs.	12,798 17 6
P. and W. Maclellan, Ltd.,* Glasgow	12,386 5 0

*Recommended for acceptance.

London.—For paving and sewer works in conne tion with the Garden Row, etc., St. Luke, schem for the London County Council.

T. Wood and Sons, Swanley, Kent	£2,335 2 10
W. Manders, Leyton	2,162 8 3
R. C. Brebner and Co., Edinburgh	1,950 18 10
D. R. Patterson, Ltd., Camden Town	1,897 11 11
J. Mowlem and Co., Ltd.,* Westminster	£1,833 0 0

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THE BUILDERS' JOURNAL

AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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The Town Planning Conference.

On the whole, a refreshingly practical and businesslike tone prevailed at last week's nference of chairmen and vice-airmen of committees, borough ıgineers, and surveyors, called by e National Housing and Town lanning Council to discuss the cost and chnical administration of town planning hemes. The conference, so far as can e seen from reports, resulted in subantial contributions towards a better ıderstanding of the many problems that wait solution. Mr. Henry R. Aldridge ıbmitted a report on the cost of townanning schemes in Germany, from which appears that the cost of preparing a heme—exclusive of surveying—is about .. per acre of land dealt with in the town-ctension plan; while the cost of the general idea" plan is from 2s. to 2s. 6d. er acre. Members of the Incorporated ssociation of Property Owners will probably learn with dismay that German town ouncils are safeguarded by the Act of 875 against claims for compensation for nd and cost of road-making so long as ıe road does not exceed 85ft. in width; nd they will possibly be amazed, and erhaps incredulous, when told that while ll cases in which this width is exceeded re dealt with on their merits, the municipal authorities are in most cases successful in inducing the owners to give the dditional land and to pay the cost of xtra road-making. Landowners in the nited States, it is well known, are milarly tractable, partly because of the ervasiveness there of "town pride" and ublic spirit, and partly (and perhaps more otently) on the principle of pruning the ree to make it more fruitful, the value of ıe land given up being as nothing in comarison with the consequent increment on djacent property. Mr. Aldridge further ointed out that German local authorities ossess the power to re-plan areas that are lready built upon, whereas in our own ountry all planning schemes must deal ith virgin land. It is perhaps the small wners who make most fuss; for Mr. A. R. tenning, of the Surveyors' Institution, was o doubt amply justified in his statement hat architects who are advising big landwners, know that these are "only too illing and anxious to make proper housng schemes." The conference dealt argely, if not chiefly, with the question of he width of roads; and one important esolution under this head was to ask the ocal Government Board whether under a town-planning scheme the local authority would have power to make the roads shown on the plan when it wished to do so, and collect the cost from the owners either when the road was made or when the land was built upon, and also whether the cost of the road could be charged on the owners of all the property it served or only on the owners of the frontages. It is to be hoped that the answer to these very pertinent questions may afford comfort and relief to certain owners who, under the old system, have been subjected to grievous hardships; as where, for instance, the builder of a row of houses opposite a suburban park found that he had to pay for the paving not only of the footpath in front of his houses, but for that on the other side of the road, next the park fence; or where a few owners living near a large church found that they had to pay for the very considerable stretch of paving in front of that church; or where the guileless purchaser of a new corner house finds that his apportionment for paving is twice or thrice that demanded from each of his neighbours. A further sensible observation was made by Mr. E. T. Hall, who, criticising a resolution dealing with the limitation of the number of houses per acre, remarked that the Dulwich College Estates Governors had set apart 160 acres of land out of two square miles for playing fields; and that whereas the resolution would mean that each individual acre of land must only have a certain number of houses, the way to lay out a big scheme was surely to consider it as a whole, and to have a number of oases rather than to deal with each particular acre. Apart from the merits of the particular resolution under notice, Mr. Hall's way of looking at the question commends itself by its breadth. Town planning, like Nature, should be seen steadily and whole. We must acquire the habit of thinking in acres rather than in yards, and perhaps in miles rather than in acres. There must be no pottering paltriness.

"The Lowest or Any Tender Not Necessarily Accepted."

This is one form of a formula used in connection with most enquiries for tenders. Its object is obviously to preserve, up to the actual signing of contract, the freedom of action of the parties who invite tenders. If we remember rightly, its omission on one occasion led to litigation, with the result that the Court ruled that those who had invited the tenders without this qualification were under obligation to accept and carry out the lowest. This is only the correlative to the fact that a tender sent in without qualification of a relatively similar kind becomes by mere acceptance a binding contract. Hence the practice of adding to the form of tender a proviso that mere acceptance shall not constitute a contract. Contractors, however, often express themselves strongly as to the way in which the freedom thus reserved is used. When tenders are invited from selected contractors, the object is, ostensibly at least, to obtain the lowest bid for the work; and the reasonable inference and expectation is, that the lowest tender will be accepted if the work is gone on with. Therefore those who tender exercise their utmost ingenuity in order to arrive at prices which will bring out the lowest tender; in the process much time is spent and much experience brought to bear. It is, and must be, very galling therefore to such to find, as sometimes happens even to firms of high repute, that although they have come out lowest in the competition, a tender at a higher rate has been preferred. Under these circumstances contractors naturally infer that either the architect or engineer has advised his clients that the work cannot be properly done below a certain figure; or, that the firm quoting the lowest price is objectionable or incompetent in some way or financially inadequate to the work; or, that the job was intended from the first to go to a certain firm, and the tenders of others were invited merely as a check. Probably the last-named inference is the one most generally made, and is the one which excites anger. It will be at once admitted that a client is well within his rights in rejecting a tender which his professional adviser says is too low; indeed, a contractor is thereby saved from the consequences of his own error of judgment. Financial inadequacy or incompetence on the part of a contractor are generally sound reasons for rejection. Contractors, however, rightly think that the two latter matters should be considered beforehand, and that the mere fact that they have been asked to tender implies that they are deemed competent both financially and otherwise, and therefore that the lowest tender of those invited should be invariably accepted, unless the professional adviser is clear that the price quoted is too low. There can of course be no two opinions about the unfairness of inviting tenders from a number of firms merely as a check price on some favoured firm, to whom the work is to be given if their price is anywhere near the mark. If the fact

becomes known, and it often does, that a certain firm is to be preferred, the competition tends to become a farce played at the expense of its promoters. The better way is to accept the verdict of a competent surveyor on prices quoted by a preferred firm by way of testing their fairness. Some rather startling figures were recently given by a correspondent as to the expense of architectural competitions, and these could be easily paralleled by builders who compete freely for work. In view of these considerations it has been suggested that the formula "the lowest or any tender not necessarily accepted," or, as it is oftener put, "the proprietor does not bind himself to accept the lowest or any tender," should have the words "the lowest or" omitted when the tenders are to be invited from selected contractors, the object being to secure an implied right to acceptance by the firm quoting the lowest price. This would make it difficult, however, for an architect or engineer to exercise his discretion in advising his client as to whether the lowest price was an adequate price, which is a serious objection. The words "does not bind himself to accept the lowest or any tender" seem to imply that lowness of price is not to be the determining factor, but that consideration will be given to the adequacy of the price quoted for the result expected. If all tenders were loyally settled on such a principle, there would be scant grounds for objection. The difficulty is that there is no criterion by which either side can test a decision before the event. It has been suggested that a fair price would automatically result from accepting, not the lowest tender, but the tender which approximated most nearly, on the lower side, to the mean price of the various tenders received. If announced in conditions of tendering, this method would probably eliminate most of the objections to the present system, and tend to make contractors quote a carefully considered price, because the temptation to resort to price cutting would no longer be the dominating factor it is now, and this offers perhaps the best solution of the difficulty in the case of a selected competition. When we turn to open tendering, however, each of the considerations to which we have referred has to be reckoned with after the tenders are in, and it becomes necessary that the advice of the professional advisers engaged in the matter should be listened to, when they advise the rejection of certain tenders on good and substantial grounds, even though those rejected are among the lowest. As to the morality of inviting tenders with no real intention of proceeding with the work, it stands self-condemned, and in the case of works where the cost of plans and quantities falls upon those who invite tenders, there is an obvious check on the indulgence of such fancies; this is unfortunately no longer the case where the cost of designs or plans and quantities falls on those who provide the tenders, and much wasteful expenditure is forced on decorators, upholsterers, and the smaller builders by the whims of clients. Into this category of wasteful expenditure imposed on architects and builders must be put those expenses of tendering in competition to which reference has been made, and to which before long an end should be put, by placing them on the shoulders of those at whose instigation they are incurred.

The success of the new and improved series of the "Architectural Review" (with which is incorporated "Details") has been so great that the January and February issues ran out of print shortly after publication.

TONE AND COLOUR IN TOWNS.*

By Professor S. D. Adshead, F.R.I.B.A.

Style and Character.

Colour, texture, and form are the three qualities through which we see style and character in the architecture of the town. Of these, colour and texture are the most abstract. Unlike form, they have but limited possibilities for graphic or hieroglyphic representation. Form appeals to us both through the understanding and through the imagination, but colour through the imagination alone. Form carries with it information. It suggests an association of concrete ideas; but colour appeals direct to the emotions alone.

The colour of a town, therefore, is a matter of greater æsthetic importance than that of form. Texture is a quality very closely allied to colour, more so perhaps than form, and the combination of colour and texture give us that quality which we may describe as tone.

Before proceeding further, it is necessary that we recognise that form, colour, and texture are only appreciable through the medium of light, and that the quality of the light is dependent upon those atmospheric conditions through which it is diffused.

Variation in atmospheric condition is very great, and apart from the question of smoke, humidity has an important influence on the quality of the light. Smoke and humidity I regard as atmospheric texture, and in combination with light, they give us tone. The more northerly the climate, the more humid will be the atmosphere, the lower the rays of the sun, and the greater the influence of tone on the colour of the town. On the other hand, the dryer and clearer the atmosphere, and the higher the sun, of less importance is atmospheric influence in diffusing tone and colour over the town. It may be safely said that in Italy and Greece, so clear is the atmosphere and so brilliant the sun, that the soffits of cornices, ceilings and of porticoes are brilliantly illuminated from the sunlit pavements below during at least half the days of every year, and perhaps during a longer period than this.

In London, on an average, there is only one week in the year when the sun is sufficiently high in the sky, and the atmosphere sufficiently clear and dry for effects like this to be seen. Even when the sky is perfectly clear, usually the sun is too low in this country to throw up reflection from the pavement in the same way. In calculating therefore what are the average conditions of light in a country situated like ours, although we may reckon upon being favoured with a certain measure direct from the sun, it does not come to us with that dazzling brilliancy with which it shines in countries which are further south; but peeping from between the clouds and illuminating the city with a bright spot here, at the same time casting a shadow there, it comes in uncertain moods. Or else low in the horizon it will cast a golden tinge over the whole town, which, however, more often than not presents a monotonous grey.

But although not favouring those of us who dwell in these northern climes with a superabundance of sun, Nature in other ways is particularly kind. With her many surprises, her serene sunrises, her sunsets, her grey dawns, her storm clouds, her rain clouds, and her harvest moons, she blends together all the heterogeneous and primary colourings of man, certainly with greater profusion than in the sunny south. But we must not trespass too much on her kindly light; we must not depend too entirely on her harmonising powers. There are times when she is in no particular mood, times when her blatant efforts are engaged simply in research, times when she is so bald, so clear, so cold, that of help for the poor efforts of man spent in bringing into relation the colour effects of a town, she has none.

*A paper read before the Birmingham Architectural Association.

Great, therefore, as is the natural influence of light on the colour effect of a town, it is not enough. The colour of the city is very dependent on man; Nature can do no more than take man's work and upon this diffuse a scheme of light, which after all is but a separate harmony in itself.

Smoke-grimed Towns.

And here before proceeding further, we come up against the distressing question of how to get colour in the architecture of towns which are diffused with smoke. In my opinion, smoke is a thing to be avoided at all times and at any cost. When so pernicious as we find it in Manchester and Leeds to have colour in the architecture is absolutely impossible. These cities are doomed to a perpetual gloom. Out of consideration for the moral and intellectual welfare of the inhabitants of a city, to say nothing of their physical health, no expense is too great which will eradicate the evil influence of smoke. My objection to smoke and its evil effect on a town is not altogether because it takes the life out of everything with which it comes in contact, but it is so self-assertive in its omnipotent rule. With its permeating powers it throws over a city a perpetual funeral pall. At times it mingles with the clouds, and, like an ominous billow or pillar of fire, hangs over a city with terrible effect. It is ominous to behold. It is an ogre risen up from a terrible inferno created by man; it is a sign that man by his works is a slave unto himself. True, a little smoke over a city may at times have a softening and subduing effect, and possibly in a limited sense gives tone to the buildings where it alights. Doubtless this would be the view held by many who, quite justly, call themselves artists, and take a distinctly humanitarian view. It is the view of those whose sympathies incline more towards the weaknesses of human nature than to its strength. The poet Shelley, when writing of the capital of the nether world, wrote:—

"A city much like London,
A prosperous and smoky city."

The point is, smoke is not an essential attribute of human existence, it is only one of those burdens which human nature in its weakness has chosen to carry. You architects who are interested in tone and colour should spare no pains in endeavouring to eradicate smoke from the towns.

In the chief cities of America, New York, Milwaukee, Toronto, Toledo, Indianapolis, Detroit, the district of Columbia, and numerous other towns, laws have been passed making the emission of black or dark grey smoke an act punishable by fine. A similar law exists over here, but it is not enforced. In America to ensure the enforcement of the law in some cities a section of the Health Department is set aside for the work, and in others there is a special smoke abatement committee with an executive of inspectors and officers under their charge.

In any case, I suggest that every town should have an army of inspectors whose duties should be regarded as equal in importance to that of the police. It would be out of place for me to enter into a consideration of the numerous devices that exist for the prevention of smoke. Undoubtedly much can be done. Fortunately we have seen the worst of the age of coal: electricity for haulage, for heating and lighting, is slowly but surely making headway on every hand.

One word more on the effect of smoke on the materials which compose the town. In northern and humid towns the smoke particles which collect in the atmosphere, being moistened, adhere wheresoever they touch. In dryer climates they fall as dust, and are either blown about until finally they get washed down the sewers or else are carried right away. So that here the problem is more serious than in Rome, in Paris, or even in London. My own explanation of the superior cleanliness of these towns over such towns as Manchester, Glasgow, and Edinburgh is not that in the former less

smoke is emitted but that the climate being dryer it does not adhere to the buildings to the same extent. What then can we do to prevent its appalling effect? Apart from preventative measures we can use those materials which either marry with it or are affected less by its pernicious influence than others. We must recollect that we are treating a disease which penetrated into every port. We can if we choose use materials like Portland stone and sand-faced bricks which with limitations have a way of taking on interesting tones without allowing themselves to be overwhelmed. Or we may use glazed surfaces, which so long as they are constantly washed certainly resist its worst effect; but in using such materials other considerations must be taken into account, and we will deal with these later on.

Initial Colouring.

Turning then to the initial colouring of the town as it appeals to us independently of external atmospheric conditions, and depending entirely as it often does on the choice of the materials used—what are the principles which should guide us in our colour scheme? I submit that in the first place the colour of the town must be in sympathy with the atmospheric conditions that prevail, as to key. In a human atmosphere and a northern clime the keynote of our colour must be low, and conversely where dazzling and brilliant atmospheric conditions prevail we may compose our colour scheme in the highest key. It is common knowledge that as we advance towards the north, colour disappears. On the other hand, in Central Africa, Australia, South America, and the Tropics, the scene is everywhere bedecked with flowers, ornamented with birds and butterflies, and bespangled with blues, yellows and crimsons in their highest keys; colours such as we in our temperate climate can ill comprehend. I submit that these effects are not for us; that we have a scheme of colour to work in, if not so high in key, so brilliant, so dazzling, so pure, or so suggestive of vitality in its highest flight, at any rate a scheme full of individual strength not comparable on terms of intrinsic worth with any other; but equally essential and possessing a reserved beauty and charm which are entirely its own. I hold that the artist who is called in to paint a panel in which is essentially a low-toned room, will, if true to his convictions, decorate it in a low-toned way.

It is right that Edinburgh should be grey, and it is right that Algiers should be white. Leaving the question of key of colour, let us turn to texture, and we see that the same principles hold good.

In a dull and moist atmosphere coarse grained materials, grainte, freestone, and sand-faced bricks are those which are in sympathy with the natural conditions around. On the other hand those vitreous materials, mosaic, faience, clay, brick and tile are only well and sympathetically used where the atmosphere is clear and dry, and where the sun is dazzling in the sky. It is a matter for practical consideration whether we use materials the colour and texture of which are seen at their best during one week in June or whether such as accord with our fleeting sunlight or our monotonous grey. Our appreciation of the importance of using materials which will soften with vegetation and tone down in weathering must influence us in deciding this. Those materials which adapt themselves most readily, which take on the local colour in the most natural way are the ones we should regard as being the most suitable to use, and it will be found that such have necessarily a fine texture and a surface which is absorbent to a considerable degree. Now, such materials may not always be the most suitable to receive the dazzling light of an exceptional July day; but rather than build in polished foreign marble, than cover the surfaces of our buildings with gorgeous mosaic, than line our streets with cream faience and other materials glazed to resist the local colour which everywhere softens the work of man and so live in an Elysium for one week in the year, let us use those materials, Portland stone, local freestone, and sand faced bricks, which welcome rather than resist the softening work of time, and let us feel that we are living in the climate in which we are born.

Having regard to cost, the choice of materials which we architects have to-day at our command is greater than ever it was before. We have facilities for using materials brought from distant parts in a way previously unknown. The distance from which material is brought appears to-day to have very little influence on the cost. Consider in connection with this the fact that all our important towns have increased to such an extent that the question of using local materials only, so as to harmonise with the natural appearance of the scenery around, is not a matter of such importance as in the past. The natural resources and effect of the site being practically obliterated in our big towns. There are exceptions, and Edinburgh is a case in point, but speaking generally, I am not one of those who would debar the use of all materials except such as were to be found in the locality around. Our towns are more artificial than they were in the past, and it is necessary that they be so. The need for using local colour is æsthetically speaking not so important to-day as when our cities were mere villages, and exotic materials intruded upon the actual scenery around. I have, therefore, no objection to the use of exotic materials merely on the ground that they are not locally found. The choice of materials should to my mind, so far as appearances are concerned, be one entirely of sympathy with the atmospheric conditions which prevail. I think I have made it clear that I strongly disapprove of the use of any material in this country, the texture and surface of which will not take on the weathering or vegetate in the way that is natural to the climate in which we live. I therefore denounce in the strongest terms these so-called glazed terra-cottas, and every material which has a surface that is adamant or glazed.

In doing so I am aware that I may be treading on tender ground. I admit that I can conceive of a street built entirely of this glazed ware, canopied with a sky of the deepest blue, absolutely clean and free from the pernicious effects of smoke, glistening under a sun with the temperature of 80 degrees in the shade. I can imagine the glistening asphalted pavement and the brilliantly-dressed crowd. I say that with such conditions a street of glazed ware with its ivory tinge would be everything that one could desire; but how often do such conditions prevail? Where in England is the town absolutely free from dirt, that can boast of ten or even thirty such days in the year and what of the odd 335, one-half of which are cold and grey and drizzling with rain? What of the glazed ware, then, with its exotic effect, its chill and icy glaze, its soot begrimed and greasy face clamouring to be washed, its blackened joints more repellent each time that it is washed. I prefer the workmen's dirty corduroy to the gentlemen's greasy shirt. My disapproval of glazed ware I extend to glazed bricks, clay bricks and terra cotta, too. Hard as adamant their resistance to our atmospheric conditions is repellent and unsympathetic; and of weathering and vegetation they will have none. In colour, the



By P. Scott.

COMPOSITION IN THE ORDERS, LIVERPOOL SCHOOL OF ARCHITECTURE

(*See also page* 168 *and Centre Plate*).

pink terra cotta and the clay brick is vicious and destructive of all breadth and softness of effect.

What then are the materials which we are to use? In the first place I would name Portland stone. This noble material, its natural colour varying from a beautiful grey to a rich brown, is in a low tone colour scheme the most beautiful that can be obtained. Where unprotected it bleaches to a beautiful white, and under the protecting influences of its cornices its shadows deepen with the secreting effects of time in a way which emphasises its powers of resistance and its form. Washed down with the rain, it takes on a surface the colour of which may vary from grey, or blue to green.

Of other stones, we have Bath. Though less durable than Portland, it weathers and takes on colour almost equally well. It is not a suitable stone to use in a smoky town, as unlike Portland it has not the power of resistance, and does not crystallise on its surface under the influence of rain so as to resist the smoke. Of other stones, we have those of a creamy tone, such as Darby Dale, Ketton, and many from York. They are sympathetic to the touch of our humid atmosphere, but unfortunately, unlike Portland, incapable of resisting smoke. Brown stones, like Ham Hill, must take a second place; they usually look well amidst their local surroundings, but in a town they are too dead. Of red stone, such as Runcorn stone, of which the Liverpool Cathedral is being built, the same remarks generally apply, though used as it is there, rising up from amongst the trees and isolated from everything else, it has a beauty which is entirely its own. Catching the sunlight as I have seen it, its soft golden brown colour strikes a note of endurance and solid grandeur, which a lighter stone in this position could not conceivably attain.

Speaking generally, stones which are either grey or cream, have the most beautiful effect in a town. Granite is a material which we must not forget. Cheapness in freight and improved methods in working have caused it to become almost as economical a building material as Portland stone. Norwegian granite is used more and more every day, and its use is likely to increase. When clean from the saw, it has an appearance of strength, refinement, endurance and precision, which gives it an exceptional value. It weathers to a greeny grey, and for the lower storeys and for the more staid buildings of a town, its use is unquestionably to be commended. Then, of bricks, we have the Berkshire, the Sussex, the Kent, and others from Leicestershire, all of which are sand-faced, the usual London stock and others of the commoner kind, such as have a surface which is not pressed, and which have very little silica in their compound. All these are sympathetic to the weather and the climatic conditions of Great Britain. Of materials of the more economic kind, but which at the same time have an æsthetic worth, I must not omit to mention Portland cement; for Portland cement I have the very greatest respect. Constructively its value is as yet but partially revealed, and its use as a decorative medium has yet to be revived. When fresh and clean, it has a beautiful texture, and a colour very similar to Portland stone. Unfortunately, however, it takes on with time a dilapidated hue. It is essentially a material to be coloured. As a decorative material for internal use, it can be treated, and has come to be known as "stuc." An excellent example of what can be done with it in this way is to be seen in the interior of the Ritz Hotel, London. Used externally, it should be distempered or painted, and here we come to the question of paint. In my opinion, we are in this country very reticent in our use of paint; we paint for preservation, but not for effect. We have a limited appreciation of the use of white, and we know something of the use of dark green and brown, but such colour as sage green, grey, or cafe-au-lait to us are quite unknown. Nothing is more distinctive in the secondary street of Paris and other Continental towns than the use they make, especially in their shop-fronts, of these delicate tints.

Application of Materials.

I have mentioned materials and their colour in detail, but after all what is of most importance is their general effect in the town, and in considering the colour effect of a town we must take into consideration not only the façades of the buildings, the colour and texture of the pavements, and the trees, but also the lamp standards, the vehicles, and human throng. We must recollect that the buildings are but a background to the moving crowd, and that architecture at its best does not call for attention, but is subconsciously felt. To my mind the finest type of street, the street which has the dignity fitting a great town, would be built of stone, or under any circumstances of a material which was white, or which had a creamy hue. Its pavement would be smooth, and for its colour it would rely upon its furnishings, its sunblinds, and the crowd. A parasol, a pillar box, or a floating banner would supply its topmost note. Such should be the colour effect of the streets in our most important towns. To my mind, Regent Street, London, owes its claim to be the most fashionable of shopping streets entirely to the delicately coloured stucco of its facades. But what of brick? Brick ought never to be considered as a material suitable to the most important streets of towns. The satisfactory use of brick demands for its background an abundance of green. The orange-red bricks to which I have directed your attention supply a beautiful material for use in the suburbs and possibly in a secondary provincial town. But red is a colour which should be used with the very greatest care. We are far too indiscriminate in the way in which we spread it about. Personally I should like to see greater care in the use of tiles. A tile roof especially that which is coloured a golden, chalky red is perfectly good with bricks, but used with stone, I feel it is out of place. We should hesitate less in our use of slates. Purple slates are to be condemned, but such as are of a soft blue, green, and grey or a velvety black supply a note of endurance where such is required in a colour effect. I have used such black slates from France on a cement front, coloured a creamy white, with excellent result.

I have said nothing of the effect of trees. As a background to architecture, they form a most magnificent foil, in colour and texture, as well as in form. The planting of trees in a town is a lost art. To indiscriminately dot them at intervals along every street shows but a limited appreciation of their real use. To plant a tree in a narrow and smoke-begrimed street, where at best it can but struggle through a short-lived career, rather excites pity than suggests a joy of life. Unless one can look upon a tree as a glory unto itself, it is better by far that it be not there. So I would say to those who propose planting trees in filthy streets, first clean your streets and then plant your trees. But if trees are to be planted where they have little chance of a natural growth, then let them be put out in tubs and boxes, carefully tended, and when they appear to suffer, let them be removed. In planting trees in avenues, there should be some possibility of one day enjoying the shade of an avenue worthy the name. If in masses they should have goodly shapes. Under no circumstances should they obstruct an important architectural view, and in connection with architecture, their right place is in the background. Growing under healthy conditions, trees and fountains are the most healthful and beautiful furnishings for a town.

In conclusion, let me impress upon you the importance of getting rid of our smoke; trees will then thrive, and we can rely upon delicate tints. Let us root our pink terra cotta and all those pernicious colours and adamant materials which are so destructive to greatness and breadth of effect in a town. Like Paris and eighteenth century London, let the tendency in the future be to make our streets lighter in tone, harder in texture, and more delicate in colouring. Thus they will be the fitting background for modern city life which pulsates with a vivacity and energy previously unknown.

Carpenters' Hall Lectures.

NATIVE CRAFTSMANSHIP IN TIMBER, BRICK, AND STONE BEFORE THE 18th CENTURY.

Mr. Arthur Stratton lectured on the above subject on Wednesday, February 9th, at the Carpenters' Hall. I would speak to you tonight, he said, about house-building as opposed to church building. In the mediæval times the craftsman found the best outlet for his genius in the decoration of churches, but more opportunity was found later on in the decoration of houses, and the man who built the church in all probability built the mansion close by. It was not until the wonderful enthusiasm for church building died down that the craftsmen devoted the whole of his skill to house building. This occurred at the time of the suppression of the monasteries. All through the time when native craftsmen were producing their best work, we find them using local materials. Where good building stone could be quarried in abundance, we seldom come across a homestead that has not stone walls, stone mullioned windows, and stone slates. The craftsman seems to have been dominated by a desire to build beautifully and well.

Timber Buildings.

I will only deal briefly with timber forms, on account of other lectures which you have heard on the subject. The Guest House at Lingfield, is representative of the small type of yeoman's house, peculiar to the Wealds of Kent and Sussex. The projection which can be obtained in half-timbered work calls for an endless variety of treatment, and a house from Worcestershire very clearly showed how this could be carried out.

Brickwork.

Brick was for long held in little repute, but later on came to be relied on for splendid and great undertakings. It was generally used in conjunction with stone. Except in districts where stone is very scarce, we seldom, indeed, find brickwork exclusively used. One of the finest examples is Compton Wynyates in Warwickshire. This house being in a district where all three materials abound, there all are used, and the colours blend admirably. The walls are of red brick, five courses to the foot, and with the wide mortar joints which give the texture which we always find in old work. The bricks used vary considerably in size from 12in. by 6in. by 3in. to 9in. by 4½in. by 1½in. Where a large unbroken surface of stone walling would be satisfactory a large surface of brickwork is apt to be monotonous. It wants projections and recesses to give light and shade. Where these can not be obtained, that is, when it was not desired to break the wall surfaces with projections, variety in the surface is sometimes obtained by using patterns in the brickwork. In burning bricks, some are more burnt than others. These vitrified and darker coloured bricks were at first looked upon as defective, but when this was found not to be the case, the craftsmen commenced to use them as a form of colour decoration. The variety of patterns evolved is very great, but the earlier ones were simpler and usually consisted of bricks crossed in diagonal lines, to form a diaper, built of headers, so as not to interrupt the English bond. In no case was the same pattern carried over the same surface. Several instances of simple types in the country were shown, including Eastbury House, near Barking, where little wall surface exists, the walls being broken up

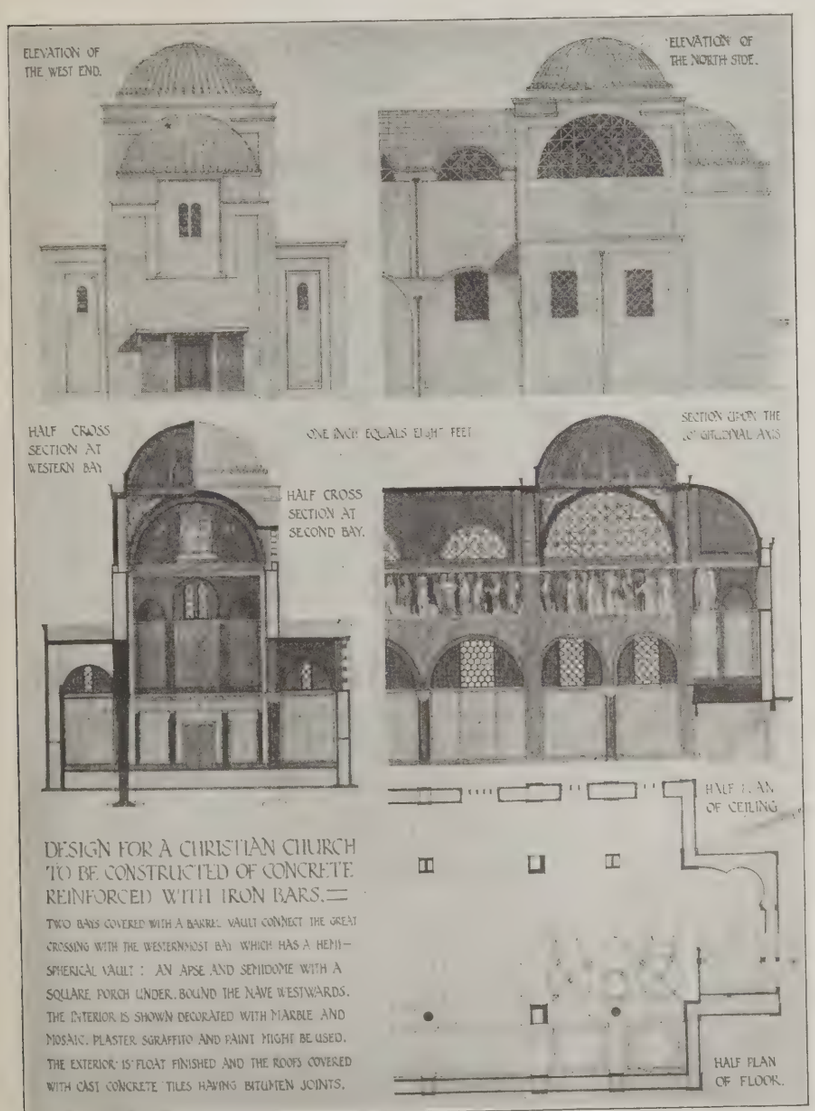
by mullioned windows; consequently where patterns are used they are whole patterns, and these only with great reserve. At Layer Marney Towers, in Essex, the stable wing is a fine example of pure native workmanship, in a house better known as exhibiting terra-cotta work in a manner seldom known in this country. Here the patterns, although running over the greater part of the surface, all vary. Eastbury, near Barking, is one of the best brick houses near at hand; mullions, copings, pinnacles, etc., are all carried out in the same material, though in some cases, unfortunately, the brickwork has been covered with cement. Another method of obtaining variety in treatment can be seen in the gateway to Little Leez Priory, in Essex. Here the octagonal towers are finished at the top with trefoiled headed corbel courses in brickwork; at Leez Priory the sides of the octagon measure 4ft. 7ins., the panels 3ft. 6ins., recessed 4ins., and the corbel course projects 4ins. Another example of a gateway with similarly recessed panels exists at Hadleigh, in Suffolk. The cusped heads of this decorative corbelling, though formed of larger pieces of material than the ordinary brickwork, were yet of the same colour and texture as the ordinary brick. These were apparently shaped first and then fired, not cut out of the brickwork afterwards. There is an unusually fine decorative example of this corbelling on the gatehouse at Rye House, on the borders of Essex and Herts, while at Nether Hall, a few miles away, the corbelling is used without recessing the panels, and is also used more sparingly. There is nothing in which the skill of the brickbuilder seems to show to greater advantage than in the chimney stacks, which run up above the parapets of these gatehouses and other buildings, and usually decorated with spiral or zigzag moulding carried out in cut brickwork. The angles are decorated with projections at the top to give a crisp outline. Examples were shown from Compton Wynyates, Haddington, in Worcestershire, and Gifford's Hall, in Suffolk. Haddington also shows another use of brickwork for nogging or filling between timber work. A house in Wiltshire is a unique example of stone filling with wooden uprights; much of the timber is now decayed. At Stockton Manor House, in Wiltshire, flint being found on the site is used in alternating courses with the stonework.

Thornbury Castle, in Gloucestershire, is a magnificent stone-built house, but brickwork was introduced by the builder for a chimney-stack. It was no uncommon thing to find red brick stacks on stone houses, and the contrast is a pleasant one.

Stonework.

Stone, as the larger material, has always suggested greater breadth of treatment. Where difference of colour in the stonework can be obtained, advantage was taken of it, as at the Abbot's Dwelling, Somerset, where the dressed work, mullions, quoins, buttresses, etc., are in darker Ham Hill stone. Though the walling generally may be rough, all wrought work should be carried out with thought and care. There are few buildings more completely suggestive and indicative of the best period of native craftsmenship than Great Chalfield, in Wiltshire. Whenever Ham Hill stone could be obtained, we find ashlar walling in large blocks with small joints. No one knew better than the old craftsmen that this could be relied on to tell its own tale. In Barrington Court, one of the noblest examples, one seeks in vain for sculptured ornament, yet there is a beauty and dignity about it beyond words. In these quiet stone buildings much depends upon the section of the mullions and their position as regards the wall faces, for their effect. The lecturer then briefly described the various sections of mullions obtaining in different parts of the country. They were seldom, he said, set back from the wall face less than 2½ins. or more than 6ins.

The bay windows and oriels were at that time singled out for ornamentation in stone, and even in brick buildings this part was almost exclusively in stone. A very favourite position for these oriel windows was over the entrance porch or gateway. Some very beautiful examples were shown, including those from Hengrave Hall, Suffolk, and Montacute House. In conclusion, Mr. Stratton said that if we would throw off the trammels of the to-day in a desire to do better work, we could not do better than to look to the work of these craftsmen, for there may be found many of the secrets which make for beautiful buildings.



THE GRISSELL GOLD MEDAL. DESIGN FOR A REINFORCED CONCRETE CHURCH BY C. P. WALGATE.

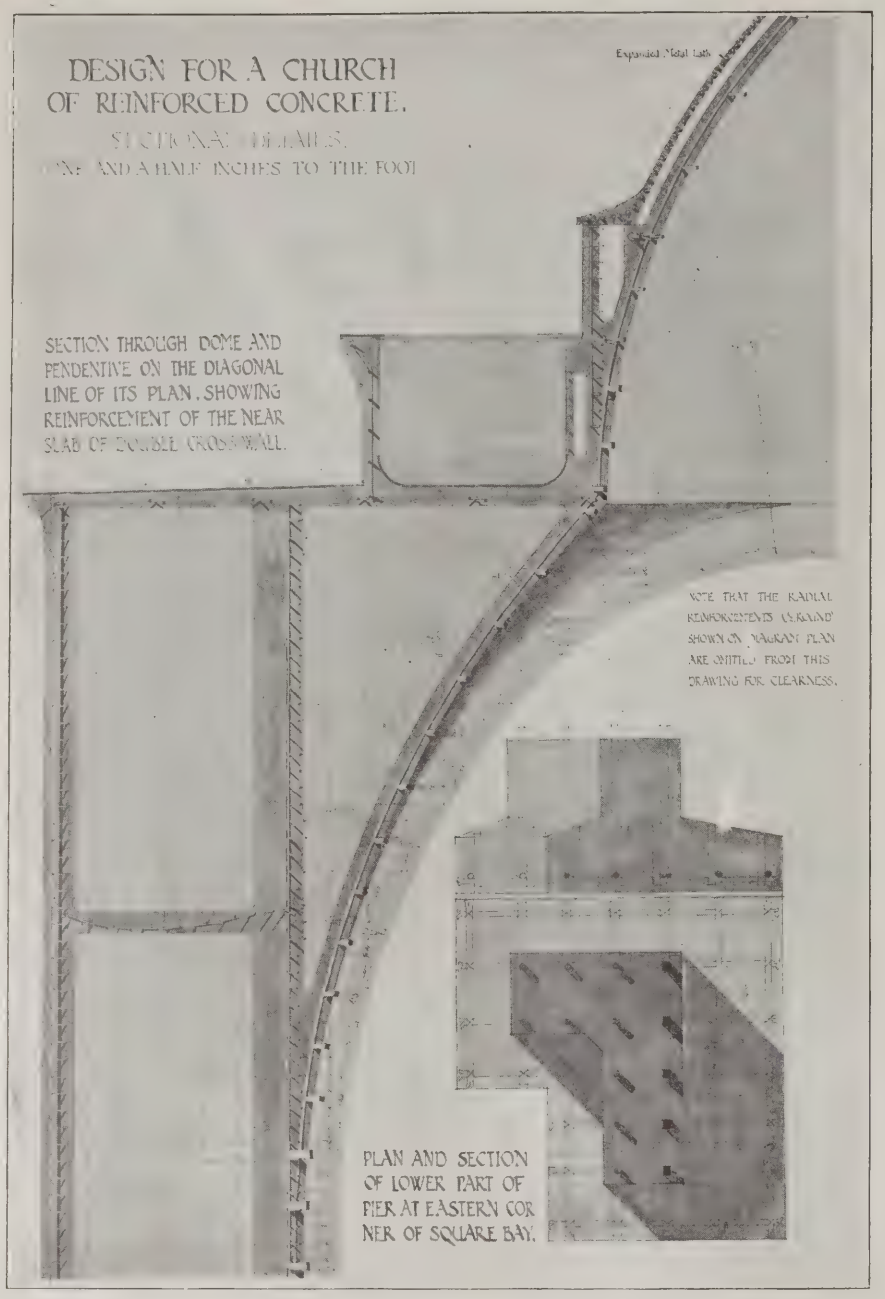
THE ART OF THE LEAD WORKER.

Mr. Lawrence Weaver lectured on the above subject at the Carpenters' Hall, on Wednesday, February 16th.

In choosing the title of "The Art of the Lead Worker," he said, I wish to differentiate from the subject matter of a lecture given last year by Mr. Troup, and which I think might have been called "The Practise of the Lead Worker." I shall not deal to-night with sanitary plumbing. In an old book, the lecturer continued, he had found the following definition:—"Plumbery: art belonging to architecture, being the art of working in lead." The real artist in leadwork should not be ashamed to write himself down as "artisan." The word "mechanic" carries with it the idea of work mechanically done, so the word artisan should carry with it the idea of work artistically done. The uses of lead in the past were very important, and differ very much in character, and I shall confine my slides and remarks to-night to English leadwork. It is one of the things always said against lead, that it is a poor relation to other materials. Many people think that things made in lead would have looked better in bronze or other material, but I show you otherwise to-night. You can get in lead a delicacy in modelling which you cannot get in any other material. There are some things which can be equally well made in lead as in bronze, such as statues—a statue made in lead is very much cheaper than one made in bronze. Lead is not a material for use in the "grand manner," but is a homely material. If lead were always used in the right place, it would not be accused of being the wrong material. Some things cannot be made of anything but lead. Rainwater pipes and heads are made in cast iron. I have nothing to say against them, if they must be cheap, but lead should be used if the work is to stand. I am not here to talk so much as to show, so will now start with the slides.

Church Fonts.

There are 30 lead fonts in England dating from the 12th century to the 17th century late Renaissance. The nearest one to London is at Walton-on-Hill, and is arcaded in 12 compartments, containing a figure in each, representing the 12 apostles.



THE GRISSELL GOLD MEDAL. DESIGN FOR A REINFORCED CONCRETE CHURCH BY C. P. WALGATE.

Another, at Ashover, in Derbyshire, is cast in thin sheets and filled round the stone, this also has a arcaded treatment filled with figures of the apostles or saints. An example from Brookland, Romney Marsh, was, the lecturer remarked, the most interesting font in lead, or, indeed, any other material, in England. This was arcaded in two tiers, the upper panels filled with the signs of the Zodiac, and the lower ones with various symbolical groups. In Gloucestershire there are six fonts all cast from the same pattern, so one may count it reasonable to suppose that when they were originally cast, in about the 12th century, there were at least 24 of them, so that, given a good design, a stock pattern is not a bad thing in itself. If you get a really good piece of sound, honest, artistic work, there is no harm in reduplicating it. Several others were shown including one from Brundall in Norfolk, and Parham in Sussex, illustrating the gradual disappearance of the arcaded treatment, which was finally abandoned altogether.

Rain Water Heads.

Now we come to the question of rain water heads. They started about the year 1241. A photograph of a gargoyle from a church in Cheshire showed a lead spout coming from the gargoyle to carry off the water, also a slide of a house in Coventry indicates the beginning of the use of the rain water pipe, but these are not carried right down, but finished with a shoe of lead to throw off the water on anyone underneath. Another gutter beautifully decorated comes from Bramhall in Suffolk, with pierced work and the vine ornament, and also a cresting of leadwork. A photograph of Dome Alley, Winchester, showed a pipe head, gutter and apron all beautifully moulded and decorated. One from the church at Leighton, Bromswold, has great interest historically, as George Herbert put up the pipe when restoring the church in 1632. Here the pipe does not continue down to the ground, but ends in a projecting spout. At Hampton Court there is a rain water head supposed to date from the time of Henry VIII., but probably dates from about 1860, and was executed by a Victorian plumber in rather a vulgar mood. One from the library at Windsor Castle is probably the oldest dated one, namely, 1589. After some examples from Haddon Hall, we come to Knole, one of our most beautiful houses, where there are forty rain water heads, twenty-four of which are of different design and all executed between 1604 and 1610. Some of these show patterns made by bright tin, and almost as bright to-day as when done in 1605. At Hatfield there is a very large one occupying a corner position and returning on either side, in which one could take a bath comfortably. At St. John's College, Oxford, there are some very interesting examples. When Mr. Troup was restoring the College he took these heads down, and on removing the paint found traces of their original colouring. Several other examples were shown in which the Renaissance feeling gradually asserted itself, culminating in an example from Shrewsbury in which the top of the pipe took the form of a Classic column.

Cisterns.

These are much the same in their mode of decoration as the fonts. One from Fagan's near Cardiff, bears the date 1620, and is a beautiful piece of decorative lead-work, others shown were from Charlton, in Kent, Bolton Hall, in Yorkshire, a fine example from Lincoln's Inn, in which the whole side panel is cast in one piece. At Lincoln Cathedral is a tank which shows the effect which can be obtained by a little piece of ornament, if you know where to put it. This example has a flowing vine pattern ornament round the top in the form of a band. Another dated 1714, decorated with the vine ornament, stands on a parapet at the Charterhouse, and has weathered a beautiful silver colour.

Vases.

These were very important elements in the decoration of formal gardens, and several were shown from Enfield, Wilton, and those from Hampton Court, which are the most beautiful we have.

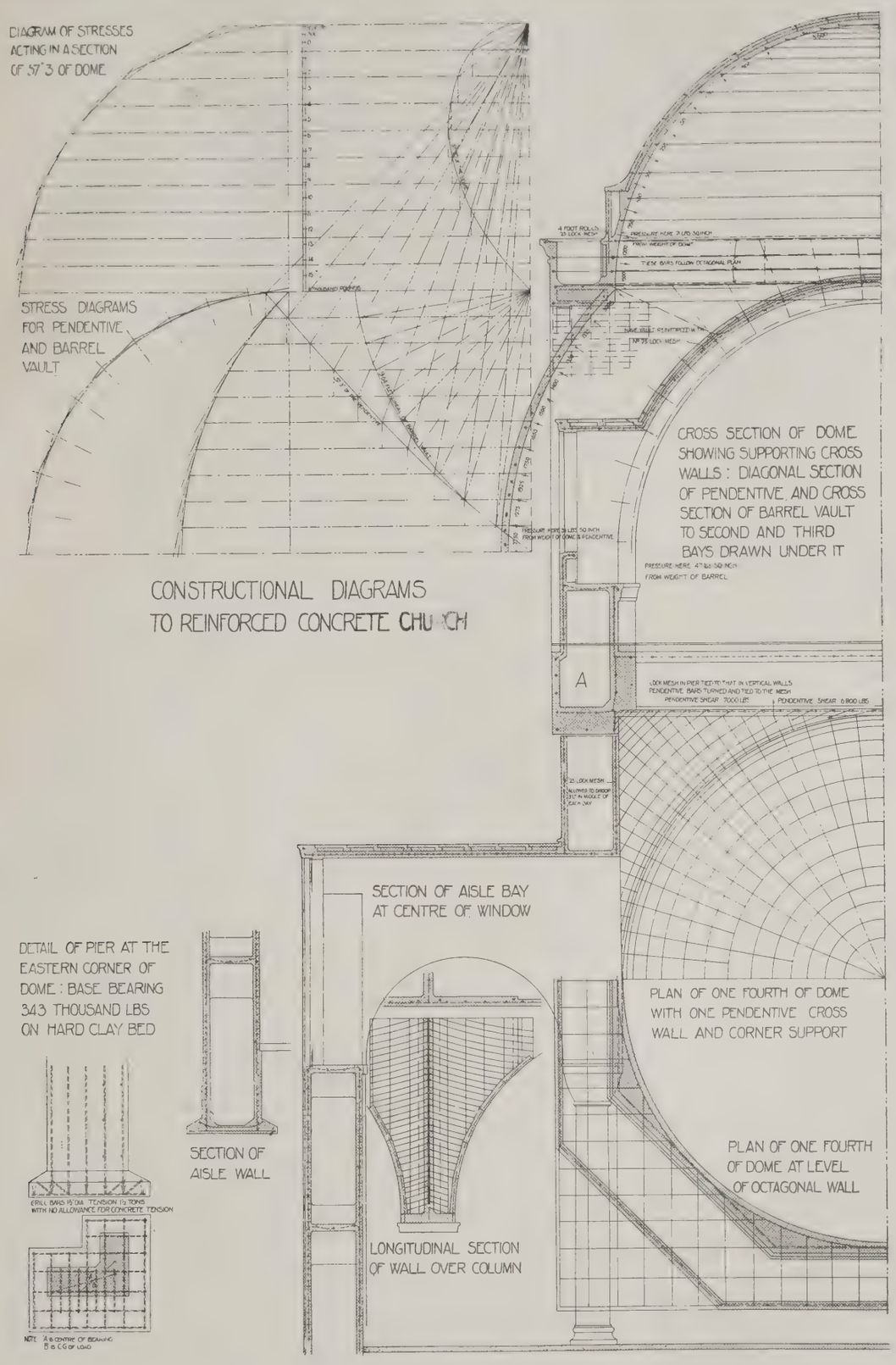
Statues.

There is a statue of Neptune near the Temple Church at Bristol, which, by the inscription below, is made from lead taken from the pumps of the Spanish Armada, but is, I am told, in reality modern. A fine example of lead figure work is the statue of Sir John Cass, modelled by Roubilliac, and now put up in the new Cass buildings in Jewry Street, Aldgate. The question of equestrian statues in lead is a vexed one. Props to support them usually have to be used. Lead is not suitable for them, because it should only be used where the bulk of the figure is over the point of support. Several lead groups and statues were illustrated, from Melbourne, in Derbyshire; Wrest Park, York; a group representing Æneas carrying away his father from Troy, modelled by Cheere, who succeeded Van Nost, at the works at Hyde Park Corner; and the Kneeling Blackamoor, perhaps the best known lead figure, replicas of which are all over the country.

Spires.

I think that in nothing does lead take quite such an honoured place as in the building of church spires, because not only is it useful as the best covering, but is also symbolic of Christian aspiration. Several types of lead spires were shown, the only remaining unrestored spire from Long Sutton, a collar type of broach spire from Ryton in Northumberland, and a very pretty type from Barnstaple. The one at Great Baddow has not much to commend it, because the spire springs from within the tower, and so is not really a spire. A lantern from Horham Hall, in Essex, was also illustrated. Dealing with Wren's spires, the lecturer remarked on his amazing versatility. St. Swithin's, Cannon Street, is the nearest approach to the mediæval spire than anything he did. A much more sophisticated piece of design is St. Margaret's, Lothbury, while St. Martin's, Ludgate, is a fine mascaline conception. Leaving London for a bit, the dome of St. Phillip's, Birmingham, by Archer, is a very fine piece of leadwork: while the National Gallery, by Wilkins, is a good piece of work, on very dry classical lines. Another use for leadwork is for staircase panels and rails, etc., as executed in No. 20, Hanover Square. In this case pure lead is of course not employed.

The lecturer concluded with a few examples of good modern leadwork—a gas standard designed by Sir Charles Nicholson for a church; and rain water head, designed by Mr. Troup and carried out by him, assisted by Mr. Dodd; a clock-face designed by Mr. Troup and carried out by Mr. Dodd; some



[THE GRISSELL GOLD MEDAL. DESIGN FOR A REINFORCED CONCRETE CHURCH BY C. P. WALGATE.

Figures to dome and pendentive represent the ring stresses. Measured from the diagrams the reinforcements are shown as follows :—Bars with a working resistance of 500 lbs., 1,000 lbs., 1,500 lbs. No. 23, Lock Mesh. Mesh 4 in. by 13 ft. 2 in., gauges, 3 and 11, breaking strain13,413 lbs lin. foot section.

Square bay dome, 106,100 lbs.; square bay pendentive, 12,000 lbs.; square bay inner wall, 36,000 lbs.; square bay outer wall, 74,000 lbs.; square bay double cross wall, 83,100 lbs.; nave bay half vault, 36,100 lbs.; nave bay half inner wall, 11,850 lbs.; nave bay half outer wall 13,875 lbs.: nave bay one bay wind, 30,000 lbs.; square bay wind, 52,000 lbs.; one bay aisle vault, 68,300 lbs.; small bay aisle vault, 54,000 lbs.; corner pier, 84,000 lbs.

The Concrete to be composed of one part of Portland cement, two of sand, and six of graded broken stone to pass a ¾" ring. The thickness of wall slabs and vaults is 4½" unless greater strength is required. "Lock Mesh" reinforcement used unless concentrated strains are to be resisted because of the facility with which it is placed in position. The walls are cellular in type to afford insulation space for pipes, etc. Concrete columns of the "Matrai" construction might be substituted for the marble ones shown, which latter, however, bear only a direct vertical load. The floor is kept up to allow a thorough system of heating and ventilation. Wall footings just below surface soil pier ditto, 5' 0" deep.

Load on Pier "A" ¼ dome, pendentive ¼ square bay walls. ¼ cross walls, ¼ bay nave vault, ½ bay aisle walls, ½ normal + ½ small aisle vault + 77,000 lbs. wind by rotary moments, and its own weight, 343,000 lbs. load on column, ¼ bay vault, 1 bay walls, ½ bay aisle, 121,700 lbs.

leadwork on a house designed by Mr. Troup; a garden ornament by Mr. Lorimer, in Scotland; a coat of arms to be put up at King's College Hospital; the roof of the Waldorf Hotel has some straightforward plumbing on it, while several architects have revived the use of leadwork in a decorative manner, notably Mr. Ernest Newton and Mr. Dawber.

Speaking of the difficulties of clothing steel structures in a suitable material, Mr. Weaver suggested lead as a possible one, and showed a sketch by Sir Chas. Nicholson for a church tower, constructed entirely of steel and covered over with lead.

Societies' Reports.

The Illuminating Engineering Society.

The first anniversary dinner of the Illuminating Engineering Society was held at the Criterion Restaurant, London, W., on Thursday, February 10. In the unavoidable absence of the President, Prof. S. P. Thompson, D.Sc., F.R.S., Sir Henry Trueman Wood, vice-president, took the chair.

The usual loyal toasts having been duly honoured, Mr. A. P. Trotter, M.I.E.E., proposed "The Prosperity of the Illuminating Engineering Society." He alluded to the rapid progress of the newly born society, and pointed out the value of the friendly, informal discussion to which it led.

The Chairman, replying to the toast, said that he himself had followed the work of the society with a very keen interest, and, though the multiplication of new societies was a matter which caused students some concern, he felt sure that this particular one had a real field for useful work before it. He thought the society had every reason to be satisfied with their progress.

The Chairman subsequently proposed the toast of "The First Honorary Members of the Society." Sir William Preece, who had done such valuable pioneering work in connection with the measurement of illumination; Sir Joseph Swan, one of the inventors of the electric incandescent lamp; and Prof. G. Vernon Harcourt, whose work in connection with the standards of light was so justly celebrated. He felt that the society was fortunate in being supported by three such eminent men.

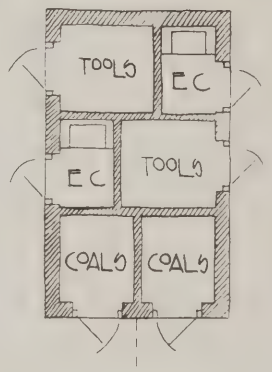
Prof. Vernon Harcourt briefly responded. He thought the action of the society in bringing together those interested both in gas, electric, and other means of illumination was a happy thought; the result of the labour of the society would be a great advance in knowledge of illumination.

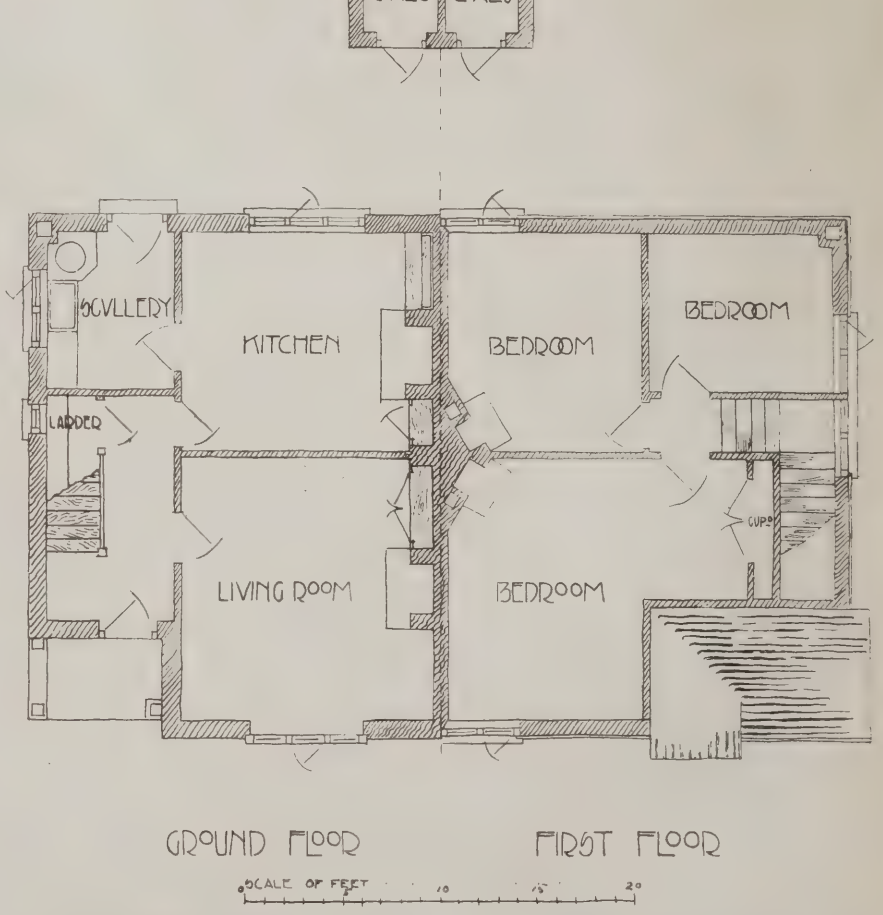
The next toast on the programme was that of "Kindred Societies." This was proposed by Mr. L. Gaster, the hon. secretary, who expressed the gratitude of the new society for the support given to it by older bodies, and in particular by the Royal Society of Arts, whose secretary, Sir Henry Trueman Wood, they were so pleased to see present. Proceeding, he said that the watchword of the society was "Co-operation." In these days no man—not even a society—could claim a monopoly of knowledge, and the co-operation between different experts, which was facilitated by the Illuminating Engineering Society, would be very beneficial.

Mr. Gaster then alluded to the presence of Mr. J. W. Helps, president of the Institution of Gas Engineers, and also, at very short notice, of Mr. W. Mordey, the past president of the Institution of Electrical Engineers. He also expressed the pleasure which it gave members of the Society to see present Prof. A. D. Waller (representing the Physiological Society), Col. Lane Notter (Deputy-Chairman of the Royal Sanitary Institute), and Mr. Stanley Hamp (of the Royal Institute of British Architects). All these societies had much in common with the Illuminating Engineering Society, and he felt sure they would give very cordial support.

Mr. J. W. Helps (president of the Institution of Gas Engineers), Mr. W. Mordey (past president of the Institution of Electrical Engineers), Prof. A. D. Waller (treasurer of the Physiological Society), and Col. Lane Notter







COTTAGES, LANGDON ABBEY, NEAR DOVER. W. J. JENNINGS AND J. F. DUTHOIT, ARCHITECTS.

These cottages have just been erected for Mr. W. P. Hampton, upon the Langdon Abbey Estate, near Dover, and stand by the roadside just by the entrance drive to the Abbey Farmhouse. The walls to the ground storey are built hollow and faced with local grey stocks, and to the storey above solid walls covered with dark red hand made weather tiles upon battens plugged to face of wall, and the roof is lined with felt and covered with dark red hand-made roofing tiles. The casements are filled in with lead lights with wrought iron casements, to open, by Messrs. Hope and Sons. The frames and barge boards and feet of rafters are painted white; doors, gutters, down pipes, and water butts, dark olive green. The architects are W. J. Jennings and J. F. Duthoit, of 6, Claremont-place, Dover, and Canterbury.

(deputy-chairman of the Royal Sanitary Institute), also spoke.

Mr. S. Hamp, A.R.I.B.A., said that the objects of the society would strongly appeal to members of the architectural profession. He thought that architects had not studied the subject as closely as they should do, but he felt confident the Illuminating Engineering Society would put within their reach the means of doing so.

Col. W. F. Leese briefly proposed the toast of "Our Guests," coupled with the names of Dr. T. M. Legge, Mr. W. Finlay, and Mr. J. A. Butterfield.

Dr. T. M. Legge (H.M. Medical Inspector of Factories), Mr. W. Finlay (president of the Electrical Contractors Association), and Mr. J. A. Butterfield briefly replied.

Mr. F. W. Goodenough (Chief Inspector of the Gas Light and Coke Company) proposed a vote of thanks to Sir Henry Trueman Wood for kindly consenting to take the chair at short notice.

Replying, the Chairman expressed his thanks for the kind expressions of the last speaker, and added that he would like to propose the health of the Hon. Secretary of the Society, Mr. Leon Gaster, to whose great energy and experience the prosperity of the society was so largely due.

Mr. L. Gaster, hon. secretary of the society, replying, said that it was only by such co-operation as the night's proceedings had exemplified that the society could give successful and useful service.

R.I.B.A.

The attention of members is called to the following change in the arrangement for the sessional papers in April:—Professor Lethaby's paper, "The Architecture of Adventure," will be read on the 18th instead of the 4th; and Mr. George Hubbard's paper, "Architecture on the Eastern Side of the Adriatic," originally fixed for the 18th, will be read on the 4th.

Devon and Exeter Architectural Society.

The annual meeting of the members of the Devon and Exeter Architectural Society (embracing the counties of Devon and Cornwall) was held at the Royal Clarence Hotel, Exeter, on Saturday, February 19th, the president, Mr. William H. May, M.S.A., of Plymouth, being in the chair, and among those present were Messrs. Charles Cole, vice-president (Exeter); James Crocker, Harbottle Reed, L. F. Tonar, T. A. Andrews, J. Jerman, J. A. Lucas, P. Morris, J. H. Shearer, A. Stevens, C. R. Cole, A. N. Tucker, L. W. Crews (Exeter), A. S. Parker, E. Coath Adams (Plymouth), C. Cheverton (Devonport), J. S. Bray Holsworthy), J. C. Southcombe (Barnstaple), and Allan J. Pinn, A.R.I.B.A., hon. secretary (Exeter).

The hon. secretary presented the annual report. The balance sheet presented by the hon. treasurer was of a satisfactory character, and with the annual report, was unanimously adopted. The retiring president, Mr. W. H. May, then delivered his address. Mr. J. Crocker proposed a very hearty vote of thanks to the president for his interesting address, and conduct in the chair during his year of office, which was seconded by Mr. C. Cole and carried.

The following members constitute the officers and council for the ensuing year, viz:—Mr. William H. May, M.S.A. (Plymouth), president); Mr. Charles Cole, M.S.A. (Exeter), vice-president; Messrs. M. A. Bazley (Plymouth); James Crocker, F.R.I.B.A.; John M. Pinn, T. A. Andrews, J. A. Lucas, O. Ralling (Exeter), C. Cheverton, M.S.A. (Devorport), J. C. Southcombe (Barnstaple), Mr. S. Dobell, hon. treasurer (Exeter), Mr. Allan J. Pinn, A.R.I.B.A., hon. secretary (Exeter).

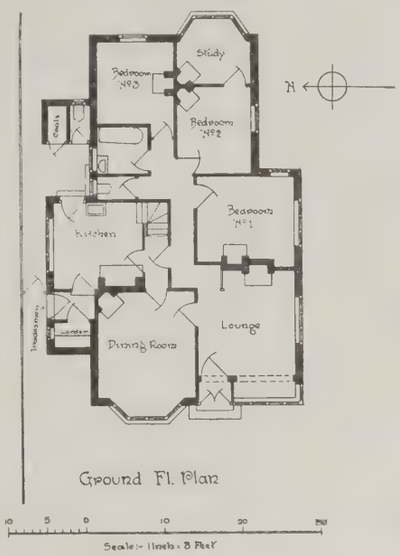
Mr. W. H. May returned thanks for the honour conferred on him in electing him to the office of president for another year. The meeting was following by a luncheon, and a short toast list was gone through.

The Architects' Technical Bureau.

A meeting of the Architects' Technical Bureau was held on the 23rd inst., at 24, Hart Street, Bloomsbury. Mr. A. W. S. Cross, F.R.I.B.A., the chairman, delivered an address explaining the policy of the Bureau in regard to the standardisation of trade catalogues, and Mr. George Hubbard, F.R.I.B.A., followed with a few supplementary remarks. A general discussion ensued, in which Mr. Searles-Wood, F.R.I.B.A., Mr. Paul Ogden, F.R.I.B.A., and several other architects, took part. A number of building trade manufacturers also joined in the debate, and a resolution, after many amendments and riders, was adopted, to the effect that a number of manufacturers be appointed as a general representative committee, to meet an advisory committee of architects, composed of a like number of gentlemen, to discuss the standardisation of trade catalogues and germane subjects. A preliminary meeting is to be held to-day, March 2nd.

THE CHAPEL OF THE THISTLE.

The Trustees of the Order of the Thistle attended on His Majesty the King on Friday last, and presented the plans which have been prepared for the erection of the new chapel of the order at St. Giles' Cathedral, Edinburgh; Mr. R. S. Lorimer, A.R.S.A., the architect, was also present.



Views and Reviews.

Masonry Construction.

Professor Ira O. Baker's treatise on masonry construction is well-known, for in this review we have to deal with its tenth edition, the former editions of the work being admirably compiled in a truly scientific spirit, and giving most valuable information on all sorts of aspects of masonry construction, as well as upon the materials. The first edition of the volume appeared in 1889, and it may be here stated that, in the United States, whence the book emanates, the term masonry includes not only stone-work as here, but brick-work, artificial stone, reinforced concrete, and is not used even in any restricted sense to building construction, but by masonry is understood perhaps more work in engineering structures than in architectural works such as we are accustomed to think of when speaking of masonry. The author, in consequence of developments that have occurred since the publication of the first edition in respect to the manufacture and testing of Portland cement and the increase in the use of concrete, found it necessary to make considerable revision in the ten years, ending 1899. Now, after another ten years, he finds that the extensive use of plain concrete and the introduction of reinforced in general use make a further revision necessary, and that revision needed to be even more extensive than before, for it led to the book being entirely re-written. The result has been that the work is brought up to date in various matters; numerous modifications have been made in the text; the size of the volume has been increased, and many pages added. Most of the new matter is found in the chapter on plain concrete, and in three new chapters on reinforced concrete, concrete building blocks, and the elastic arch, and also in connection with new structures illustrated. Indeed, it is to be noted that the number of structures described and illustrated has been materially increased, and certainly represents much of the latest practice of leading engineers. It is peculiar that we should find in a book on masonry construction, which the English reader would suppose to be a book on stone-work, that the subject of concrete and reinforced concrete is dealt with so very extensively, and in so able a manner, for it is not to be expected that in a work of this character it would be possible to deal in very great detail with a specialised



"WYNNSTAY," BELTINGE, HERNE BAY. HERBERT KENCHINGTON, ARCHITECT.

This bungalow has recently been erected on a site near the sea. The bricks used are local red bricks, and the tiles sand-faced Kentish tiles. The Architect was Mr. Herbert Kenchington, of 14, Great James Street, W.C., and the Builder, Mr. Sydney H. Head, of Herne Bay.

subject. Yet the author has, in a comparatively short space, digested the main principles of the subject so comprehensively that the chapters herein would be more valuable to many students of reinforced concrete than many of the much larger books written specially and solely to deal with the subject. So, again, on the subject of the elastic arch, Professor Baker's summary of the theory is masterly, and the subject is dealt with from almost all points of view in the most convenient way to the designer. The condensation that Professor Baker seems to be able to effect without any loss of clearness is most valuable to the student, for we are afraid that in the majority of text-books the over-elaboration confuses rather than assists. This book, while it contains information on all aspects of ordinary masonry construction, deals, however, with many aspects of engineering construction in a similar admirable way, summarising the points in theory; for instance, it deal with the design of foundation piles and pile driving, including cost data; the construction of coffer dams and caissons; the design of masonry dams and reinforced concrete dams and retaining walls, and, in addition, deals with practice, describing and illustrating numerous structures erected in the last few years. The book, indeed, is one that should be in every engineer's library, and we may say also that it will be found of very great service to any architect who desires to make himself acquainted with the practice and theory of heavy construction in masonry and brickwork, and also desires to become acquainted with the principles of reinforced concrete construction.

"A treatise on Masonry Construction." By I. Osborn Baker, Bs.C.D.Eng'g. Professor of Civil Engineering, University of Illinois. London: Chapman nd Hall, Limited. Price 21s. net.

Obituary.

We regret to announce the death on Sunday, February 6th, at Forest Hill, of Mr. William Robert Green, M.I.M.E., who was for about half a century associated with R. Waygood and Co., Ltd., lift and crane manufacturers. Born at Poole in 1838, Mr. Green served his apprenticeship with Messrs. Gourlay Bros., marine engineers in Dundee. After about four years' service in the Royal Navy, as engineer on the "Radamanthus," he joined his uncle, the late Richard Waygood, who had founded the present business, in 1833, at Beaminster, Dorset, and who had removed it to London, in 1840, to works in Newington Causeway. At Newington Causeway the work consisted principally in the making of agricultural machinery and in hot water engineering, but in the early sixties the manufacture of small hand-lifts was commenced. The building of the railway arch across Newington Causeway, about 1863 caused the removal of the works temporarily to Suffolk Grove, and finally, to their present position in Falmouth Road, off Great Dover Street. Mr. Green, who subsequently became a partner, contributed very largely to the rapid development of the business in the new works, and the construction of sugar, rice, oil and other machinery was added to the manufactures. The lift-making part of the business was increased, and among the first hydraulic lifts was a book lift made and fitted, soon after 1865, at the Court House at Ryde, Isle of Wight, for the use of the Bench. Later, when the business was formed into a private limited company, Mr. Green was of course a director, and since his retirement two or three years ago, he has acted as consulting engineer to the Company, which now employs nearly a thousand hands, as compared with the eighteen to twenty which were in the business when Mr. Green joined it in about 1860. Mr. Green was highly respected by a large circle of friends, and in addition to these, there was a remarkable demonstration of sympathy from over seven hundred of the company's employees, from the works and offices, when the interment took place on the 9th February, at Nunhead cemetery.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

Date of Delivery.	Competition.
Mar. 21.	PARISH COUNCIL OFFICES, BLAWARTHILL. Architects are invited to send in plans and estimates of the probable cost of Offices to be erected for the Renfrew Parish Council at Blawarthill, Roker Road, near Scotstoun West Station. A sketch of the Site and other particulars can be had from the Clerk to the Council at 1, Manse Street, Renfrew, on payment of a fee of ten shillings, which will be refunded on receipt of a bona-fide set of plans, on or before 21st March. *No Premium will be paid to Competitors, and the Council does not bind itself to accept any plan sent in.*
Mar. 31.	SHEFFIELD ENDCLIFFE PARK CHURCH. Plans desired for Church for 650, Institute for 150, Primary Department for 125, Junior Department for 95, and Caretaker's Apartments. Premium, not merged in commission, £35. Assessor, Chas. Hadfield, Esq., F.R.I.B.A., Delivery on March 31. On receipt of 5s. the Secretary, J. W. Nicholls, 64, Everton Road, Brocco Bank, Sheffield, will furnish conditions and instructions with plan of site, showing existing buildings, levels, and drainage—these not returnable. Deposit returned only to those who send plans.
Mar. 31.	MUNICIPAL OFFICES, KARACHI. The Municipality offer a premium of 7,500 rupees (£500) for the best design, detailed plans and estimates for new Municipal Offices. Cost not to exceed 500,000 rupees, and the style of architecture is left open to the designers. Ferrotype plans of the site and a general arrangement of the floors of the building showing the accommodation to be provided, together with a copy of instructions to architects, will be supplied to intending competitors on application to the Chief Officer and Chief Engineer, Karachi Municipality. A charge of Rs. 5 will be made therefor, which will not be refunded. Each set of drawings must be sent in anonymously, but accompanied by a sealed envelope containing the author's name and address. Each set of drawings and all the documents required, including the sealed envelope, must be securely packed in a wooden box, addressed as follows:—The Chief Officer and Chief Engineer, Karachi Municipality, Karachi, India, and forwarded, at the competitor's own risk and charges, in time to reach the Chief Officer on or before the 31st day of May, 1910. It is proposed to apply to Government for permission for one of the chief architects to act as assessor to decide on the design to which the prize shall be awarded. The final decision of the assessor will be final and not open to dispute. The decision of the Municipality will be made within three months of the latest date for submission of designs, and payment of one-half of the premium will be made thereafter to the author of the selected design, the balance to be paid when the further details specified in the instructions to architects have been supplied. On payment of the premium the Municipality will have all rights in the design, with power to erect the building under its own agency, either according to the design selected or with such additions or alterations as it may deem necessary.
No Date.	SECONDARY SCHOOL AT PETERBOROUGH, for Soke of Peterborough Education Authority, to accommodate 250 scholars, but allowing for enlargement so as to accommodate 300 scholars. Particulars of the general instructions and conditions, together with a plan of the site, may be obtained on application to Walter J. Deacon, Clerk to the Authority, Cross Street, Peterborough.
No date.	ELEMENTARY SCHOOL, BLOXWICH, for the County Borough of Walsall Education Committee. Designs are invited for the erection of a Public Elementary School (mixed) to accommodate 500 children, at Bloxwich. Conditions of competition and plan of site from W. Dawson Sadler, M.A., Director of Education, Council House, Walsall.

Warrington Elementary School Competition.

The name of the successful architect in the plans competition in connection with proposed new schools was disclosed at Monday night's meeting of the Warrington Education Committee. The Sites and Buildings Committee had recommended that plans bearing the distinguishing number "3" be adopted subject to the receipt of satisfactory references. The Surveyor and Director of Education having reported upon their visit to Leeds and the result of their inquiries, the commiittee now recommended that Mr. T. A. Buttery be appointed the architect for the Evelyn Street Council School upon the terms and conditions set forth in the conditions of competition and on the terms of his letter to the committee, dated the 7th December, 1909. The recommendation was adopted, without comment, at Monday's meeting of the Education Committee.

Secondary School at Peterborough.

The Secretary of the Royal Institute of British Architects desires us to announce that the Competitions Committee have been in communication with the promoters, and that they are now satisfied with the conditions of the competition.

Blawarthill Parish Council Offices.

The terms of the competition for the above may be commended to the attention of the Royal Institute Competitions Committee as an instance of the way in which architects are regarded by public bodies. Apparently no assessor is to be appointed, no premiums are offered, and the Council does not bind itself to accept any plan sent in.

THE INSTITUTE MEMBERS' CLUB.

A special meeting of the above will be held in the new meeting room, Room 519, Caxton House, Westminster, S.W., on Thursday next, March 3rd, at 6 p.m. The agenda includes: "New R.I.B.A., by-laws, and voting by proxy; and next elections at R.I.B.A.

Our Plate.

Compositions in the Orders.

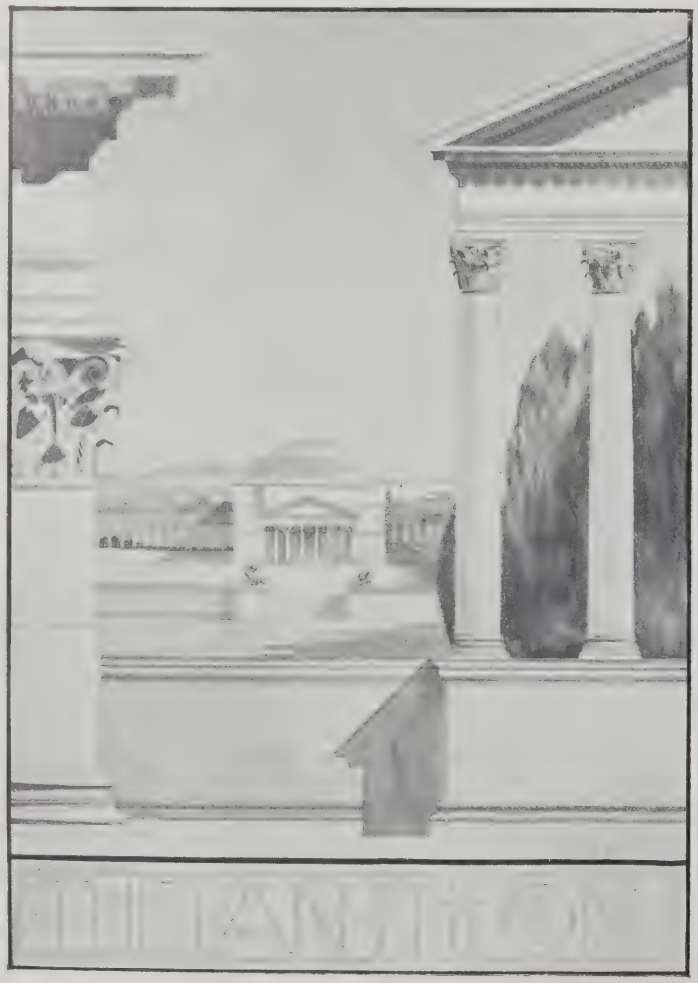
The drawings illustrated are the work of students in the School of Architecture, University of Liverpool, at about the end of their first year. Before he may start on a scheme of this kind, each student has to make a shaded drawing of a column and its entablature, as well as a few other exercises in sciography. Three weeks are given in which to complete the compositions, which are carefully drawn in washed ink and rendered in colour. Each student has to take his order from some definite building of antiquity, which he is allowed to choose for himself, and before beginning his design he has to look up in the library all the detail he can find belonging to it. He then arranges his composition, the general idea being to place the order and its detail in the foreground and behind it the building from which it is taken, the whole being welded together with an imaginary landscape background. In this way, while learning his orders somewhat intimately, the student also obtains his first essay in composition, and at once becomes extremely interested in the process. In visiting the United States last spring, I found this method of drawing the orders in vogue in certain of their schools, instead of the old one of painfully copying them in some stereotyped arrangement from Vignola or other similar sources. The illustrations now published, together with those which appeared in the Journal some time ago, are our first attempts at similar work. The colouring, which cannot, of course, be appreciated from the illustrations, has been taught the students by Professor Adshead, whom we are now fortunate in having as a colleague in the school.—C. H. Reilly.



By G. E. Chambers.



By H. C Mason.



By T. L. Wills.



By W. E. Davies



By F. C. Harris.



By D. A. Griffin.



By E. C. Preston.



By W. R. Owens.

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CONCRETE AND STEEL SECTION

(MONTHLY.)

he Concrete Institute.

The first annual general meeting of the Concrete Institute was held at the Royal United Service Institution Whitehall, London, on February 17th last, Rt. Hon. the Earl of Plymouth, C.B. e First Commissioner of Works), presit, being in the chair, supported by Sir ary Tanner, I.S.O., vice-president; Mr. P. Wells, J.P., hon. treasurer; Mr. William nn, F.R.I.B.A., and other members of uncil. It was announced that the ballot six vacancies on the Council had resulted the election of Prof. Henry Adams, Inst.C.E., Messrs. C. H. Colson, M.Inst. E., William Dunn, F.R.I.B.A., J. S. E. de sian, M.Inst.C.E., E. Fiander Etchells, Phys.Soc., and William G. Kirkaldy, soc.M.Inst.C.E.

The Hon. Treasurer then read the annual port, and referred to the accounts. The lowing is a summary of the former:—

The Concrete Institute, which originally rted with one hundred founders, had on cember 31st, 1909, 850 members and 17 cial subscribers. The membership is still reasing.

The principal work of the Council of the stitute since its formation has, to a great ent, been constructive, including the Inporation of the Institute.

Special Committees have been formed from ne to time to attend to various technical tters, and of those that are now in full rking order the Science and the Parliantary Standing Committees may be cially mentioned as having materially conbuted to the work of the Institute.

The general meetings which have been ld for the presentation and discussion of pers have been most successful, the attendce being satisfactory and the discussions of nsiderable interest.

Transactions of the Institute, containing pers with full reports of the discussions d other information concerning the work the Institute, have been published from ne to time.

During the summer months arrangements re made by which members of the Instite had an opportunity of visiting works d other places of interest. These visits, nich were attended by a large number of e members, were of an instructive charter.

Besides the organisations of these meetgs and visits, the Institute has done much eful work in other directions. There are o matters which call for special attention, mely, the part it has played in the Amendent of the London Building Act, and its ort to introduce a standard notation for nforced concrete.

With reference to the first matter the Coun- of the Institute felt that, although a ung Society, it ought to have a voice in e Amendment of the London Building Act, far as that Act affected reinforced concrete uctures. Accordingly, the House of Comons was petitioned by the Institute and rious conferences were attended by its legates. It is satisfactory to report that e new Act recognises the representative aracter of this Institute, and that it is now e of the various bodies which have to be nsulted in the matter of regulations for nforced concrete construction in the unty of London.

Again, a most useful work may be said to ve been initiated by the suggested standard stem of algebraical symbols to be used in lculations for reinforced concrete. The atter has aroused considerable interest both this country and abroad, and it is hoped at the list of symbols prepared by the ience Standing Committee will be soon lopted by the English-speaking nations.

The report and balance-sheet was adopted on the motion by the Earl of Plymouth, who dwelt on the satisfactory progress which the Institute had made, seconded by Sir Henry Tanner, and supported by Mr. F. E. Wentworth-Sheilds, M.Inst.C.E., and member of Council, and Mr. E. Fiander Etchells, F.Phys.Soc., who both dealt at some length with the work of the Science Standing Committee. After some discussion on various matters of detail, the meeting terminated with a vote of thanks, moved by Mr. William Dunn and seconded by Sir Henry Tanner.

The Concrete Institute has certainly made great progress in the short time since its foundation, and the membership is large as such societies go. It is evident that it has a great future before it, and it has started well. There is a tremendous amount of work to be done in standardising and coordinating work that has been done, as also in research work, for which latter it is to be hoped funds may in time be available. There is a great and increasing interest in the subject displayed by the architectural and engineering professions the world over, and it should be for England—the birth-place of Portland cement—to lead the way in the scientific use and manufacture of the material, and the Concrete Institute should be foremost in serving as a means of discussion, assistance, and education. The Concrete Institute seems destined to become one of our most important scientific institutions.

REINFORCED CONCRETE COLUMNS AND PILLARS.

Let b = breadth of a column.
" d = width or diameter of a column, *i.e.*, least dimension of section.
" A = total area of a column = bd. (for rectangular sections) or $\frac{\pi d^2}{4}$ (for circular sections).
" c = compressive stress intensity on concrete.
" c_s = compressive stress intensity on steel.
" l = length of column.
" m = modular ratio, *i.e.*, ratio between moduli of steel and concrete = $\frac{E_s}{E_c}$
" E_s = Elastic modulus of steel in compression.
" E_c = Elastic modulus of concrete in compression.
" r_l = least radius of gyration.
" r_c = radius of gyration of concrete taken on total sectional area of column.
" r_s = radius of gyration of steel taken as $(m-1)A_c$ in area.
" r = ratio of steel to concrete.
" A_L = cross-sectional area of longitudinal rods in column.
" A_E = Equivalent area of cross section.
" I = Inertia moment.
" P_s = breaking load of a short column.
" P_l = breaking load of a long column.
" c_m = maximum stress intensity equal to elastic limit in compression.
" j = a constant.
" k = a coefficient in the equation $I = kA_Ld^2$.
" c_1 = safe resistance of column in lbs. per sq. in. of total section.
" c_m = ultimate resistance of concrete in lbs. per sq. in.
" r_l = ratio of total volume of longitudinals to total volume of column.
" r_h = ratio of total volume of horizontals to total volume of column.

For a short column where the tendency to bend is negligible obviously $P_s = c_mA$.

If we require to limit the stress to the safe resistance of the material then we have simply $P = cA$. as our formula for general use.

If the column is made of reinforced concrete the elastic theory requires us to assume that the stresses on the steel and concrete are proportional to the moduli of elasticity of the two materials, *i.e.*, the stress on the steel is $\frac{E_s}{E_c}$ times as great as on the concrete. This means that we must substitute the equivalent section $A_E = A - A_L + mA_L \quad A + (m-1)A$.

Therefore we have

$$P = c\,[A + (m-1)\,A_L]$$

$$c = \frac{P}{A + (m-1)\,A_L}$$

$$c_s = \frac{m\,c}{}$$

The R.I.B.A. Committee's report adopts 15 for the value of m. and limits c to 500, so we get

$$P = 500\,[A + 14\,A_L]$$

$c_s = 15 \times 500 = 7500$ lbs. per sq. in.

The R.I.B.A. Committee's report advised that for short columns the reinforcement should not be less than r = ·008 of the gross sectional area, and that cross binding should not be further apart than 24 times the last lateral dimension of the reinforcing rods.

For spirally reinforced columns the general formula favoured seems to be that of the French Commission on Reinforced Concrete, namely

$$c_1 = \cdot 28\,c_m\,(1 + 15\,r_l + 32 r_h).$$

The French Commission recommend that for $c_1 = 710$, 1140 and 1420 respectively, the pitch of the spirals should $= \frac{d}{5}$ $\frac{d}{6\cdot5}$ and $\frac{d}{8}$ respectively.

When columns exceed in length 18 times the least dimension, the tendency to buckling as a whole must be counteracted. The following is the method of calculation proposed:—

As already explained for a short column $P_s = c_m A$. . . . . (1)

Now Ealer has proved that for a long column

$$P_l = \frac{\pi^2 EI}{j^2 l^2} \quad . \quad . \quad . \quad . \quad (2)$$

Then the equation $\frac{1}{P} = \frac{1}{P_s} + \frac{1}{P_l}$ . . (3) fits the condition that when a strut is very short $P = P_s$ nearly (for in that case $\frac{1}{P}$ becomes negligible), while when a strut is very long $P = P_l$ nearly (for in that case $\frac{1}{P_s}$ becomes negligible).

Therefore we can write, from substituting (1) and (2) in (3),

$$P = \frac{1}{\frac{1}{P_s} + \frac{1}{P_l}} = \frac{1}{\frac{1}{c_mA} + \frac{j^2 l^2}{\pi^2 E\, I}} = \frac{c_mA}{1 + \frac{j^2 c_m l^2 A}{\pi^2 E\, I}} \quad (4)$$

and $$P = \frac{P_s}{1 + \frac{j^2 c_m l^2 A}{\pi^2 E\, I}} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (5)$$

From (4) we obtain Rankine's formula

$$P = \frac{c_mA}{1 + x\frac{l^2}{r_l^2}} \qquad \text{where } x = \frac{j^2 c_m}{\pi^2 E}$$

and also Gordon's formula,

$$P = \frac{c_mA}{1 + y\frac{l^2}{d^2}} \qquad \text{where } y = \frac{j^2 c_m}{\pi^2 E k}$$

This is the formula the R.I.B.A. Committee recommended.

From (5) we have

$$P = \frac{P_s}{1 + \frac{j^2 c_m l^2 A}{\pi^2 E A r_l^2}} = \frac{P_s}{1 + \frac{j^2 c_m l^2}{\pi^2 E r_l^2}} \quad (6)$$

and $r_l^2 = \frac{I}{A} = \frac{kAd^2}{A} = kd^2$.

Calling $r_l^2 = r_c^2 + r_s^2$, then from (6) we get

$$P = \frac{P_s}{1 + \frac{j^2 c_m l^2}{\pi^2 E k d^2}} = \frac{P_s}{1 + \frac{j^2 c_m l^2}{\pi^2 E_c (r_c^2 + r_s^2)}}$$

for we can substitute E_c for E when we refer to the equivalent area, but we must be careful in using this formula to remember that P_c and P_s are what might be called the equivalent ratios of gyration.

The constant j^2 depends upon the fixing of the ends. If both ends of the column are fixed the binding is the same as a strut of half the length hinged at the ends which substitute $\frac{1}{2}$ for l; therefore j^2 becomes equal to $\frac{1}{4}$. When one end is fixed and the other rounded or free we have $j^2 = \frac{4}{9}$.

SHORT METHODS OF CALCULATION FOR CHECKING REINFORCED CONCRETE WORK.

By E. Fiander Etchells, F.Phys. Soc., M.Math.Assoc., A.M.I.Mech.E.

The main purpose of this paper is not so much to show how the formulæ in reinforced concrete work are derived, as to show how they are applied in checking an existing design.

It is presumed that a set of plans have been placed before the municipal engineer, and that he is required to express an opinion upon the strength of the construction from the point of view of public safety.

In this paper it is assumed that the calculations must comply with the requirements of the Royal Institute of British Architects' report, but the notation will be on the "initial letter" principle, as worked out in the standard notation recently put forward by the Concrete Institute.

It should be noted that there is no conflict of principle between these two reports, but the adoption of a systematic notation should make the formulæ of the R.I.B.A.'s report less irksome to all who have not a long memory for algebraical symbols.

Now there are so many points to be observed, both in the design and in the checking of the design of reinforced concrete work, that they could not possibly be dealt with in one short paper.

The utmost that can be attempted here is to give a few equations for testing the strength at salient or critical points.

If the design passes these tests satisfactorily, it can be more closely examined. If it does not pass such test it should be referred back for reconsideration or revision.

One of the earliest points to be observed is to ascertain what loads have been allowed for, in the case of arches, pillars, beams, etc., and what angle of repose and what weight of material have been taken in the case of retaining walls, bins, silos, etc.

The relentless force of merciless competition and the blind worship of the lowest tender both help to reduce the standard of strength.

Unfortunately the competition is not always upon a just and fair basis.

If it is specified that the stresses shall be in accordance with the R.I.B.A.'s report, one designer may still undercut all the others by taking very light loads or very high angles of repose, or by taking low values for any of the factors not within the special province of the R.I.B.A.'s report.

This preliminary reduction of loads or pressures is a very common means of obtaining a low tender. In asking for tenders the loads and pressures to be carried should always be fully specified.

In checking designs the data as to loads and pressures should always be examined at the outset, and before touching a single equation.

The fact that the calculations finish up neatly by showing the stresses to be within the limits set by the R.I.B.A.'s report is no proof of sound construction, unless the "loading" data is right, and unless the assumptions made in the calculations conform with irrefutable fact.

The following equations (wherever they contain numerical coefficients) are for use with concrete, having a crushing strength of at least 2,400 lbs. per square inch, twenty-eight days after moulding:—

Pillars With Longitudinal Rods and Without Spiral Hooping.

NOTATION.

A = total cross-sectional area of a pillar (including the reinforcement), (square inches).

A_L = total cross-sectional area of the longitudinal steel rods (in square inches).

P = the total pressure on the pillar (in thousands of pounds).

c = the compressive stress intencity on the concrete (in thousands of pounds per square inch—usually about 0.5 thousands —i.e., 500).

c_s = compressive stress intensity on steel.

For the purpose of calculation c_s is to be taken as being = $15c$.

The value of c should not exceed 500 lbs. per square inch for the concrete specified. It follows that c_s shall not exceed $15 \times 500 = 7{,}500$ lbs. per square inch (say 3⅓ tons).

Therefore all those designs which stress the steel in pillars to 7 or 7½ tons per square inch, and assume that the concrete will take the rest, must be referred back for amendment if the R.I.B.A.'s report is to be complied with.

$$c = \frac{P}{A + 14\,A_L} \quad \text{(Equation I.)}$$

$$c_s = 15c = \frac{15P}{A + 14\,A_L} \quad \text{(Equation II.)}$$

$$P = c(A + 14_L) \quad \text{(Equation III.)}$$

By putting c at the maximum safe value of 500 lbs. per square inch, P in Equation III. will give the total maximum safe pressure on the pillar in pounds.

If we work in thousands of pounds, so as to reduce the amount of figuring, we get the following equation.

The total safe pressure or load on a pillar in thousands of pounds = P where

$$P = \tfrac{1}{2}(A + 14\,A_L) \quad \text{(Equation IV.)}$$

The ½ in this equation is not merely a vulgar fraction; it represents half a thousand pounds per square inch.

In using any of the above equations the following conditions should be complied with:

(1) The load should be static and axial (i.e., not eccentric).

(2) The length should not exceed eighteen times the least diameter.

(3) The horizontal bindings should not be further apart than one-third of the least diameter of the pillar.

(4) The reinforcing rods should be near the outside of the pillar, but not nearer than their own diameter.

The R.I.B.A.'s report does not determine the minimum diameter of the bindings, but where round rods are used they are usually about $\frac{3}{16}$ in. to $\frac{5}{16}$ in., according to the size of the pillar, and the load, and the spacing, and the quality of the concrete.

Rectangular Beams With Tensile Reinforcement.

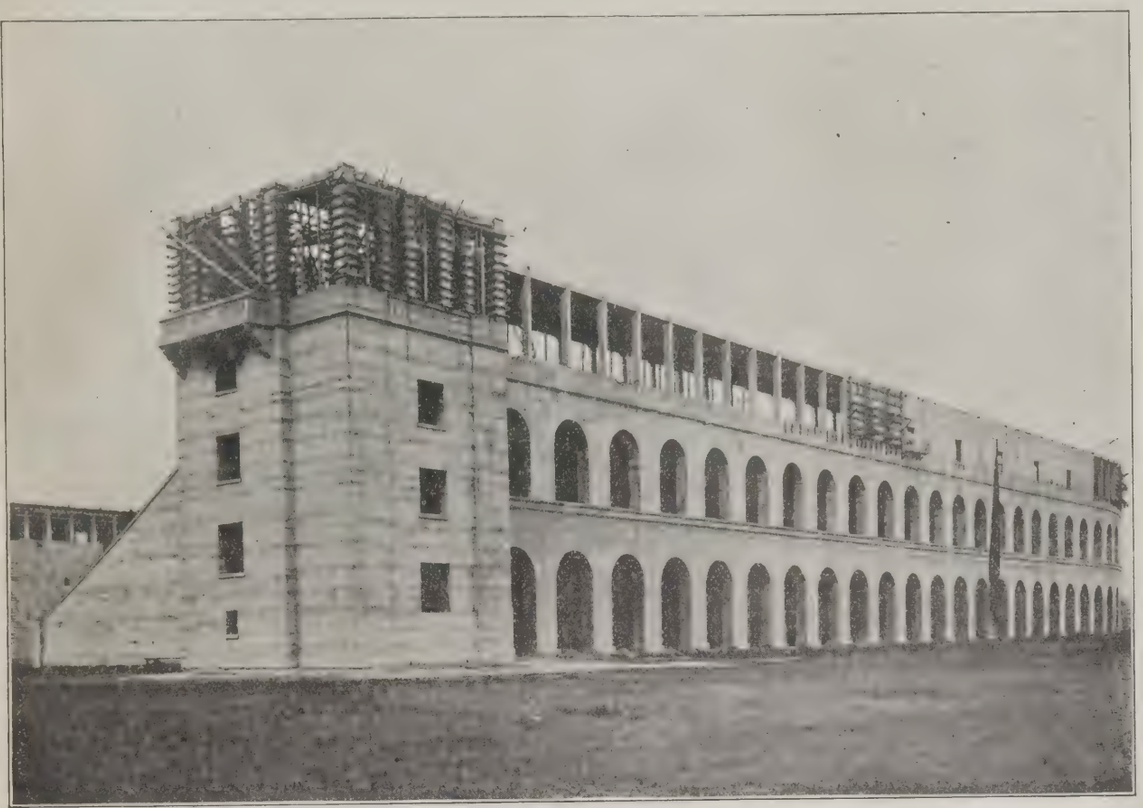
In the case of plain concrete beams the neutral axis is assumed to lie at the centroid of the cross-section; but in reinforced beams such a beautifully simple assumption is untenable, on account of the disturbing influence of many complex and indeterminate factors. The actual neutral axis is a shifting and fugitive line which even varies with the intensity of loading. The neutral axis referred to in ordinary practice is a hypothetical neutral axis, which is placed on "the safe side of uncertainty."

One of the basic assumptions which guide us in fixing the position of this nominal neutral axis is that "the tension in the concrete is negligible."

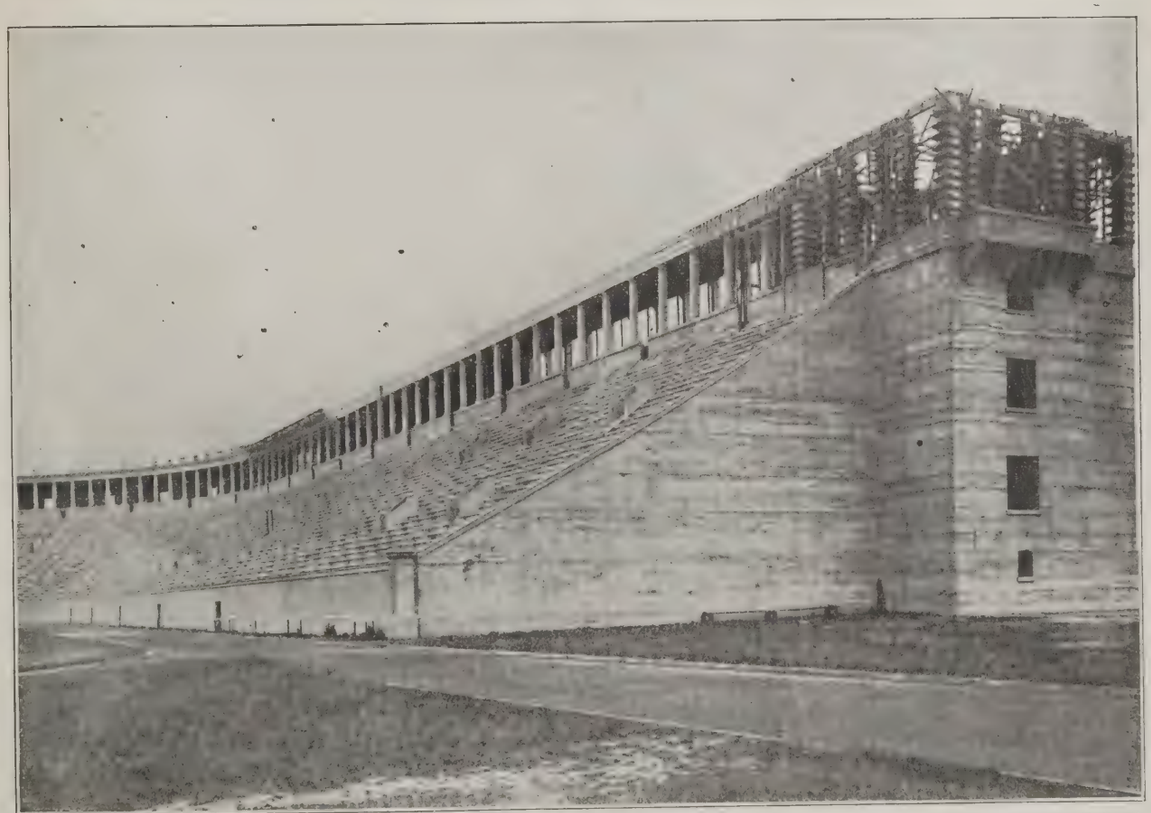
Let us examine this assumption for a moment, in order that we may be satisfied thereon.

With a concrete which crushes at 2,400 lbs. per square inch the ultimate tensile resistance will be about one-tenth of that amount—say, 240 lbs.

Now, on account of the difference in the elasticity of steel and concrete, equal deformations will not give equal stresses.



View showing exterior elevation.



General view of one side of seating. [*Photos: Topical.*

This new Stadium, which is built entirely of Reinforced Concrete, is not merely notable for its construction, but is a very admirable piece of design.

THE NEW REINFORCED CONCRETE STADIUM, HARVARD UNIVERSITY, U.S.A.]

If the modular ratio (i.e., the ratio between the elastic moduli of steel and concrete) be taken at 15, then, for low stresses, the stress on the steel will be fifteen times the stress on the concrete at the same distance from the neutral axis.

Conversely the stress on the concrete will be one-fifteenth of the stress on the steel. When the tensile stress on the steel was 17,000 lbs. per square inch, the tensile stress on the concrete would appear to be 17,000/15 = 1,134 lbs. Now, this 1,134 lbs. is about 4.7 times (nearly five times) greater than the ultimate tensile strength of concrete, and yet to the casual observer no cracks are seen. What has happened? It was at one time thought that the tensile strength of concrete was raised by the steel helping the concrete across the weakest parts. Some such action may occur, but not to the extent which the credulous affirm.

Short Methods of Calculation.[5]

The latest and most careful laboratory experiments reveal the presence of multitudinous microscopic cracks—smaller than hair cracks, and too small to be seen by the naked eye

Of course, as the loading is proceeded with, and the yield point of the steel is approached, the cracks widen out prior to absolute failure of the beam.

We see, therefore, that at the ordinary working stress of the steel the tensile resistance of the concrete has been exceeded.

Therefore we are justified in neglecting it in our calculations for finding the position of the neutral axis.

Rather than here submitting a rigid mathematical proof of the exact position of an hypothetical neutral axis, it perhaps would be more helpful in the checking of designs to submit this large scale diagram which shows the position of the neutral axis for various ratios of steel and concrete.

The points on the curve were found by the following equation :—

$$\frac{n}{d} = \sqrt{\left(r^2 m^2 + 2rm\right)} - rm, \text{ where}$$

n = distance of the *neutral* axis below the compressed edge (inches).
d = effective *depth* of the beam, measured the compressed edge to the axis of the tensile reinforcement.
b = *breadth* of the beam.
A_t = *Area* of *tensile* reinforcement.
$r = A_t / b\,d$ = *ratio* of area of reinforcement to area of concrete.
m = modular ratio = $E_s / E_c = 15$.

The area of concrete in compression will be $b\,n$.

The compressive stress at the compressed edge will be $= c$.

The compressive stress at the neutral axis will be zero.

The mean compressive stress will be

$$\frac{c + o}{2} = \frac{c}{2}$$

The centre of the compressive force will be at a distance $= \frac{n}{3}$ from the compressed edge, or at a distance $d - \frac{n}{3}$ from the axis of the tensile reinforcement.

The resistance moment of the concrete will be R_C.

$$= \begin{pmatrix}\text{Mean}\\ \text{stress}\end{pmatrix}\begin{pmatrix}\text{Area}\\ \text{stressed}\end{pmatrix}\begin{pmatrix}\text{Lever}\\ \text{arm}\end{pmatrix} =$$

$$= \frac{c}{2} . bn . \left(d - \frac{n}{3}\right) =$$

$$= \frac{1}{2} c\,b\,n \left(d = \frac{n}{3}\right)$$

Let t = the tensile stress on the steel.

The resistance moment in terms of the tensile stress on the steel = R_T where—

$$R_T = t\,.\,A_t\,.\left(d - \frac{n}{3}\right)$$

As the beam may fail by excessive compressive stress on the concrete, or by excessive tensile stress on the steel, the lower of the two values R_c and R_T should be taken as the measure of the resistance moment.



Built entirely of Concrete. *Photo: Topical.*

THE CITY STABLES, CHELSEA, MASS., U.S.A.

It is hardly likely that the amount of steel in tension and the amount of concrete in compression can always be so evenly proportioned that neither would fail before the other.

The consequence is that, from the economic standpoint, there is usually an excess of steel or an excess of concrete.

In the case of rectangular beams with tensile reinforcement only, the critical or economical ratio is about ⅔ of 1 per cent.

For a lesser percentage of metal the beam will fail on the tension side, for a greater percentage of metal the concrete will give way first by crushing along the compressed edge.

[These remarks, of course, apply to beams which fail by bending, the question of failure through excessive shear stress is not before us for the moment.]

When there is less than .67 per cent. of steel, the resistance moment may be taken as being approximately

$$\left(t\,.\,A_t\right)\left(\frac{7}{8}\,d\right)$$

If the steel be stressed up to 7½ tons per square inch, and if the percentage of steel does not exceed .67 per cent., then the following simple rule may be used :—

Let R_c = the resistance moment of the tensile reinforcement in *thousands of inch-pounds.*
A_t = area of tensile reinforcement n square inches.
d = effective depth in inches i.e., the distance from compressed edge to axis of tensile reinforcement.

Then $R_T = 14{\cdot}7\,A_t\,.\,d$.

When there is more than 0.67 per cent. of reinforcement the compressive resistance will be the determining factor.

When there is more than .67 per cent., and not more than 2.5 per cent, the following approximate rule, devised by the author for his own use for rapid checking, may be employed. This rule does not necessitate any conscious use of the troublesome neutral axis :—

Let R_c = the *compressive resistance* moment in thousands of inch-pounds.
p = the *percentage* of reinforcement = $100\,r$ since—

$$r = \frac{p}{100}$$

Then—

$$R_c = \left(\frac{00 + 20p}{1{,}000}\right) bd^2$$

b and d being the breadth and depth respectively, (This rule is for concrete stressed up to 600lb./ins.^{2} along the compressed edge.)

For example, take a beam with 2 per cent. reinforcement, the exact value of R_c would be

$$\frac{130{\cdot}8}{1{,}000}\,b\,d^2$$

while the approximate rule would give

$$R_c = \frac{130}{1{,}000}\,b\,d^2$$

Let us take another example and work it out both ways.

Let us take a rectangular beam of the following dimensions :—

Breadth = 8in.
Total depth = 16in.
Cover of rods at underside = 1½in.
Reinforcement = 3 rods ¾in. diameter.

The distance from the underside of the beam to the centre of gravity of the three rods will be 1½in. + ⅜in. = 1⅞in.

The effective depth of the beam will be 16in.—1⅞in. = 14⅛in.

The value of $b\,d = 14\frac{1}{8}\text{in.} \times 8\text{in.} = 113$ sq. in.

The area of one rod ¾in. diameter = 0.44 sq. in.

The total area of the tensile reinforcement $A_t = 0.44 \times 3 = 1.32$ sq. in.

Let p = the percentage of steel, then

$$\frac{1{\cdot}32 \text{ sq. in.}}{113 \text{ sq. in.}} = \frac{p}{100}$$

Multiplying both sides of this equation by 100, the hundreds on the right-hand side will cancel out, and we will get

$$\frac{100 \times 1{\cdot}32}{113} = p = 1{\cdot}17$$

That is, the percentage of steel to the area $b\,d = 1.17$ per cent.

Using the diagram for finding the position of the neutral axis. we find that

$$n = 0.44\text{d.}$$
$$= 0.44 \times 14.125$$
$$6.21\text{in.}$$

The area of concrete in compression (i.e., the area above the neutral axis)

$$= b\,n = 8\text{in.} \times 6.21\text{in.}$$
$$= 49.68\text{in.}$$

The stress at the compressed edge will be 600lb. per square inch.

The compressive stress at the neutral axis will be zero.

The mean stress will be $\frac{600 + 0}{2} = 300$lb. per square inch.

Expressing this in thousands of pounds, so as to reduce the number of figures, we can say that the mean stress per square inch will be $\frac{300}{1,000}$ or .3 thousands of pounds

The total compressive force above the neutral axis = .3 × 49.68 = 14.9 thousands of pounds (or 14.9 milals).

Now, the centre of pressure will not lie in the centre of the area above the neutral axis; it will be nearer to the compressed edge. Its calculated position is one-third of n from the compressed edge—that is to say, that the centre of compressive force is 6.21/3 = 2.07in. from the compressed edge of the beam.

The lever arm [or the arm of the couple formed by the compressive force above and the tensile force below] will be the distance between the centre of pressure and the centre of gravity of the tensile reinforcement.

That is $d - \frac{n}{3} = a$, where a is the arm of the couple.

In our case

$$a = 14.125 - \frac{6.21}{3}$$
$$= 14.125 - 2.07$$
$$= 12.055\text{in.}$$

The resistance moment in terms of the compressive force

= Compressive force × lever arm.
= 14.9 × 12.055in.
= 179.6 thousands of inch-pounds
= 179.6 milal inches.

Now this has been worked out fully, but by using our approximate rule we get

$$\left(\frac{90 + 20 \times 1.17}{1,100}\right) b\, d^2$$
$$= \left(\frac{90 + 23.4}{1,000}\right)\left(1,596\right)$$
$$= 181.1 \text{ thousands of inch-pounds.}$$

Comparing this result with the previous 179.6, it will be seen that this approximation is sufficiently accurate for all practical purposes, more especially having regard to the inevitable variability of concrete.

The resistance moment in terms of the tensile stress will be

$$A_t \,.\, t \,.\, a =$$
= 1.32 sq. in. 16.8 milals × 12.055 in.
= 270 thousands of inch-pounds nearly.

Thus the tensile resistance greatly exceeds the compressive resistance, as was to be expected.

These examples have been set out at at length only in order that the relative speed of the two methods may be contrasted and the results compared.

FUTURE SCHOOL BUILDING IN LONDON.

The Education Committee of the London County Council has prepared the following estimates of capital expenditure for the provision of schools for the financial year ending March 31st, 1911, and for the half-year ending September 30th, 1911.

PURPOSE.	Year ending 31st March, 1911. £	Half-Year ending 30th Sept., 1911. £
ELEMENTARY EDUCATION.		
No. 1—New Elementary Council Schools—		
(i.) Sites	71,000	25,700
(ii.) Buildings	132,665	68,500
(iii.) Equipment	5,000	3,835
	208,665	98,035
No. 2—Additions and alterations to Elementary Council Schools—		
(i.) Sites	56,000	800
(ii.) Buildings	46,340	9,000
(iii.) Equipment	1,835	70
	104,175	9,870
No. 3—Modernising and improving Elementary Council Schools—		
(i.) Sites	1,850	1,150
(ii.) Buildings	37,100	26,700
(iii.) Equipment	1,000	—
	39,950	27,850
No. 4—New Day Schools for the blind, deaf and defective—		
(i.) Sites	11,700	—
(ii.) Buildings	17,020	16,400
(iii.) Equipment	460	795
	29,180	17,195
No. 5—Additions and alterations to Day Schools for the blind, deaf, and defective—		
(i.) Sites	5 300	
No. 6—Industrial Schools—		
(i.) Sites	10,000	
Total—Elementary Education	397,270	152,950
HIGHER EDUCATION.		
No. 7—Secondary Schools—		
(i.) Sites	8,500	8,000
(ii.) Buildings	9,000	35,000
(iii.) Equipment	—	1,050
	17,500	44,050
No. 8—Training Colleges—		
(i.) Sites	3,000	—
(ii.) Buildings	4,100	6,300
(iii.) Equipment	80	400
	7,180	6,700
No. 9—Technical Institutes and Schools of Art—		
(i.) Sites	15,500	—
(ii.) Buildings	14,200	33,800
(iii.) Equipment	1,000	45
	30,700	33,845
No. 10—Grants in aid of Higher Education	29,500	5,000
Total—Higher Education	84,880	89,595
GENERAL.		
No. 11—Divisional Offices—		
(i.) Buildings	1,340	1,000
(ii.) Equipment	560	—
	1,900	1,000
No. 12—Places of detention—		
(i.) Liabilities in connection with buildings transferred from Metropolitan Asylums Board..	7,630	—
No. 13—General Provision—		
(i.) Sites	40,000	15,500
(ii.) Buildings	5,000	6,000
	45,000	21,500
No. 14—Sites to be acquired under the London County Council Provisional Order (Sites for Educational Purposes), 1910 (if confirmed)	11,900	8,450
Total—General	66,430	30,950
Grand Total	548,580	273,495

The Committee state that the average cost of a new school place is generally put at £20 for building and 11s. for equipment. The average cost per place for sites has been taken as £10 in the past, but there is a considerable variation in different districts. In the present estimates each case is dealt with on its merits. The Buildings Sub-committee have also put forward an estimate of expenditure on maintenance, etc., for the year ending March 31st, 1911, of £691,715, made up as follows:—Painting and cleaning, £68,955; repairs to buildings, £62,625; building and equipment not chargeable to capital, etc., £84,180; schoolkeepers and cleaning, £110,880; fuel, £44,000; gas and electricity, £36,000; water, £20,500; cleaning, warming, and lighting of non-provided schools, £43,440; rent of buildings, £9,055; rates and taxes, £207,385; and insurance, £4,695.

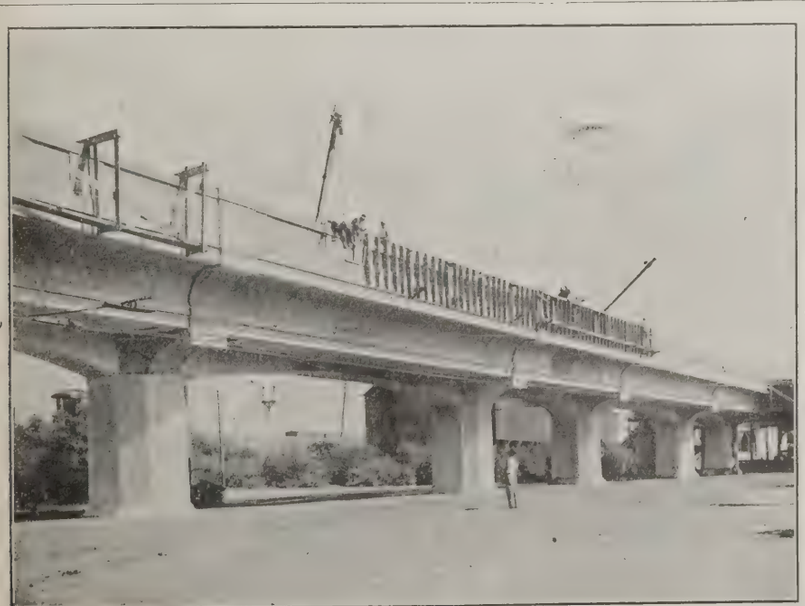


Photo: Topical.

FIRST REINFORCED CONCRETE VIADUCT ON THE BOSTON, MASS., ELEVATED RAILWAY.

Buildings in Progress and Completed.

BIRNIE.—The new public hall has just been completed and opened. Mr. A. Morrison, Hillhead, is the architect.

BOURNEMOUTH.—The memorial stone of the new mission buildings in connection with St. John's Church, Boscombe, to be erected at a cost of about £6,000 has been laid.

BOURNVILLE.—The foundation stone of a new infants' school at Bournville has been laid. The building has been designed to accommodate 290 children.

BURY ST. EDMUNDS.—The new sanitorium has been opened for the reception of persons suffering from consumption. The site is situated at the corner of Rougham Road and Shaker's Lane. The building is cross-shaped, and built of corrugated iron, lined with sheet felt at the back. The wards, bathrooms, corridors, etc., are lined with a patent asbestos material, impervious to water, and also fireproof. The building is lined throughout with match-boarding. There are two fine large wards (male and female), which contain accommodation for four patients in each room. The size of the rooms is 30ft. by 12ft. The wards are connected with a passage, and look out upon two fine large verandahs, 42ft. by 9ft. each. Immediately to the left of the entrance hall is a large dining room, and to the right of the hall is the matron's sitting room. The wards stretch from left to right of the main hall, which leads to the doctors' room, and the matron's bedroom, and the scullery, larder, servants'

rooms, and stores, including coal-house, etc. The contractors were Messrs. Santo, Spencer and Co., of London and Ipswich, and Messrs. Hinnell and Son were responsible for the drainage and the foundations, which are of brick. Mr. W. D. Harding (borough surveyor) personally supervised the erection of the building, the foundations of which rest on gravel soil, which makes an ideal foundation for this class of building, being very dry. The sanatorium is 175 feet above the sea level, and commands a fine view of the valley of the Lark and the surrounding country.

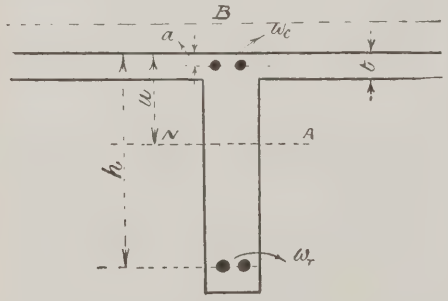
CRAIGEND.—A new school has been erected for the school Board of the East Church Parish of Perth (Landward) at a cost of £880. The school buildings—including mistresses' house (detached), erected at an additional cost of £570—are situated overlooking the main road on ground extending to about an acre, and the school itself provides accommodation for eighty pupils. There are two spacious and well-lighted classrooms, capable of being converted into a single apartment; while both boys' and girls' playgrounds are of large dimensions.

DESIGN OF T BEAMS.

By John C. Gammon, B.Sc. (Lond.); A.C.G.I.

This article is intended to give a new and simplified method of designing T beams. The first series of curves are sufficient to design a T beam. when single reinforcement only is required, and when used in conjunction with the second series of curves are sufficient when double reinforcement is required.

The curves are based on the ordinary theory, and in accordance with the stresses recommended by the Royal Institute of British Architects. Thus the working stress in the steel is taken as 16,000lbs. per sq. inch, and the stress in the concrete as 600lbs. per sq. inch. The ratio of the modulus of elasticity of steel to that of concrete is assumed to be 15. Certain approximations are made, but involve no practical error. They are chiefly, (1) that the stress in the steel is uniformly distributed; (2) that the concrete takes no tension; (3) that for a given effective depth and thickness of slab the area of reinforcement (tensile) is proportional to the bending moment, i.e., the leverage arm remains constant. In the curves the leverage arm is calculated as that obtained when the stresses in both the steel and the concrete have their maximum permissible values. It will be altered to a very inconsiderable extent if corresponding values of the effective depth and area of steel are used, which give some smaller value for the stress in the concrete.

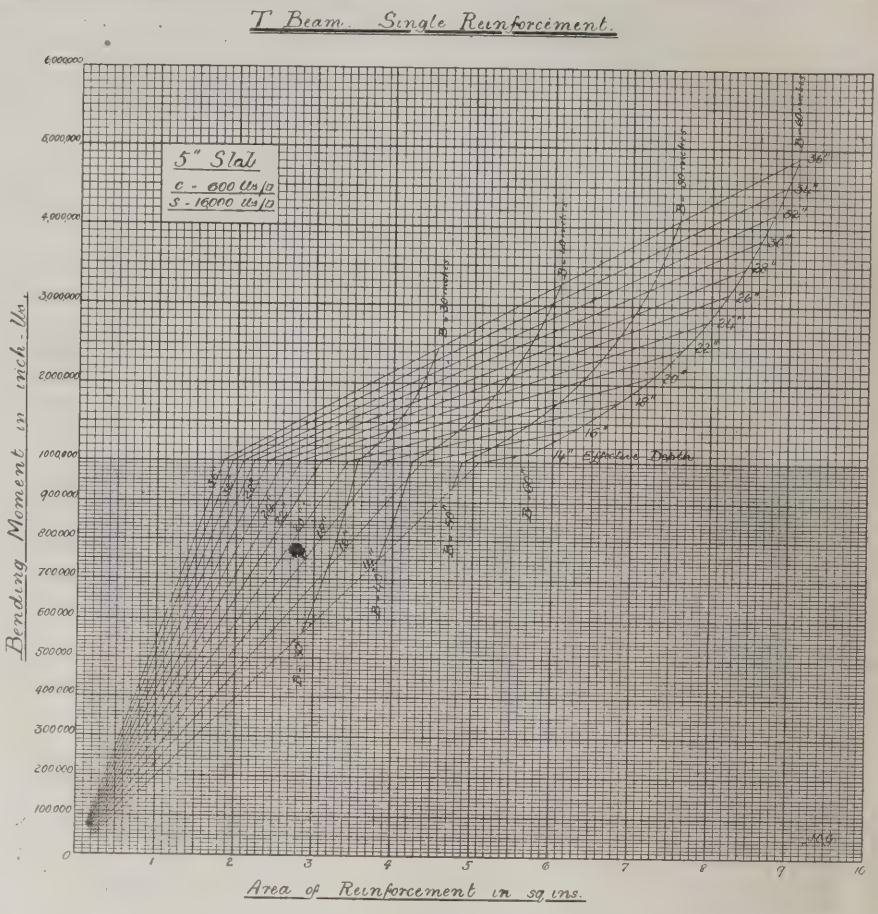


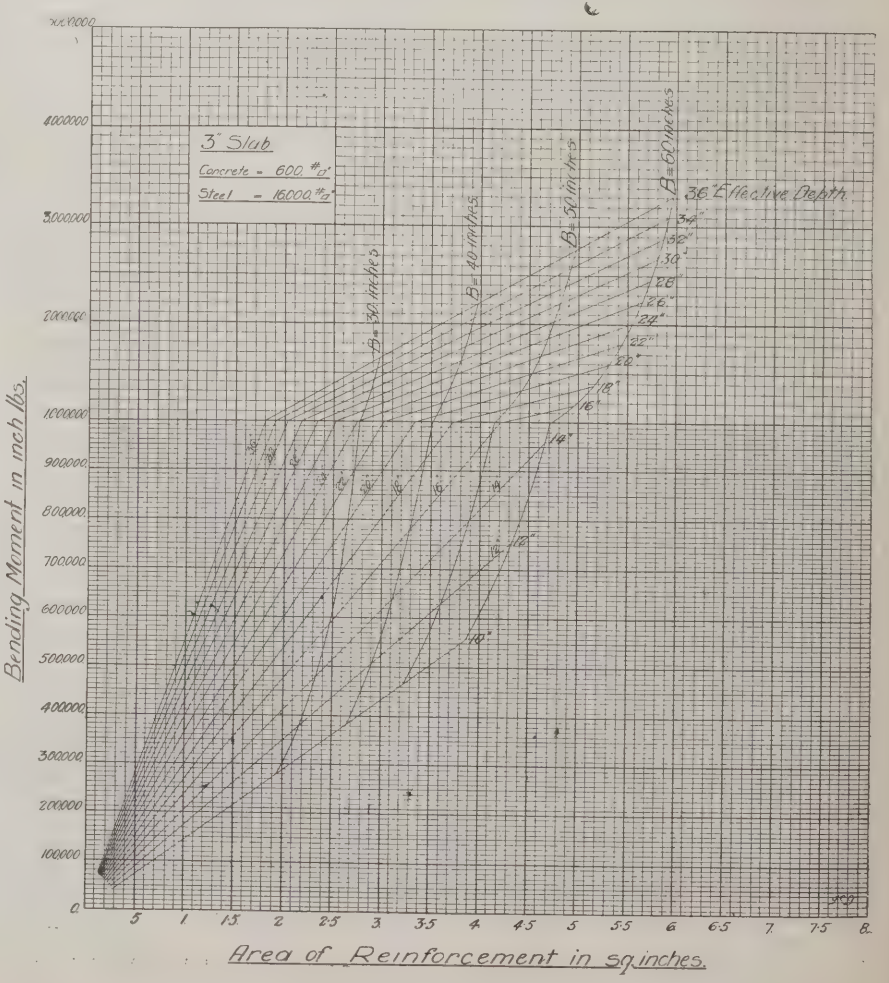
The following abbreviations are used:—

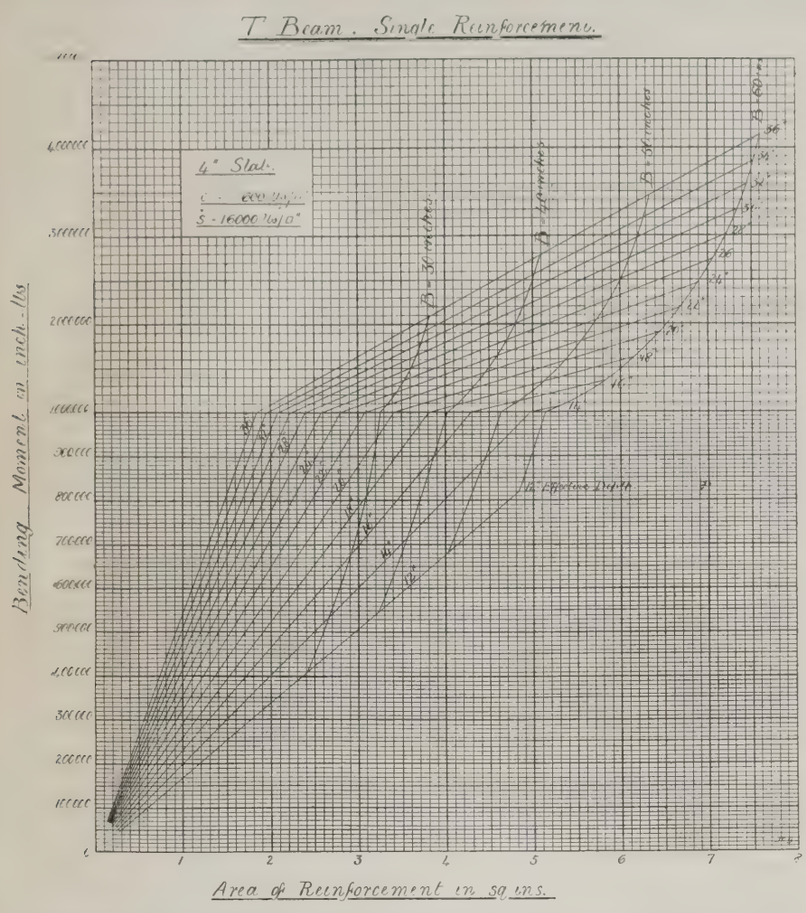
Area of Steel in Tension	= Wt
Area of Steel in Compression	= Wc
Effective depth of beam	= h.
Breadth of Slab, which can be developed	= B.
Thickness of Slab	= t.
Distance of Wc from top of Slab	= a.
Distance of neutral Axis from top of slab	= u.
Bending Moment	= M.

Single Reinforcement.

The first series of curves are used in the following way, and will give directly the value of "W" whether single or double reinforcement be required. The value of the bending moment having been found for the given conditions, together with the value of "t," corresponding values of "W" and "h" can







be read off from the curve drawn for the particular value of "t." The only condition to be fulfilled is that the point selected on the curve must fall within the line representing the maximum permissible value which can be given to B. That is to say, the breadth of slab which it is necessary to develop in order to keep the stress in the concrete below 600lbs. per sq. in. can also be found by interpolating values between or working on the curves representing B=30 inches, B=40 inches, B=50 inches, and B=60 inches. According to the rules of the R.I.B.A. Committee on Reinforced Concrete, the effective breadth of the slab should not exceed ¾ of the distance between the centres of beams nor one-third the clear span of the beams, and its value is also limited by a consideration of the resistance to shear of the slab used in conjunction with the T.

The working out of an example may better explain the utility of these curves.

Example:—

M = 1,200,000 in. lbs.
t = 4 inches.
B = 40 inches.

Then from curve drawn for t=4 inches, minimum permissible effective depth = 20 inches, when W_T = 4.1 sq. ins. for a value of M = 1,200,000 in. lbs. If a greater value of h, say 24 inches, be used with 3.37 sq. ins. of steel, then only 30 inches breadth of slab is required to keep the stress in the concrete below 600 lbs. per sq. in.; and since 40 inches breadth is available the concrete will be considerably understressed. For rough work it would be sufficiently accurate to say that the concrete is being stressed to $\frac{30}{40}$ of 600; or 450lbs. per sq. inch. On the other hand, if a less effective depth be used, the concrete by itself would be overstressed if the given curves were used; and it would certainly be most economical to use double reinforcement.

(To be concluded.)

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

The annual meeting of the Builders' Clerks' Benevolent Institution was held at the offices of the Institution, 21, New Bridge Street, E.C., on Tuesday evening of last week.

Mr. Leonard Horner (president) occupied the chair, and there were also present Mr. E. Brooks (hon. treasurer), Messrs. Gammon, Mackness, Ward, Stansfield, Oldham, Leach, Hadland, and Newling; also there were present Mr. W. Downs, the president elect, and Mr. J. Austin, secretary.

After the usual formal business, the secretary read the report, which ran as follows:—

"Your committee have pleasure in submitting the forty-third annual report and financial statement, which shows the continued interest in the institution of so many connected with the building trade. The amounts received during the past year were as follows:

Annual subscriptions	£189	0	0
Donations	452	5	0
Dividends	172	10	0
Interest on deposit	1	16	7
Balance from dinner account ...	17	3	4
Bank charge remitted		10	6
	£833	5	5

Out of this sum £703 has been paid in pensions, and £23 6s. 6d. disbursed in affording temporary relief. Since the last report one of the pensioners, a widow, died. When deciding to have an election to fill up the vacancy thus caused, your Committee declared two vacancies, feeling that they were justified in doing so, owing to the successful efforts of the president in obtaining subscriptions and donations. There are now twenty-eight widows and two aged clerks receiving pensions. This is the extreme limit allowed by the funds at the disposal of the committee, and they would like it put before you that there are several deserving cases known to the Committee to which help cannot be extended through lack of funds. Your Committee take this opportunity of recording their heartiest thanks to Mr. Leonard Horner for his unremitting efforts in so successfully working for the institution. They also gratefully acknowledge the generosity of the hon. solicitors, auditors, architects, builders, surveyors, in continuing their assistance to the institution. Mr. Wm. Downs has kindly consented to accept the office of president for the ensuing year. By Rule 11, section 3, one-third of your committee retire, and being eligible, offer themselves for re-election."

Mr. Brooks then read the financial statement of the year, which showed that the total income for the year was £1,002 12s. 3d., and the total amount to the credit of the institution was £7,742 5s. 4d.

Mr. Leonard Horner, in moving the adoption of the report, said that as president he had followed a very good man, and among the things he said when he retired, he (Mr. Horner) could only repeat. He would like to congratulate the Committee on the report and the balance-sheet. There had been a great depression of trade during the year, but when the boom did come, as it undoubtedly must, he hoped for better times. He anticipated, however, one or two more years of some slight depression. But in the meantime they must keep matters connected with the society going, and he must congratulate the hon. treasurer (Mr. Brooks) on his report of funds in hand to the tune of something over £7,000. (Applause.) That sum was also a tribute to the excellent work which the Committee had done, and, in fact, to all connected with the society. He desired to move that the report and balance-sheet as read should be adopted and printed, together with a list of subscribers and the rules of the institution.

Mr. Leach seconded the resolution. In doing so he paid a compliment to Mr. Horner. Of course, he said, they must remember the circumstances under which Mr. Horner honoured the institution by becoming the president when things looked very black for them at the time. And now, after twelve months had passed by, they had to congratulate him on a magnificent year. It was due to the tremendous energy of Mr. Horner in attending to the work of the institution that they had gained such a splendid result. (Applause.)

The resolution was carried.

Mr. Oldham proposed a hearty vote of thanks to the retiring officers of the institution. They were Mr. Leonard Horner (president), Messrs. H. Brooks (hon. treasurer), Thomas Stirling, Ernest E. Ridler, and F. Tomlinson (hon. auditors), Amphlett, Clarke, Gammon, and Hadland (committee). It behoved them, he said, year after year to thank all their presidents for the very great help they had received from them. It was really difficult to know how to distinguish between the loyalty and energy of one officer of their institution and another, but with regard to Mr. Leonard Horner, he must say that the very gracious support he had given to them during the year had eclipsed all previous years. (Applause.) Although many presidents previously had attended regularly to the meetings of the committee, they could hardly expect many to follow Mr. Horner who could attend those meetings more than he had done. (Applause.) They could not find if they looked through the records that he had been absent once except during his holiday time. (Applause.) The small things which they attributed to him were very little compared with what they intended to say of him. (Applause.) He hoped that he had long years before him to be with them, and he expressed the sincere hope that Mr. Horner would never miss one of their annual dinners, and that he would be there at those annual functions as long as the institution existed. (Applause.) The auditors had given their services gratis, and had carried out their work very ably. The retiring members of the Committee had been very regular in their attendance, and the duties

they had to perform in making their sad inquiries into deserving cases which it was the object of the institution to relieve, had been performed in the most generous fashion. (Applause).

Mr. Mackness seconded. He said that the resolution had been so ably proposed that it required a very few words on his part. He must add his tribute to the president in thanking him for what he had done for the institution in the past year. It had been said that the President had come to them when things were looking very black. Looking at it at the end of the year, they owed Mr. Horner a sincere debt of gratitude. (Applause.) He came from the East End, and most people looked upon the East End as a poor part of London. (Laughter.) But from the East End Mr. Horner had brought a dinner list of subscriptions of £450. (Applause). He did not think in the future that they must look upon the East End as a poor part of London. (Laughter and applause). He must remind them that were it not for the help of that institution many of their unfortunates—unfortunate through no fault of their own—would not be able to keep their homes together. He hoped that in years to come the work which the President had done during the past year in enabling them to alleviate this distress, would be a source of joy to him. (Applause.)

The resolution was carried unanimously.

Mr. Leonard Horner, who was received with applause when he rose to reply, said that he felt rather overwhelmed by the praise they had given him for doing nothing at all. He could look back with great pleasure to his year of office, in that he had been enabled to help to do a little good, and also that he had made friends. He would look forward to having a great many dinners with the members of the institution. (Laughter.) He also thanked them on behalf of the retiring officers, especially on behalf of Mr. Brooks. Mr. Brooks had been with them many years, and they knew "He is all right." (Applause.) If they came to work it out, the Institution was very much indebted to the members of the Committee for all they had done, and the auditors were very good to do what they had done for them. (Applause.)

Mr. Newling moved, that Mr. Wm. Downs —(applause)—should be elected chairman, and that Mr. H. Brooks (hon. treasurer), Messrs. Thomas Stirling, Ernest E. Ridler, and E. Tomlinson (auditors), and Messrs. Amphlett, Clarke, Gammon, and Headland (committee), be re-elected to the positions which they formerly held. He must tender the thanks of the committee to Mr. Downs for consenting to become the president over them. No better gentlemen than the auditors could possibly be appointed, and with regard to the treasurer, he would be very very deeply missed. (Applause.) With regard to the committeemen, he must say that they were all united in the one desire to advance the interests of the society, and when they thanked one they thanked all.

Mr. Ward, in seconding, endorsed the remarks.

The resolution was carried.

Mr. Leonard Horner, in replying, said he would like to say that Mr. Downs was coming in at the end of several bad years, but he knew the committee would extend to Mr. Downs the same great help they had extended to him. (Applause.) If they did, then Mr. Downs's year of office would be a success. (Applause.)

Mr. Downs then took the chair amid applause. He thanked them very much for the kind way in which they had received him, and he promised his best endeavour to do all he could for the society and give it his best support. (Applause.)

Mr. Brooks moved, and Mr. Stansfield seconded, the appointment of Mr. H. Chatfeild Clarke, F.R.I.B.A., F.S.I., and Mr. Herbert W. Horner as vice-presidents, of the institution.

A vote of thanks to the new President brought the proceedings to a close.

LONDON MASTER BUILDERS' ASSOCIATION.

Annual Dinner.

The annual dinner of the London Master Builders' Association was held in the Whitehall Rooms, Hotel Metropole, last Thursday evening. The rooms had been greatly improved by redecoration in a scheme of white and gold, with scarlet hangings. There was a large gathering, and amongst those present were the President, Mr. F. G. Rice, Messrs. James Carmichael, J.P., H. H. Bartlett (past president), W. F. Wallis, J.P. (president, Institute of Builders), Joseph Randall (past president), S. Smethhurst, J.P. (president, National Federation), Ernest J. Brown (past president), F. L. Dove, L.C.C. (past president), Frank May, J.P. (past president), T. Gregory, J.P. (past president), Fred Higgs (past president), James S. Holiday (treasurer), Leonard Horner (senior vice-president), G. Bird Godson (vice-president), Wm. Laurence, junr., H. Arthur Bartlett, Howard W. Trollope, Wm. H. Hammond, F. G. Minter, Ernest N. Kent, H. S. Greenwood, B. T. Greenwood, J. B. Depree, A. G. White (secretary, National Federation), J. Chessum, R. J. Holliday, A. D. S. Rice, C. W. Latter, F. P. Rider, Alex. Ritchie, J.P., W. Godson, Clement B. Broad, John C. Broad, E. O. Snewin, H. C. Snewin, L. C. Randall, C. J. Trollope, Clifford C. Trollope, and Mr. T. Costigan (secretary).

Among the visitors present were Messrs. Davidson Dalziel, M.P., Jas. S. Gibson, F.R.I.B.A., Alex. R. Stenning, F.R.I.B.A. F.S.I. (president, Surveyors' Institution), A. Stoner (Master Tylers' and Bricklayers' Company), Professor Elsey Smith, M.A., Alan George, G. Corderoy, F.S.I., H. H. Statham, F.R.I.B.A., H. T. A. Chidgey (president, Quantity Surveyors' Institution), J. Osborne Smith, F.R.I.B.A., F. Dare Clapham, F.R.I.B.A., Percy Tubbs, F.R.I.B.A., A. H. Ryan-Tennison, F.R.I.B.A., J. J. Joass, E. Keynes Purchase, F.R.I.B.A., W. E. Hewitt, F.R.I.B.A., and many others.

After the loyal toasts Mr. W. F. Wallis (president of the Institute of Builders) rose to propose the toast of "The Houses of Parliament." He said that had he known, when asked by his friend, Mr. Rice, to propose a toast, the nature of that toast, he would not have so readily consented. Like Agag he felt the necessity of walking delicately. They had just passed through a General Election, and they were now in the midst of a crisis. He found comfort in the fact that Great Britain was not singular in that respect, and instanced Prussia, Saxony and Austria-Hungary as countries that were also in the throes of a crisis of a constitutional nature. Mr. Wallis proceeded to give an amusing picture of an old time election, with the hustings, the rival mobs and the clash of their respective bands. He feared our modern elections were deadly dull in comparison. He admired however the great earnestness with which the modern politician regarded his duties. Regarding the House of Commons, he was a "House of Commons man" and he felt proud of that house. The House of Lords too was enhanced by the claims of antiquity and sentiment. It included many men of brilliant careers.

Mr. Davidson Dalziel, M.P., said he had great diffidence in responding to the toast, for he was one of the youngest members (though not in years) of the present House of Commons, and regarding that House it was perhaps not his place to say very much. If Mr. Wallis, however, thought that the modern election was dull, or that it lacked the attributes of fervour and excitement, he could assure him that that was not the case. He (Mr. Dalziel) had just come through a very warmly contested election, and even as regards music they had had the Land Song to occupy their attention. At present we were passing through a crisis, a crisis that he thought raised the momentous question of whether this country should be governed by a single chamber or not. He could assure them that he would do his utmost to uphold the dignity of the House of Commons. Regarding the House of Lords he felt the necessity of steering clear of any controversial topic; but he thought that if the Peers had erred, they had erred honestly. The House did not consist wholly of men who were merely the sons of their fathers; but included many men who had served the nation in high official positions or who had previously represented constituencies in the House of Commons.

Mr. F. Higgs proposed the toast of "Art and Science." He said the English language was peculiar. The word "Art" had many meanings and applications. For instance—"artful" and "artless," though in neither case could such applications apply to the architects or surveyors. The dictionary meanings of the word had not satisfied him; and he had therefore coined one of his own. He thought art was "the outward expression of the beautiful visions of the mind." That he thought was true art. He instanced as examples in painting, Raphael's "Madonna," and the "Mater Consolatrice"; in sculpture, the Venus of Milo and Michael Angelo's "David." Architecture, with which he was more concerned, might be defined, he thought, as "the beauty of majesty and strength in proportion." It had been his privilege to travel and see many of the fine buildings of the world. He instanced the Pantheon and the Colosseum at Rome; the great Gothic cathedrals of the West, exemplifying the beauty of Nature and the mysteries of the Christian religion; in the Classic Renaissance, St. Peter's at Rome and the Cathedral and Baptistery at Florence, and many of the buildings in Venice; in London, St. Paul's Cathedral and Somerset House; our Tudor domestic architecture and in the Gothic Revival, the Houses of Parliament and the Law Courts. Coming to more recent times he thought the Roman Catholic Cathedral in Westminster was a wonderful work, and he also commended Sir Aston Webb's Victoria and Albert Museum as a piece of original design. What we wanted to-day, and what would be better for architects, surveyors and builders, was a revival of the old patrons of the Arts. Regarding science he had also looked up dictionary meanings, but preferred one of his own; he thought science might be defined as "the exact knowledge of the comprehensible." In reality his toast of "Art and Science" was only the old one of "The Architects and Surveyors" in a new dress. And as regards surveyors, he thought that the quantity surveyors were a great adjunct to the building trade, that they often exhibited a splendid effort of the imagination in dealing with plans, having no details, impossible sections and specifications that had to be written up from their own bills.

Mr. J. S. Gibson replying for Art said he had been much interested in Mr. Higgs' definitions, but he was not to be drawn into an attempt at definitions of Art. He thought Art was an instinct. In his verdant days he took a great interest in the historical side of Art, and had read much about those patrons to whom Mr. Higgs had referred. What struck him was the manner in which those patrons had travelled and educated themselves to an appreciation of the beautiful things which existed in the world. Nowadays this was not a common occurrence. He thought the reason might be, that with our personally conducted tours from Egypt to the North Pole we took travel too light-heartedly. The architect had, perhaps, a greater opportunity than the painters and sculptors. Their work could only be seen in museums and picture galleries by those who troubled to visit them; but the work of the architect was to be found in every street, and appealed to everyone who walked along our thoroughfares.

Mr. Alexander Stenning briefly replied for science

Mr. H. T. A. Chidgey said he thought that his toast, "The London Master Builders' Association" was the most important toast of the evening. The London Master Builders' Association had often been compared to the City Guilds, but there was this essential difference between them, that the old City

Guilds limited their members to those within the square mile, while the London Master Builders' Association embraced all the members of the various trades in Greater London. Moreover, the City Guilds included many members of trades other than those they were representative of. There was not much connection between quantity surveying and basket making, and yet he had the privilege of being a member of the Basket Makers' Company. The City Guilds also represented many extinct trades, while the London Master Builders' Association was alive and flourishing. He thought the art and craft of building presented great ideals, but the necessity for a federation was never more apparent than to-day. "Union is Strength" was an old motto, and if the London Master Builders' Association had not already a motto, he thought that the old one of "Defence not Defiance" would not be inappropriate. Mr. Chidgey then referred to the excellent hand-book issued by the Association and detailed many of the points of the Association's activity as set out therein. He referred to the present difficulty over arbitration owing to the custom of public bodies appointing their architect or engineer as sole arbitrator in the event of disputes between them and their contractors. He thought an entirely impartial arbitrator should be appointed.

Mr. F. G. Rice, the president, in responding, said that when he entered on his year of office he determined to maintain the high traditions of the long list of presidents who had preceded him, and if he had maintained, in some part, that reputation, he had been amply repaid by the cordiality with which the toast had been received. He desired to record in what great measure he had been assisted by his Council, though they must not suppose that his Council was wanting in criticism. They were past-masters in the art, but their criticism was of a constructive and not destructive character. That night was the 38th anniversary of the Association, and it was not given to every one present to remember the start. The toast was coupled with his own name and with that of Mr. F. J. Dove, who was, unfortunately, prevented by the weather from attending. When he entered on his year of office he received a legacy—it was not often that a builder got a legacy—but he had one. One thing was to get the new office premises and the other to set the Organisation Committee going. Both these matters had been accomplished. Mr. Rice mentioned what a great pleasure it had been to the association to entertain the Belgian master builders. Referring to the question of Bills in Parliament affecting the building trade, he said that they had been told to keep two eyes on the Government. He instanced a number of Bills in the past year to which they had had to devote their attention, but hoped the Government would not make capital more shy than it was at present. Mr. Chidgey had referred to the activity of the building trade, but he was sorry he could not agree with him. It had been said in the course of the L.C.C. election campaign that the L.C.C. Works Department was the *bête noire* of the building trade. This, however, was not the case. But at the time of the inception of the Works Department, the L.C.C. had made the conditions of contract so onerous that no respecting builder would tender. The London builders worked upon the rates of wages and conditions of employment agreed upon between them and the men's unions, but they did require that more than 28 bricks per hour should be laid. That he was told was the rate of work accomplished on one of the Works Department jobs. What was the *bête noire* of the building trade, was the sub-contractor who took all the work and caused endless friction. Builders might not be able to lay mosaic floors, but they could carry out the joinery; they might not be able to lay some patent concrete flooring, but they could construct the ordinary concrete floor. Builders were tired of sitting in the middle of their jobs handing out cheques to all and sundry. He appealed to architects to remember that respectable builders had a great interest in their work and a pride in their buildings, quite apart from any financial aspect.

Mr. James Carmichael proposed the toast of "The Guests." to which Mr. H. H. Statham, F.R.I.B.A., responded.

The L.M.B.A. Handbook.

We have received a copy of the London Master Builders' handbook for the current year, and we hear that a number of very gratifying letters are being received by the association from leading architects and surveyors, with reference to the preface in the book. As many of our readers may not have seen this preface mentioned, the following extract may be found interesting:—

"Membership of the association entails heavy financial sacrifice, and although the list of members shows that the bulk of the more influential building firms in London belong to the organisation, it is a regrettable fact that there are still a few London contractors and some provincial ones, who frequently execute work in London, and who while enjoying all the advantages reaped by the sacrifice of their organised brethren, contribute nothing themselves and selfishly hold aloof.

"The policy of the association has always been one of peace, and it is mainly owing to its conciliatory action that the building trade has, for so many years, been exempted from the labour dissensions which have disturbed many other industries during that period.

"The interests of architects and surveyors in this, as in many other respects, are identical with those of builders, and the attention of the architectural and surveying professions is particularly directed to this view of their obligations to the organised members of the building trade.

"If, as a consequence, the London members of the Royal Institute of British Architects and those of the Institutions of Surveyors will make it a practice to employ upon their works such contractors only as are members of the London Master Builders' Association, they will not only be serving the interests of their clients and themselves in the direction referred to, but will greatly assist in the strengthening of the Builders' Organisation, with the result that irregular practices which, from time to time, form the subject of complaint and conference, can be effectually prevented.

"A similar observation to the foregoing is applicable to their provincial members, who, it is suggested, should employ only members of the various Employers' Associations embraced in the National Federation, of which London is one of the centres.

"That great financial sacrifice is made by its members there is no doubt, and a considerable amount of time must have been given by the Executive and Council to the management of the association. It is owing to their efforts that the trade has been free from labour troubles for some years past, and we hope the association is now going to reap its reward with the building owner, architect, and surveyor.

"It must be admitted that the London Master Builders' Association has benefited the trade in general, and the time has come when architects should recognise the fact, and only invite those firms to tender who are members of the association."

Trade and Craft.

Terrazzo Plates.

A floor covering which is claimed to be an ideal one for tropical climates is that of cement or terrazzo plates. Cement plates have to be made richly coloured, and if produced by means of powerful joint lever or hydraulic presses, they are indestructible in use. The considerable rise that has taken place in the plate industry in India, Java, etc., gives sufficient evidence as to the lucrative nature of such plants. In purchasing the requisite machinery, it is advisable only to apply to leading firms, the reputation and experience of whom in this branch of the industry will guarantee proper execution of orders. The firm of Dr. Gaspary and Co., Markranstadt-bei-Leipzig (Germany) may be named as having amongst their customers some of the largest establishments in this country and as undertaking the design and equipment of complete plants by their own erectors. An important speciality of the firm is the manufacture of cement colours: the colours being produced in the firm's own extensive works and tested at their own cement goods factory, every possible security is afforded to customers that they will only be supplied with the best and most suitable materials. The firm will be pleased to furnish full particulars and any information on these subjects free of cost.

Expanded Metal for Plaster-work.

Expanded Metal is made from sheets of rolled metal of various thicknesses, cut and expanded by machinery into meshes of various shapes, each of which is made in several strengths or weights. The ¼-in., ⅜-in., and 7-16-in. mesh lathings, which are made from sheets of rolled steel, are particularly adapted to form a key for plaster in ceilings, steelwork encasing, solid and hollow partitions, exterior walls, and other plasterwork. There are, however, special concrete meshes, in various weights, which are also made from sheets of rolled steel, and are specially suitable as reinforcement for concrete in foundations, walls, floors, roofs, arches, bridges, retaining walls, and other work demanding great strength. The lighter weights of the ¾-in. and 1½-in. diamond meshes (steel) are frequently used in concrete for encasing steelwork. Any of the meshes may be used for openwork partitions, fencing, machinery guards, and in almost limitless other applications.

The expanded metal lathings for plasterwork in fire-resisting and other building construction are dealt with in "Pamphlet No. 1," of which a sixth edition has been issued by the Expanded Metal Company, Ltd., York Mansion, York Street, Westminster; while "Pamphlet No. 2" deals with and is entitled "Expanded Steel for Reinforced Concrete Construction."

It is the first of these pamphlets to which attention is now more particularly drawn. It is more than a mere catalogue or price-list, as it contains a great deal of matter that is of real practical value. The three types of expanded metal—diamond-mesh, cup-mesh, and square-mesh—are, of course, illustrated, and there are many detail illustrations which are of considerable value as showing the best methods of dealing with a large variety of problems, whether simple or complex, of building construction, ordinary and extraordinary. There are details of a suspended ceiling, with a section through floor and ceiling, and the various forms of clips and hangers used in suspended ceiling work are shown and explained. Sections are shown and described of girder encasing, wall casing or covering, air-ducts, false beams, cornices, pillars, etc.; actual examples—as, for instance, at the Ritz Hotel, the Capital and Counties Bank (London), offices of Crown Agents for the Colonies—being frequently given in illustration of the various uses of expanded metal. These examples, and many other detail engravings, give, as we have said, high practical value to the pamphlet, which contains also many interesting views of important works in which the system has been or is being employed.

Speaker's "Eternit."

The success of Messrs. G. R. Speaker and Co.'s "Eternit" in diverse applications and in various countries is strikingly shown in an illustrated booklet on the system which has just been issued by the firm, who are engineers and contractors to H.M. Government, and whose address is 29, Mincing Lane, and 26 and 28, Mark Lane, London, E.C.. "Eternit" or asbestos cement roofing tiles are about ⅛in. thick, and, externally and to the touch, resemble high-quality slates, but are lighter

and of much greater tensile strength. The average weight is no more than about 21lbs. per square yard, allowing for 2¾in. lap, as compared with 67lbs. for Welsh slate and 80lbs. for red roof tiles.

All fire assurance companies accept "Eternit" as being fire-resisting and incombustible. Possibly cork is a worse conductor of heat and cold than "Eternit," which, however, has in this respect no other superior. Hence roofing of this material keeps the building cool in summer and temperate in winter. After three months' exposure, during which these tiles absorb moisture in exactly the same ratio as the best Welsh slates, and thirty per cent. less than that of terra cotta roof tiles, absorption entirely ceases; and, "Eternit" tiles having perfectly smooth faces, which permit of their being laid diagonally and with close joints, make roofs that are thoroughly weathertight and damp-resisting. Another advantage over slates is the superior toughness of Eternit tiles, which eliminates breakage in transit, tackling, and fixing. The tensile strength is 5,781lbs. per square inch, and the crushing force 8,281lbs. per square inch. The consequent economy in freight, labour, masonry work, and quick finish is very obvious. This greatly reduces the initial cost; and the cost of upkeep is practically nil. The tiles are supplied in three colours, grey, blue, and terra-cotta, and there is a choice of three different patterns of laying; and as these tiles are exquisitely finished, they are æsthetically very pleasing; and this fact, taken in conjunction with their lightness, durability, and efficiency, renders them admirably adaptable to many and various services. A pamphlet issued by Messrs. Speaker shows the application to a large number and variety of buildings, large and small, which have not only been roofed with Eternit, but the labour necessary to the fixing has all been done by Messrs. G. R. Speaker and Co.'s Engineering Department.

Reinforced Brickwork.

The principle of reinforcement having enormously increased the value and utility of concrete, the use of which was formerly almost confined to foundation work, because it was incapable of withstanding high tensional stresses, the question arose whether brickwork could not be similarly strengthened, with corresponding advantages. Messrs. Richard Johnson, Clapham and Morris, Ltd., 24 and 26, Lever Street, Manchester, have issued an illustrated booklet in which they show how this object has been effectually realised. The reinforcement they employ is a wire mesh 2ins. and 2½ins. in width, with, respectively, three and four straight tensional wires running its entire length, the wire being made from best quality mild steel of uniform temper. This mesh, when embedded in the mortar joints of the brickwork, forms a continuous bound, so that the mortar, instead of being merely a filling, becomes the strength of the brick wall, the brickwork being thus "rendered as monolithic as reinforced concrete." The action of the wire mesh when resisting tensional stresses is to reduce its sectional area, which in turn tends to close the meshes of the wire, and so compresses the mortar locked therein. The mortar at once develops its greatest strength, which is resistance to compression. The tensional stresses in the wire are partly arrested by the mortar developing its greatest strength, in which it is materially assisted by being firmly held by the bricks above and below it. Moreover, the metal being of small section, distributed throughout the joints, and protected by the courses of brick, there is practically no expansion in case of fire, to which reinforced brickwork offers the utmost resistance. The superior strength of reinforced brickwork enables the building of much thinner walls than is possible with ordinary brickwork, thus ensuring economy of space as well as of material. Many interesting applications of the system are illustrated in the pamphlet.

Coming Events.

Wednesday, March 2.

CARPENTERS' HALL LECTURES.—Mr. C. F. A. Voysey, on "Castles in the Air," 7.30 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Council meeting, 7 p.m. Ordinary meeting, 7.30 p.m. Paper by Mr. Joseph Oswald.

THE ROYAL SANITARY INSTITUTE LECTURES.—Mr. E. J. Steegmann on "Elementary Science," 7 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. J. H. Stevenson on "Heraldry as Applied to Architecture," 8 p.m.

R.I.B.A.—Art Committee Meeting.

ROYAL SOCIETY OF ARTS.—Mr. E. Cooke on "The Teaching of Design," 8 p.m.

Thursday, March 3.

THE INSTITUTE MEMBERS' CLUB.—(Room 519, Caxton House, Westminster).—Special meeting, 6 p.m.

Friday, March 4.

ARCHITECTURAL ASSOCIATION.—Mr. J. A. Gotch on "The Mediæval House," 7.30 p.m.

ROYAL SANITARY INSTITUTE.—Mr. E. J. Steegmann on Elementary Science, 7 p.m.

LEICESTER AND LEICESTERSHIRE SOCIETY OF ARCHITECTS.—Mr. J. Armitage on "Wood-Carving," 8 p.m., at 5, St. Martin's East.

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS, Southampton Row.—Mr. W. W. Watts' 2nd Lecture on "The History and Development of English Silversmiths' Work," 6 p.m.

L.C.C. SCHOOL OF BUILDING, BRIXTON.—Mr. E. P. Wells on "Reinforced Concrete," 7.30 p.m.

Saturday, March 5.

ABERDEEN ARCHITECTURAL ASSOCIATION.—Exhibition of Sketches and Criticism of Designs. Exhibition of work by students of Liverpool University School of Architecture at Aberdeen Art Gallery closes.

Monday, March 7.

ROYAL SANITARY INSTITUTE.—Mr. E. J. Steegmann on "Elementary Science," 7 p.m.

SURVEYORS' INSTITUTION.—Mr. J. C. Rogers on "The Surveyors' Institution: a forty years' Retrospect," 8 p.m.

Tuesday, March 8.

ROYAL SOCIETY OF ARTS (Cantor Lectures).—Mr. Lawrence Weaver's First Lecture on "Lead Work," 8 p.m.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCHITECTURE.—Mr. Banister Fletcher on "Early Christian Architecture: Basilican Churches outside Rome, Baptisteries, Tombs, etc.," British Museum, 4.30 p.m.

MANCHESTER BUILDING AND SANITARY TRADES' EXHIBITION.—Opens at City Exhibition Hall, Manchester.

INSTITUTION OF SANITARY ENGINEERS.—Students' lecture. Mr. J. H. Smyth, on "Quantities and Measurements of Sanitary Works," 7 p.m.

Wednesday, March 9.

CARPENTERS' HALL LECTURES.—Mr. Halsey Ricardo on "The Use of Coloured Materials in Building," 7.30 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Opening of the R.I.B.A. Exhibition of Prize Drawings.

ROYAL SANITARY INSTITUTE.—Mr. E. J. Steegmann on "Elementary Science," 7 p.m

EDINBURGH ARCHITECTURAL ASSOCIATION.—Professor W. E. F. Britten on "Decoration," 8 p.m.

Thursday, March 10.

R.I.B.A.—Science Committee meets.

Friday, March 11.

ARCHITECTURAL ASSOCIATION DEBATING SOCIETY.—"The Story of the Crafts in Relation to the Practice of Architecture." Mr. A. R. Jemmett, F.R.I.B.A. (joint meeting with the Art Workers' Guild), 7 p.m.

ROYAL SANITARY INSTITUTE.—Mr. W. C. Tyndale on "Calculations, Measurements, and Plans, and Sections," 7 p.m.

Provincial Sessional Meeting, Newcastle-on-Tyne, Town Hall, Newcastle, Dr. H. Kerr, on "Sanitary Administration, with special reference to legislation, past and recent."

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS (Southampton Row).—Mr. Allan S. Cole, C.B., 1st Lecture on "Some Ancient Textile Patterns," 6 p.m.

Saturday, March 12.

R.I.B.A.—Last day for receiving applications for election at the meeting on June 6th.

ROYAL SANITARY INSTITUTE.—Provincial Sessional meeting, Newcastle-on-Tyne. Visits to Corporation tenements, Model Cottage Exhibition, Infectious Diseases Hospital, and to Sewage Works.

ST. BARTHOLOMEW-THE-GREAT, WEST SMITHFIELD, LONDON.—Lecture on History and Architecture of the Church, 2.30 p.m. Organ recital, 2 p.m. Collection for Restoration Debt Fund.

Monday, March 14.

THE SURVEYORS' INSTITUTION.—The Professional Associate examination commences.

ROYAL SANITARY INSTITUTE.—Professor Henry Adams on "Building Materials," 7 p.m.

R.I.B.A.—Mr. A. A. Hudson on "The Business side of Architecture," 8 p.m.

ROYAL SOCIETY OF ARTS (Cantor Lectures).—Mr. Lawrence Weaver's second lecture on "Lead Work," 8 p.m.

Tuesday, March 15.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCITECTURE. — Mr. Banister Fletcher on "Byzantine Architecture: the Architectural Character of the Early Churches." British Museum, 4.30 p.m.

R.I.B.A.—Practice Committee meets.

INSTITUTE OF SANITARY ENGINEERS.—Students' Lecture. Mr. Nandy Hoskins on "Materials," 7 p.m.

Wednesday, March 16.

CARPENTERS' HALL LECTURES.—Professor G. E. Moira on "Mural Painting," 7.30 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Annual meeting. Exhibition of Students' work and Prize-distribution, 7.30 p.m.

ROYAL SANITARY INSTITUTE.—Professor Henry Adams on "Sanitary Building: Construction and Planning," 7 p.m.

ROYAL SOCIETY OF ARTS.—Mr. Noel Heaton on "The Foundations of Stained Glass Work," 8 p.m.

Thursday, March 17.

R.I.B.A.—Literature Committee meets.

Friday, March 18.

ARCHITECTURAL ASSOCIATION.—Professor Beresford Pite on "Filippo Brunelleschi and the Renaissance." Nomination of officers, 7.30 p.m.

ROYAL SANITARY INSTITUTE.—Mr. W. C. Tyndale on "Sanitary Appliances," 7 p.m.

LEICESTER AND LEICESTERSHIRE SOCIETY OF ARCHITECTS.—Mr. A. Herbert on "The Influence of the Classical Revival in Leicester," 8 p.m.

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS (Southampton Row).—Mr. Allan S. Cole, C.B., 2nd Lecture on "Some Ancient Textile Patterns," 6 p.m

Saturday, March 19.

ABERDEEN ARCHITECTURAL ASSOCIATION.—Mr. Theodore Fyfe on "Architecture in Ancient Crete," 7.30 p.m.

MANCHESTER BUILDING AND SANITARY TRADES' EXHIBITION, City Exhibition Hall, closes.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to the Royal College of Surgeons and to New Operating Theatre, Royal Infirmary, Edinburgh.

ST. BARTHOLOMEW-THE-GREAT, WEST SMITHFIELD, LONDON.—Lecture on the History and Architecture of the Church, 2.30 p.m. Organ Recital, 2 p.m. Collection for Restoration Debt Fund.

Monday, March 21.

INSTITUTE OF SANITARY ENGINEERS.—Mr. P. M. Fraser on "Contributions to the Study of Housing and Town-planning," 8 p.m.

Tuesday, March 22.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCITECTURE. — Mr. Banister Fletcher on "Byzantine Architecture: the later Churches." British Museum, 4.30 p.m.

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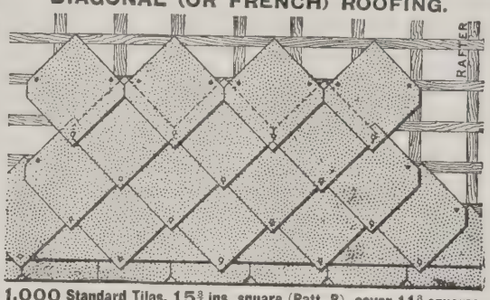
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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, Caxton House, Westminster.

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Eltham.—For the erection of a Parish Hall for the Building Committee. Messrs. Moscrop, Young and Glanfield, 20, Brook Street, W., and Percy J. Waldram, F.S.I., 12, Buckingham Street, W.C., joint architects. Quantities supplied.

Main contract and alternative estimates.

Jones and Andrews	£2,382
William Blay	2,375
Thomas and Edge	2,306
W. Smith and Sons	2,297
F. and H. F. Higgs	2,268
Thomas Knight	2,267
H. L. Holloway	2,243
J. Grover and Sons*	2,242

*Accepted

London, E.—For erection of a Coroner's Court at Poplar, for the London County Council.

Abbot and Charlton, Acton	£4,023 10 11
Pasterfield and English, Streatham	3,695 0 0
W. Reason, Roseberry Avenue, E.C.	3,597 0 0
A. Webb, Stratford	3,589 0 0
Cripps and Son, Cubitt Town	3,485 0 0
Newell and Lusty, Poplar	3,463 0 0
F. and G. Foster, Norwood Junction	3,333 0 0
J. Barker and Co., Ltd.	3,329 0 0
H. King and Son, Peckham	3,318 0 0
F. Webster and Son, East Dulwich	3,290 0 0
R. Woollaston and Co., Limehouse	3,295 0 0
Sabey and Son, Ltd., Islington	3,283 0 0
E. Lawrence and Sons, Ltd., City Road, N.	3,254 0 0
R. A. Lowe and Co., Chislehurst	3,250 0 0
F. S. Sumpter and Co., Victoria and Albert Docks, E.	3,235 0 0
B. E. Nightingale, Lambeth	3,209 0 0
J. Parsons, Waterloo Road, S.E.	3,047 0 0
Gathercole Bros.,* Norbury	3,000 0 0

*Accepted.

Minster-in-Sheppey (Kent).—For erection of a school to accommodate 100 children, Minster-in-Sheppey Halfway Houses Council school, for Kent Education Committee. Mr. W. H. Robinson, architect.

West Bros.	£1,539
S. Wise	1,500
C. Gates and Sons	1,389
L. Seager	1,379
G. E. Wallis and Sons, Ltd.	1,377
G. Browning	1,360
A. S. Ingleton	1,327
W. and L. Bowes	1,319
I. A. Davison	1,300
Hancock and Kettle	1,299
Kemp Bros.	1,298
T. Monk	1,276
W. J. Norris	1,274
W. Owen	1,250
G. Baker and Son	1,233
C. E. Skinner	1,226
E. Bishop and Son,* Albany Road, Sittingbourne	1,210

*Accepted.

Okehampton (Devon).—For new higher elementary school and 120 children, with laboratory, cooking and manual training rooms at Okehampton, for the Devon County Education Authority.

W. Ball and Son	£4,443 11 11
Pethick Bros., Ltd., Plymouth	4,442 0 0
W. E. Bennett, Bodmin	4,205 0 0
F. J. Stanbury, Devonport	4,134 5 8
C. Byer, junr., Bridgwater	4,070 12 6
J. Crockerell, Devonport	4,017 0 11
H. Harris and Co.	3,950 0 11
J. Paynter, Plymouth	3,942 5 0
J. J. Sleeman and Son	3,840 13 3
Blatchford and Daw*	3,707 16 6

Rest of Okehampton.

*Accepted.

Spurstow (near Tarporley).—For alterations and additions to school buildings, for Cheshire County Council Education Department (Administrative Sub-Committee for the Nantwich Union Area). Mr. H. Beswick, county architect, Newgate Street, Chester.

J. Morrey	£842 10 0
T. Astles	518 10 0
G. Brookes	510 0 0
Cox and Vaughan	480 0 0
G. Wright and Sons	480 0 0
Reece Bros.	473 0 0
J. T. Gresty and Sons	470 0 0
F. Matthews	460 0 0
C. Parker,* Beeston	420 0 0

*Accepted.

Watford (Herts).—For erection of a new warehouse, granary, etc., in Queen's Road, for Messrs. R. G. Norman and Sons. Mr. C. P. Ayres, architect, 6, The Parade, High Street, Watford.

W. King and Sons	£943 17 9
C. Eames	935 0 0
Clifford and Gough	935 0 0
W. and D. Wilkins	925 0 0
Bracey and Clark	920 0 0
H. Brown	917 0 0
C. Brightman and Son	911 0 0
G. Wiggs and Sons	900 0 0
J. L. Tyler	898 10 0
Ensor and Ward*	893 0 0
Clark Bros.	887 10 0

All of Watford.

*Accepted.

Westbury-on-Trym (Bristol).—For alterations and additions to Burfield House at Westbury-on-Trym, Bristol, and erection of the Red Maid's school, for the Governors. Mr. Frank Wills, F.R.I.B.A., architect, Bristol; Messrs. G. R. Tasker and Sons, surveyors, London.

Perkins and Son	£11,500
Cowlin and Son	11,490
C. A. Hayes and Son	11,359
R. F. Ridd and Son	11,347
E. Love	11,227
E. Clark and Son	11,188
L. Thomas and Son	11,140
F. Chown	11,111
G. Humphreys	10,890
S. Martin and Son	10,849
E. Walters and Son	10,567
A. Dowling	10,478
T. C. Gluyas	10,400
R. Wilkins and Son	10,384
Stephens, Bastow and Co., Ltd.*	10,372

All of Bristol.

***Accepted.**

Weybridge (Surrey).—For erection of a house in Oatlands Chase, Oatlands Park, Weybridge, for Mr. F. W. Smith. Messrs. Crickmay and Sons, architects, 13, Victoria Street, Westminster, S.W., and Weymouth, Dorset.

G. Jarvis	£2,029 18 0
H. J. Nicholson	1,952 0 0
C. Trask and Sons	1,885 0 0
Hill and Son	1,865 0 0
Drowley and Co.	1,807 0 0
W. A. Annett	1,745 0 0
T. C. Ranger	1,621 17 6
Gaze and Sons,* Walton-on-Thames	1,501 0 0

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COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about **five days** or longer after the date of this issue.
Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders.
The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Mar. 2. **BRADFORD.**—Contractors desirous of tendering for iron and steel work, masons', joiners', plumbers', plasters', slaters', and painters' work, required in the extension of shed, gatehouse, etc., at New Lane Mills, Laisterdyke, Bradford, are requested to forward their names to William A. Ross, Architect, 10, Parkinson's Chambers, Hustlergate, Bradford.

March 2-15. **WHITLEY BAY.**—Erection of a new Council school, to accommodate 600 scholars, and a caretaker's dwelling-house, at Whitley Bay, for the Northumberland Education Committee. Contractors should forward particulars, name and address to the undersigned not later than March 2, together with a deposit of £2 2s. for specification and bills of quantities. Plans may be inspected at the office of Marshall and Tweedy, Architects, Eldon Square, Newcastle-on-Tyne. Tenders must be forwarded to C. Williams, Secretary to the Education Committee, The Moothall, Newcastle-on-Tyne.

Feb. 23—March 7. **LICHFIELD.**—Erection of 16b married soldiers' quarters, in one block, for the Secretary of State for War. Plans, specification, and conditions of contract, may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., or at the Barrack Construction Office, Whittington Heath Barracks, Lichfield, up to this day. Those desirous to tender and to receive a copy of the bills of quantities must apply to the Director of Barrack Construction not later than Feb. 25,, accompanied by a deposit of 10s. Cheques or orders to be made payable to the Assistant Financial Secretary, and crossed "Bank of England for Credit to Army Funds." Tenders must be delivered to H. De La Bere, Director of Army Contracts, War Office, Whitehall, London, S.W.

March 7. **ABERDARE.**—Erection of a Workmen's Hall Institute and Free Library, at Cwmbach, Aberdare. Plans and specifications can be seen, and bills of quantities obtained, upon application to Thomas Roderick, Architect, Clifton Street, Aberdare. Tenders to be sent to G. J. Davies, Osborne Villa, Cwmbach, near Aberdare.

March 7. **EXETER.**—Additions and alterations at St. Luke's College, Heavitree Road, Exeter, for the Diocesan Board of Education. Particulars can be obtained on application to the Architect, James Jerman, F.R.I.B.A., 1, Bedford Circus, Exeter, to whom tenders are to be sent.

March 7. **HALIFAX.**—Alteration of the Old Riding School, Halifax, into an electric theatre for the National Electric Theatres, Ltd. Plans and specifications can be seen and quantities obtained of Richard Horsfall and Son, Architects and Surveyors, 22a, Commercial Street, Halifax, to whom tenders are to be sent.

Mar. 7. **LIVERPOOL.**—Execution of jobbing repairs in connection with the Workhouse, Brownlow-hill, and other Parochial Buildings, from the 27 March, 1910, to 25 March, 1911, for the Select Vestry. Forms of tender and all information may be obtained on application to H. J. Hagger, Vestry Clerk, Parish Offices, Brownlow Hill.

March 8. **NEWPORT (Mon.).**—Supply of certain decorative oak fixtures, oak panelling, and other works, for Stevens, Confectioners, Limited, Cardiff, at the new premises, Davis Buildings, High Street, Newport, Mon. Plans can be seen and bills of quantities obtained of G. E. Halliday, F.R.I.B.A., 19, Castle Street, Cardiff, to whom tenders are to be sent.

March 8. **SOUTHGATE.**—Erection of thirty-four cottages at Tottenhall Road, Palmer's Green, for the U.D.C. Plans may be seen at the Council Offices, Palmer's Green, and forms of tender and copies of the specification obtained from the Council's Surveyor, C. G. Lawson, on depositing £2 in cash. Tenders must be sent to W. M. Ellenor, Clerk of the Council, Council Offices, Palmer's Green, N.

March 8. **SWINTON.**—Execution of alterations to the Parish Church. Plans may be seen at the office of the Architect, T. P. Marwick, 43, York Place, Edinburgh, or at the office of the Clerk to the Heritors, A. D. Walker, School House, Swinton, Duns. Schedules for mason, joiner, plumber, plaster, slater, and painter works may be obtained from the Architect on deposit of 10s. Tenders are to be delivered to the Clerk to the Heritors.

March 8. **DARLINGTON.**—Erection of offices for the Locomotive Department at Stooperdale, Darlington, for the N.E.R. Plans and specification may be seen and quantities and further information obtained upon application to William Bell, the Company's Architect at York. Quantities supplied on personal application to parties tendering for the whole of the works. Tenders to be sent to R. F. Dunnell, Secretary, York.

March 8. **BROMLEY (Middlesex).**—Execution of certain plastering work in the "E and F" ward at the Sick Asylum, Devons Road, Bromley-by-Bow, London, E., for the Managers of the Poplar and Stepney Sick Asylum District. Forms of tender, with all particulars, together with copies of specification, may be obtained on application to the Engineer and Superintendent of Labour at the Asylum. Tenders must be delivered to Walter R. Foskett, Clerk, Devons Road, Bromley-by-Bow, London, E.

March 9. **WINCHESTER.**—Repairs to some 46 cottages in different parts of Winchester. Specifications can be obtained of J. Ashton Sawyer, Chartered Surveyor. Tenders should be delivered to Walter Bailey, 19, St. Peter Street, Winchester.

March 9. **HETTON.**—Erection of a Council chamber and offices at Hetton-le-Hole, for the U.D.C. Plans and specifications may be seen and forms of tender obtained from the Surveyor, John Harding, Township Offices, Hetton-le-Hole, by forwarding stamped addressed foolscap envelope. Tenders to be forwarded to William Street, Houghton-le-Spring.

March 9. **CRUMPSALL.**—Erection of a dwarf wall and screen in connection with the covered passage at the workhouse at Crumpsall, for the Guardians. Bills of quantities may be had from the office of A. J. Murgatroyd, Architect, 23, Strutt Street, Manchester, upon deposit of 10s. 6d. Tenders to be delivered to James Macdonald, Clerk to the Guardians, Poor Law Offices, New Bridge Street, Manchester.

March 9. **CROYDON.**—Execution of the following building works at the Croydon Mental Hospital, Warlingham, Surrey. Extension of attendants' dining room (female side), for the Corporation. Plan and specification may be seen on application to the Borough Engineer, Town Hall, Croydon, and copies obtained on receipt of a deposit of £1 1s. Tenders to be sent to F. C. Lloyd, Clerk to the Visiting Committee, Town Hall, Croydon.

March 9. **HUDDERSFIELD.**—Erection of an elementary school at Birkby, Huddersfield, for the Corporation. Plans, specification, and general conditions may be seen, and bills of quantities and forms of tender obtained on application at the offices of K. F. Campbell, M.Inst.C.E., M.I.E.E., Borough Engineer, 1, Peel Street, on deposit of £2 2s. Tenders to be sent to J. Henry Field, Clerk to the Local Education Authority, Town Hall, Huddersfield.

March 10. **LONDON, E.**—Alterations at the Infirmary in Bancroft Road, Mile End, London, E. for the Guardians of the Poor. Forms of tender, with specifications, may be obtained upon application, enclosing stamped directed foolscap envelope, to Benjamin Catmur, Clerk to the Guardians, Guardians' Offices, Bancroft Road, Mile End, E., to whom tenders are to be sent.

March 11. **BROCKLEY.**—Erection of a chancel, etc., to Hedworth Church, near Brockley Whins Station. Plans and specification on application at the Vicarage, up to 11th inst. Tenders are to be sent to C. Hodgson Fowler, F.S.A., Architect, The College, Durham. Quantities may be obtained from W. Morton, Quantity Surveyor, 45, John Street, Sunderland.

March 11. **HURST (near Ashton-under-Lyne).**—Erection of a new elementary school for 150 scholars at Hurst, near Ashton-under-Lyne, for the Lancashire Education Committee. Plans may be seen and bills of quantities obtained at the office of the County Architect, Henry Littler, 16, Ribblesdale Place, Preston, by deposit of £2. Tenders must be delivered to W. F. Knott, Parish Offices, Ashton-under-Lyne.

March 12. **BUCKIE.**—Execution of mason, carpenter, slater, plaster, plumber, painter and glazier works of laundry and art class rooms at Buckie Public School, for the Rathven School Board. Plans and specifications to be seen at Buckie with R. Y. Mackay, Clerk to the School Board, to whom offers are to be sent.

March 12. **SOWERBY BRIDGE.**—Mason and bricklayer, carpenter and joiner, slater and plasterer, plumber and glazier, cast-iron and steel, concreter, and painter's work required on the erection of a 5-storey cotton mill, Walton Street, Sowerby Bridge, for Mitchell Bros., Cotton Co., Ltd. Plans may be seen and bills of quantities obtained upon application, up to March 12, to Thos. Kershaw, A.R.I.B.A., Architect, L. and Y. Bank Chambers, Halifax, to whom tenders are to be sent.

March 14. **BILSTON.**—Alterations to the assembly room and approaches at the Town Hall, Bilston, for the U.D.C. Specification and form of tender may be obtained upon application to Vincent Turner, Engineer and Surveyor, Town Hall, Bilston.

March 14. **MEXBOROUGH.**—Erection of six almshouses, and other works incidental thereto, at Church Street, Mexborough, for the U.D.C. Plans may be seen and a copy of the particulars and bills of quantities obtained at the Council offices on deposit of £1. Tenders are to be sent to G. Fenwick Carter, C.E., Surveyor to the Council, Council Offices. Fair wages clause.

March 14. **HULL.**—Erection of a school in Southcoates Lane, for the Corporation. Drawings and specification may be seen, and quantities obtained, upon deposit of £2 2s. with Joseph H. Hirst, City Architect, Town Hall, Hull. Remittances to be made payable to the City Treasurer. Tenders are to be addressed to the Secretary of Education, and delivered at the Education Offices, Hull.

March 14. **SHEFFIELD.**—Erection of new infant department for 468 places at Owler Lane Council school, for the Education Committee. Drawings and conditions of contract may be seen, and bills of quantities and forms of tender obtained, on application to the City Architect, at the Town Hall, Sheffield. Tenders to be delivered at the Education Offices, Leopold Street. Fair wages clause.

March 14. **EDINBURGH.**—Execution of mason and brickwork, carpenter and joiner, glazier, slater, plasterer, plumber, smith, and painter's work for the erection of hall and houses at Windygates for the L.O.A. Shepherds. Schedule of quantities may be obtained on deposit of £1 1s., with G. Charles Campbell, Architect and Surveyor, Methu. Offers to be lodged with Alexr. Mackie, Sec., L.O.A.S., 1, India Buildings, Edinburgh.

March 15. **NEWBRIDGE (Mon.).**—Erection of a new church at Newbridge, Mon., for the trustees of the Zoar Welsh Congregational Church. Plans and specification may be seen with John W. Aldiss, M.S.A., Architect and Surveyor, Newbridge, Mon., and bills of quantities obtained by a deposit of £1 1s.. Tenders to be sent in to Philip Parry, 19, Panteg Terrace, Newbridge, Mon.

March 16. **WOOD GREEN.**—Erection of Public Baths at Western Road, for the U.D.C. Bills of quantities, prepared by Young and Brown, with form of tender may be obtained of the Clerk on deposit of £5. Drawings and specification may be seen, on production of the receipt for the deposit, at the offices of Architect, Harold Burgess, Capel House, 62, New Broad Street, E.C. Tenders must be delivered to W. P. Harding, Clerk of the Council, Town Hall, Wood Green. Fair wages clause. Local labour to be employed.

March 16. **NORTH SHIELDS.**—Erection of North Shields Telephone Exchange, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster, North Shields. Bills of quantities and forms of tender may be obtained at the under-mentioned address on deposit of £11. Tenders must be delivered to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

March 17. **ALTRINCHAM.**—Erection of a new county secondary school for boys. Bills of quantities, specification, and form of tender, may be had on application to H. Beswick, F.R.I.B.A., County Architect, Newgate Street, Chester, and plans may be seen at his office. A deposit of £2 2s. will be required. Tenders to be delivered to Jos. Howarth, Clerk to the Committee, Education Department, Market Street, Altrincham.

March 21. **WATERLOO-WITH-SEAFORTH.**—Erection of a secondary and technical school in Cambridge Road, Seaforth, for the U.D.C. Plans may be seen and bills of quantities obtained at the office of the County Architect, Henry Littler, No. 16, Ribblesdale Place, Preston, by deposit of £3. Tenders must be delivered to John I. Thompson, Clerk to the Council, Town Hall, Waterloo.

March 21. **ST. HELENS.**—Erection of a new school, in North Road, St. Helens, for the C.C. On deposit of £1 1s. plans and specifications may be inspected and bills of quantities and conditions obtained at the office of the Architect, Frank S. Biram, George Street, St. Helens. Tenders must be delivered to Percival Sharp, Secretary for Education, Education Office, St. Helens.

No date. **HEATH HAYES.**—Erection of new schools. Plans and specifications may be obtained from Guy H. Parkhouse, Heath Hayes.

No date. **BELFAST.**—Erection of playsheds and boundary wall; concreting playgrounds. Plans and specifications can be seen at the school. Tenders to be sent to Rev. J. Bradley Templeton, 18, Claremont Street.

No date. **HANLEY.**—Erection of proposed Electric Theatre, Percy Street, Hanley. Preference will be given to the Builder who undertakes to carry out and complete the whole of the works within 5 weeks. Applications for quantities to be made to the Architects, Hickton and Farmer, F.F.R.I.A.B., County Chambers A. Martineau Street, Birmingham, and 15, Bridge Street, Walsall.

No date. **NEWCASTLE-ON-TYNE.**—Excavation and foundations for the proposed Queen's Hall, Princess Street, Lisle Street, Northumberland Place, Newcastle-on-Tyne. Names to be sent to the Architects, Graham and Hill, 6, Eldon Square, Newcastle-on-Tyne. The contract will include the provision of hoarding and the pulling down of the existing buildings and the clearing away of the old materials, except such as can be re-used for concrete work.

ENGINEERING.

March 7. **BUCKIE, N.B.**—Construction of an extension of the Buckie (Cluny) Harbour, and the improvement of the existing harbour, for the T.C. The work includes the construction of concrete piers and quays, rock excavation, dredging, etc. Contract drawings, terms, and conditions of contract, specification, and bills of quantities, may be seen on application to the undersigned, or at the office of the Engineer to the Council, W. T. Douglas, 15, Victoria Street, Westminster, S.W. Copies of the form of tender, terms and conditions of contract, specification, and bills of quantities, may be obtained on application to the Engineer upon deposit of £3 3s. Copies of certain of the plans may be obtained from the Engineer on payment of 10s. 6d., which is non-returnable. Tenders to be delivered to John L. M'Naughton, Town Clerk, 4 Cluny Square, Buckie, N.B.

March 12. **MERTHYR TYDFIL.**—Construction of a ferro-concrete public road bridge, 76ft. span, over the River Taff, at Merthyr Vale, and other work in connection therewith. Specification, together with a general drawing, giving plans, elevation, section and cross-sections, may be obtained from T. Fletcher Harvey, Borough Engineer, Town Hall, Merthyr Tydfil, upon deposit of £2 2s. Tenders must reach T. Aneuryn Rees, Town Clerk, Town Hall, Merthyr Tydfil.

March 12. **BATH.**—Taking down and rebuilding Coxley Bridge, on the main road between Glastonbury and Wells, for the Somerset County Council. Arch (11ft. span) and abutments of new bridge to be built in reinforced concrete; parapets and wing walls, etc., in masonry. Drawings, specifications, and form of contract may be seen by appointment at the County Surveyor's Office, Bath, where a copy of the bill of quantities and forms of tender may be obtained on deposit of £2 2s. Tenders to be delivered to H. T. Chapman, County Surveyor, County Surveyor's Office, Queen Square, Bath.

IRON AND STEEL.

March 7. **LONDON, W.C. (for Australia).**—Supply and delivery at one of the railway piers at Williamstown, Melbourne, of the following rails and (or) fish-plates, for the Agent General for Australia:—Schedule A: 1,647 tons of 100lb. steel rails. Schedule G: 151 tons of steel fish-plates for 100lb. rails; or alternatively for half these quantities. Specification, conditions of contract, and form of tender may be obtained at the office of the Agent-General for Victoria, at Melbourne Place, Strand, London, W.C., to whom tenders are to be sent. A preliminary deposit of £500 must accompany each tender.

March 15. **MANCHESTER.**—Supply of:—Manual valves, 40ins. and 36ins. diameter; automatic valves, 36ins. diameter; reflux valves, 40ins. diameter; sluice valves from 18ins. to 3ins. diameter; air valves; and miscellaneous ironwork, for the Corporation. Specification and form of tender may be obtained on application to G. H. Hill and Sons, Civil Engineers, Albert Chambers, Albert Square, Manchester, and 3, Victoria Street, Westminster, upon receipt of cheque deposit £2 2s. Tenders addressed to the Chairman of the Waterworks Committee, must be forwarded to the Secretary, Waterworks Offices, Town Hall, Manchester.

PAINTING.

March 8. **LEEDS.**—Painting at the City hospitals, for the Corporation. Specification and bills of quantities may be seen at the Stewards' Office, Seacroft Hospital. Tenders to be delivered to Robert E. Fox, Town Clerk.

March 22. **WEST STANLEY.**—Painting the following schools for the Durham County Education Committee:—South Moor Council, mixed and infants' schools; Greencroft Council, mixed; Annfield Plain Council, infants; Hare Law, mixed and infants; Causey Row, mixed and infants; East Stanley infants, West Stanley senior, and West Stanley infants. Specifications, etc., may be obtained from E. G. Chatt, Station Road, West Stanley.

No date. **HOLBECK.**—Painting the exterior of the workhouse, for the Union. Forms of tender and particulars may be obtained on application to George Diment, Clerk, Poor Law Offices, Holbeck, Leeds.

PLUMBING AND SANITARY

March 7. **BEDLINGTON.**—Construction of the following length of sewer, inclusive of manholes, gullies, connections, and other works, for the U.D.C.—816 yards 12in. glazed earthenware pipe sewer, from 5ft. to 12ft. in depth. Drawings and specifications may be seen, and quantities, form of tender, and all other particulars obtained, by appointment at the office of the Surveyor of the Council, J. E. Johnston, Front Street, Bedlington. Tenders to be sent to Charles D. Forster, Joint Clerk of the District Council, 24, Grainger Street West, Newcastle-on-Tyne.

March 8. **RISHTON.**—Supply of channels, kerbs, setts, flags, limestone (broken), lime, granite (broken), sanitary pipes, gullies, etc., iron castings, brushes, etc., for the U.D.C. Information and forms of tender may be obtained from the Surveyor at the Council Offices, Brook Street, Rishton, where tenders must be sent.

March 14. **STANHOPE.**—Laying 3,160 yards or thereabouts of main sewer and the construction of tanks, filters, and irrigation area for sewage disposal purposes at Stanhope, for the U.D.C. Plans and specifications may be seen and quantities and forms of tenders and other information obtained on application to the Council's Engineer, J. S. Parker, A.M.I.C.E., Post Office Chambers, St. Nicholas Square, Newcastle-on-Tyne, or the Council's Surveyor, J. R. Ridley, Town Hall, Stanhope. Deposit of £1 required. Tenders should be sent to F. H. Thompson, Clerk to the Council, Stanhope.

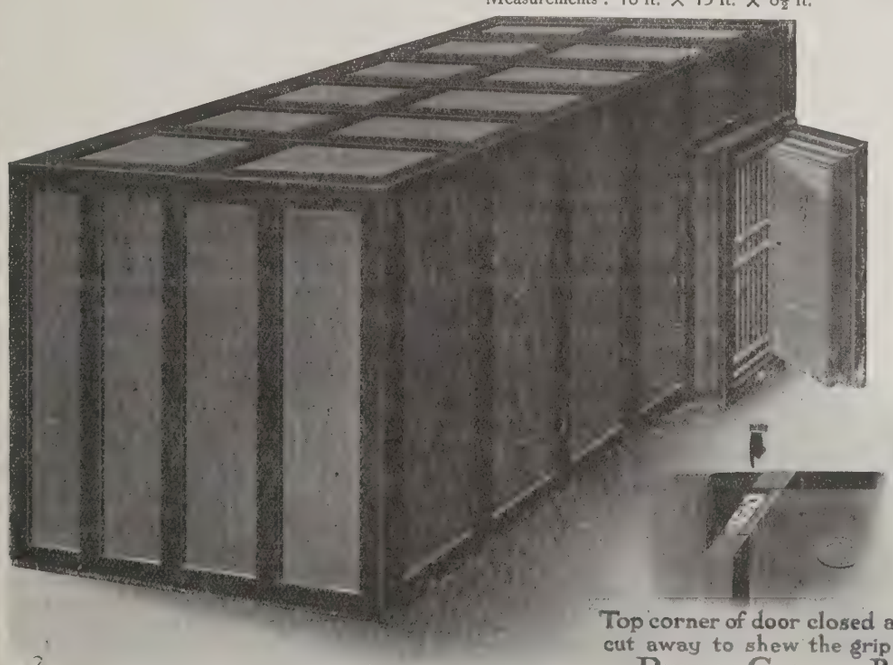
ROADS AND CARTAGE.

March 7. **CAMBERWELL.**—Kerbing, channelling, foundations for asphalte paving and road work, in Desenfans Road, Dulwich Village, for the Corporation. Specification and form of tender can be obtained from William Oxtoby, Borough Engineer, Town Hall.

(*Continued on next page.*)

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Measurements: 18 ft. × 13 ft. × 8½ ft.



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March 7. **SLEAFORD.**—Supply of 1,000 tons of broken X and XX granite, and 200 tons slag, at per ton, to be delivered free at Sleaford Station, for the U.D.C. Forms of tender may be obtained on application to Edmund Clements, Clerk, Council Offices, Sleaford, to whom tenders are to be sent.

March 7. **BEVERLEY.**—Supply of about 7,000 tons of stone for macadamising the main roads, to be delivered at railway stations and wharfs, for the East Riding C.C. Conditions, forms of tender, and further particulars, may be obtained on application to the County Surveyor, Beverley. Tenders to be sent to John Bickersteth, Clerk of the Council, County Hall, Beverley.

March 7. **BATLEY.**—Supply of:—(a) Flagstones, setts, pavors, and kerbs; (b) sanitary tubes; (c) pitch and oil; (d) cement; (e) broken granite for the Corporation. Forms of specification and tender may be obtained from the Borough Engineer, Oscar J. Kirby, Town Hall, Batley. Tenders addressed to J. H. Craik, Town Clerk.

March 7. **BOLSOVER.**—Supply of highway material (slag, granite, stone setts, kerbs, channels, and tarred slag), delivered free of charge, for the year ending March 31, for the U.D.C. Full particulars and form of tender may be obtained from W. G. H. Browne, Council Offices, Bolsover. Tenders must be sent to H. J. Watson, Acting Clerk to the Council, 32, Gluman Gate, Chesterfield.

March 7. **LICHFIELD.**—Supply and delivery of 2½in. granite and chippings and slag, at various stations and wharves during the ensuing twelve months, for the R.D.C. Tenders must be sent to the Surveyor's Office, Union Workhouse, Lichfield. Further particulars and forms of tender may be obtained upon application to C. O. Rawstron, District Surveyor, Lichfield.

March 7. **HENDON.**—Execution of certain works of kerbing, channelling, metalling, paving, surface water drainage, and other works, in Victoria Road, Mill Hill, N.W., for the U.D.C. Drawings and specifications may be seen and forms of tender obtained of F. Flater Grimley, Engineer to the Council, at the Council Offices, The Burroughes, Hendon, N.W. A deposit of £10 will be required for form of tender. Tenders, addressed to the Chairman of the Council, to be sent to Henry Humphris, Clerk to the Council, The Burroughes, Hendon, N.W.

March 7. **ROCHFORD.**—Supply of (1) granite and flints for the highways within the district, for 12 months, from April 1, 1910; (2) unloading, measuring, and carting above materials; (3) supply of horses, carts, and men for day work for the same period; for the R.D.C. Forms of tender, containing full particulars as to quantities, places, etc., may be obtained on application to Frederic Gregson, Clerk, Southend-on-Sea. Samples (if any) are to be sent to the Surveyor, H. T. Sidwell, Rayleigh, Essex.

March 7. **BARNES.**—Supply of the following for twelve months ending March 31, 1911, for the U.D.C. 1, broken Guernsey or Alderney granite; 2, broken pit flints and Thames ballast; 3, horses and carts on hire; 4, disinfectants; 5, ironmongery, etc.; 6, removal of refuse by barges; 7, Portland cement; 8, forage and litter; 9, granite kerb and channel; 10, paving slabs; 11, oils, paints, etc.; 12, stoneware pipes, etc. Particulars and forms of tender may be obtained of G. Bruce Tomes, Assoc.M.Inst.C.E., Engineer and Surveyor, The Council House, High Street, Mortlake, S.W., to whom tenders are to be sent.

March 7. **PONTYPRIDD.**—Supply of the following stores and materials for 12 months ending March 31, 1911, for the U.D.C.:—1, hauling stone; 2, granite and basalt metalling; 3, broken limestone and gravel; 4, broken pennant stone and gravel; 5, paving, kerbing, and channel stone, etc.; 6, cement and lime; 7, slates, bricks, etc.; 8, sewer pipes; 9, smith and cart work; 13, oil and colourman's sundries; 14, engineer's stores; 16, ironmongery, stores, etc.; 18, iron castings; 19, tar, macadam, stone, and gravel; 20, sand and gravel; 21, wheelwright work. Forms of tenders and specifications may be obtained on application to W. E. Lowe, Engineer and Surveyor, Municipal Buildings Pontypridd. Tenders must be received by J. Colenso Jones, Clerk to the Council, Municipal Buildings, Pontypridd.

March 8. **MALDON (Essex).**—Making-up new road in the parish of Tollesbury, for the R.D.C. Plans and specifications may be seen and forms of tender obtained of Wm. Almond, Surveyor, 6, Market Hill, Maldon, Essex, to whom tenders are to be sent.

March 8. **FAVERSHAM.**—Supply of pit flints (broken), shingle and fine gravel for roads within the district, for the R.D.C. Full particulars as to quantities, terms of contract, and form of tender, may be had on application to J. G. Chittenden, District Surveyor, Ashford Road, Faversham. Tenders to be delivered to Allan Tassell, Clerk, Faversham.

March 8. **WARDLE.**—Supply of the following materials and work for the year ending March 31, 1911, for the U.D.C.:—Broken granite, granite chippings, flags, kerbs, setts, pipes, brushes, shovels, picks, channelling, paving with setts, plumbing, and team labour. Forms of tender may be had from the Surveyor, Council Offices, Wardle, near Rochdale. Tenders and samples of materials to be sent to George Adams, Clerk to the Council.

March 9. **GLASGOW.**—Supplying whinstone metal for one year from Whitsunday, 1910, for roads in the district, comprising the parishes of West Kilpatrick, East Kilpatrick, Kirkintilloch, and Cumbernauld. Copies of the specifications may be procured from the Clerk, Hugh Hutcheson, 115, Wellington Street, Glasgow; or the Surveyor, Archibald Wilson, County Building, Dumbarton. Offers will be received by the Clerk or Surveyor.

March 9. **BRIGHTON.**—Supply of 2,400 tons of broken granite of various sizes, for the Corporation. Specification and form of tender may be obtained on application at the office of the Borough Surveyor, at the Town Hall, Brighton. Tenders to be sent to Hugo Talbot, Town Clerk, Town Hall, Brighton.

March 9. **TUTBURY.**—Supply of broken granite and limestone, for the repairs of highways, for year ending March 31, 1911, in various parishes, for the R.D.C.; also for carting the same materials. Forms of tender, containing full particulars, may be obtained from C. F. Chamberlin, Clerk, Council's Offices, Union Offices, Burton-on-Trent, or from H. S. Tebbitt, Surveyor, Rolleston, Burton-on-Trent.

March 9. **WINCANTON.**—Supply of materials (including granite, basalt, limestone, and flint), and labour for repairing the main and district roads, for three years, from March 31, 1910, for the R.D.C. Further information and forms of tender may be obtained from the District Surveyors, E. H. Knapman (Wincanton) and E. J. Haine Padfield (Cole, Bruton). Tenders to be delivered to F. W. Lancaster, Poor Law Offices, Wincanton.

March 9. **CHESTER-LE-STREET.**—Supply of the following materials for a period of twelve months, ending March 31, 1911, for the U.D.C.:—1, Northumberland whinstone; 2, broken slag; 3, broken limestone; 4, Portland cement; 5, cement concrete flags; 6, brooms and shovels; 7, sanitary pipes; 8, disinfectants. Specifications, schedules, and forms of tender may be obtained on application to Wm. Ridley, Surveyor. Tenders to be delivered to Fredk. J. Gray, Clerk, Council Chambers, Front Street, Chester-le-Street.

March 9. **SOUTH SHIELDS.**—Supply of the following materials required for the year ending March 31, 1911, for the Corporation:—Northumberland whinstone, Fifeshire whinstone, Aberdeen and Norwegian granite, slag, limestone, Caithness flags, Portland cement, cement concrete flags, cast ironwork, shovels, scavenger brooms and machine brooms, coal, disinfectants, leather hose, sewer boots, jackets, etc., sanitary pipes, paints, paint oils, glass, timber, iron, horse shoe nails, cart axles, springs, etc., tar, pitch, oils, and general stores. Specifications and forms of tender may be obtained on application to Leslie Foseveare, A.M.I.C.E., Borough Engineer and Surveyor, Chapter Row, South Shields. Tenders to be delivered to the Town Clerk, Court Buildings, South Shields.

(Continued on next page.)

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March 12. **HUNSLET.**—Supply of highway material, including granite, limestone, dross, flags, kerbs, and setts, for the twelve months ending March 31st, 1911, for the R.D.C. Forms of tender may be obtained on application to W. B. Pindar, Clerk to the Council, Leek Street, Hunslet, Leeds, to whom tenders are to be sent.

March 12. **BELPER.**—Supply of various materials required for the maintenance of 162 miles of highways during year ending 31st March, 1911, for the R.D.C.:—Granite, 1,200 tons; furnace slag, 1,300 tons; limestone, 2,000 tons; also carting the same in the different parishes. Specification and form of tender may be obtained upon application to Robert C. Cordon, Engineer and Surveyor, Duffield, near Derby.

March 12. **COVENTRY.**—Supply and delivery of the following materials during the year ending March 31, 1911, for the Corporation:—Broken road stone, granite kerbs, granite setts, stoneware pipes, castings, workmen's tools. Forms of tender and full particulars may be obtained and samples inspected on application to J. E. Swindlehurst, M.Inst.C.E., City Engineer and Surveyor, Saint Mary's Hall, to whom tenders are to be sent.

March 12. **BURNLEY.**—Supply of the following materials for the twelve months ending March 31, 1911, for the R.D.C.:—(1) Broken granite macadam, (2) broken limestone, (3) shovels and spades, (4) scavengers' brooms, (5) disinfectants, (6) earthenware sewer pipes. Forms of tender and schedule of quantities and stations for delivery may be obtained on application to H. Pritchard, Acting Surveyor, 18, Nicholas Street, Burnley. Tenders to be delivered to J. S. Horn, Clerk to the Council, 18, Nicholas Street, Burnley.

March 14. **STREATHAM.**—Making-up and paving Penwortham Road, Streatham, for the Corporation of Wandsworth. Specifications and drawings may be seen, and forms of tender obtained, at 56, East Hill, Wandsworth, S.W., upon deposit of £5 5s. Tenders must be delivered at the Council House, East Hill, Wandsworth, S.W. Fair wages clause.

March 14. **LEEDS.**—Paving and flagging the following private streets, for the Corporation:—Burton Avenue (part), Fairford Avenue, Fairford Terrace, Primrose Lane, Longroyd Street, Longroyd Place, Longroyd Grove, Back Longroyd Terrace, Roseville Street, and Ivy Grove; also paving and flagging improvement in Low Road. Drawings may be seen at the City Engineer's Office, Municipal Buildings. Forms of tender and bills of quantities may be obtained and copies of documents inspected on application at the Highways Office, 155, Kirkstall Road, Leeds. Tenders must be delivered at the Town Clerk's Office, Town Hall, Leeds.

March 15. **BRISTOL.**—Construction of a new road, about 800 yards in length, in the parishes of Nempnett and Winford, for the Clutton R.D.C. Specification on application to the Council's Surveyor (T. Orchard, The Grange, Haliatrow, near Bristol), by deposit of £1 1s. Tenders must be sent to J. Sumner Dury, the Clerk to the Council, Temple Cloud, near Bristol. For further information apply to the Surveyor.

March 16. **EASINGWOLD.**—Supplying whinstone, slag, etc., according to order, stating price per ton for unbroken, machine broken, and hand broken (the broken to be supplied in cubes small enough to pass through a 2½in. ring) for which the same will be delivered free at the various railway stations, for the R.D.C. Tenders must be sent to F. I. H. Robinson, Clerk, Easingwold.

March 16. **MIDDLESEX.**—Supply of about 12,000 tons (more or less) of 2in. and 1½in. basalt or granite; 2,000 tons (more or less) of ½in. chippings, to be delivered free to various stations in Middlesex, for the C.C. Particulars, with specification and form of tender, may be obtained of H. T. Wakeham, M.Inst.C.E., County Engineer and Surveyor, Middlesex Guildhall, Westminster, S.W. Tenders must be sent to the Clerk of the County Council, Middlesex Guildhall, Westminster, S.W.

March 16. **MIDDLESEX.**—Cartage of about 12,000 tons (more or less) of broken stone, 2,000 tons of chippings, and about 4,000 tons (more or less) of gravel, from various railway stations and local pits in the districts of Barnet, Bedfont, Cowley, Cranford, Edgware, Enfield, Hampton, Harlington, Harmondsworth, Harrow, Hayes, Hillingdon, Potter's Bar, Southall, Stanmore, Wembley, and Wood Green, for the C.C. Particulars and forms of tender may be otained of H. T. Wakeham, M.I.C.E., County Engineer and Surveyor, Middlesex Guildhall, Westminster, S.W. Tenders must be sent to the Clerk of the County Council, Middlesex Guildhall, Westminster.

March 18. **EASTRY.**—Supply and delivery of surface and approved dry flints on the various roads in the district and recarting stones from depots. Also for steam rolling with ten ton rollers, for the R.D.C. Forms and tenders and schedules of quantities may be obtained of the District Surveyor, D. E. Foster, Hazel Bank, Eastry, Dover, or the Assistant Surveyor, W. Goodsell, Durlock Road, Ash, Dover. Tenders must be delivered to F. S. Cloke, Clerk to the Council.

MISCELLANEOUS.

March 5. **WARRINGTON.**—Supply of the following materials for a period of twelve months, from April 1, for the Corporation:—1, cast-iron pipes, valves, and cast-iron surface boxes; 2, bib, stop and ball cocks, and ferrule couplings; 3, cylinder and engine oils; 4, carting. Deposit of 10s. per section is required. Further particulars may be obtained from James Gray, Engineer, Municipal Offices, Warrington.

March 7. **CAMBRIDGE.**—Supply of the following materials and goods for one year from April 1, for the U.D.C.:—(1) Timber, British and foreign; (2) stoneware pipes and fittings; (3) Portland cement; (4) gravel, sand, etc.; (5) brooms, etc.; (6) paint, etc. Specifications may be seen, and forms of tender obtained at the office of the Borough Surveyor, Guildhall, Cambridge. Tenders should be delivered to J. E. L. Whitehead, Town Clerk, Guildhall, Cambridge.

March 8. **LONDON, E.**—Execution of plastering work in the "E and F" ward at the sick asylum, Devons Road, Bromley-by-Bow, London, E., for the managers of Poplar and Stepney Sick Asylum District. Forms of tender, with all particulars, together with copies of specification, may be obtained on application to the Engineer and Superintendent of Labour at the Asylum. Tenders must be delivered to Walter R. Foskett. Clerk to the Board, Clerk's Office, Devons Road, Bromley-by-Bow, London, E.

March 14. **EASTRY.**—Execution of the following works:—Carpenters, glaziers, tin-plate workers, etc., for the Union, for one year, from March 29, 1910. Offers to tender should be sent through the Post-Office, at the Union Workhouse, Eastry, where forms of tender may be obtained. Tenders must be forwarded to Fred. S. Cloke, Clerk, Sandwich.

March 16. **NEWCASTLE-UPON-TYNE.**—Supply of the undermentioned materials during 12 months ending March 31, 1911, for the Corporation:—1, bricks; 2, carbolic acid; 3, cement; 4, clot lime; 5, flags, (artificial), 6, flags (Caithness); 7, flags (freestone); 8, gulley grates ventilator covers, etc.; 9, hosepipes; 10, iron, steel, and horse shoe nails; 11, kerbstones; 12, leather; 13, lead washings; 14, oils and paints; 15, pitch tar and creosote oil; 16, privy pans and ashbins; 17, road stones; 18, sanitary pipes; 19, scavenging brooms, etc.; 20, shovels; 21, timber. Forms of tender may be obtained on application at the City Engineer's Office, Town Hall. Tenders must be left at the Committee Clerk's Office, Town Hall.

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ADVERTISER, sitting for P.A.S.I., March 14th, requires engagement immediately after; constructive and working drawings, details, quantities, surveying and levelling, drainage, etc.; good experience; moderate salary.—Apply, Box 5561, BUILDERS' JOURNAL Office.

ACCURATE QUANTITIES prepared by London Surveyor of experience, in shortest possible time; reasonable terms; provincial work undertaken; jobs measured and settled anywhere.—Surveyor, 34, Chambers Lane, Willesden, London, N.W. 'Phone, 553 P.O. Willesden.

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ARCHITECT'S Junior Assistant (20), 3½ years' experience; good tracer and colourist; working plans from rough sketches, levelling; specimen drawings sent; small salary.—B., 15, Marine Parade, Brighton. 5547

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ARCHITECT and Surveyor's Junior Assistant; good draughtsman, tracer, colorist, measuring up, etc., typewriting if required, and general office routine; good references.—E. A. H., 132, Wightman Road, Harringay, N. 5549

ARCHITECT and Surveyor's Assistant desires engagement, 16 years' experience; working drawings, details, specifications, surveys, levelling and general routine; excellent references; moderate salary.—A. R., 1, South View, Church Road, Egham. 5550

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BOROUGH OF TODMORDEN.
EDUCATION COMMITTEE.

The Committee are prepared to receive Applications for the position of CLERK OF WORKS, to superintend the erection of a new secondary school.

The selected candidate will be required to commence duties immediately.

Salary £3 3s. per week.

Applications, endorsed "Clerk of Works Appointment," with copies of three recent testimonials, must reach the undersigned not later than Monday, 7th March, 1910.

By order,

JAMES WHITEHEAD,
Clerk to the Committee.

Education Offices, Roamfield, Todmorden.
17th February, 1910. 5545

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Sixty-six Freehold Building Plots of choice sites, covering in all about 29 acres, commanding extensive and beautiful views; capital frontages, large areas, and good roads; near churches, river, and station half an hour from Liverpool Street and St. Pancras; gas and water; golf course near by.

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HOUSES FOR SALE at Westcliff-on-Sea, the rising watering place; within 50 minutes' of the City; the best-built houses in the district, standing on high ground overlooking the sea; Westcliff is unrivalled as a health resort, and with cheap season tickets and an excellent train service, why continue to live in the overcrowded districts of London?—Full particulars to view, price to purchase, or annual rental, on application to the owner, R. Henderson, "Langrish," Westcliff Park Drive, Westcliff-on-Sea.

Contracts Open.

BURTON-UPON-TRENT UNION WORKHOUSE.
NEW WATER SUPPLY SCHEME.

The Guardians of the Poor of the Burton-upon-Trent Union invite TENDERS from Builders and Engineers for WORKS in connection with the New Water Supply Scheme for the Union Workhouse in Burton-upon-Trent, in accordance with plans, specifications, and bills of quantities, prepared by the Architect, Mr. Thomas Jenkins, of Arcade Buildings, Station Street, Burton-upon-Trent.

The estimates are to be given in separate sections:—

(a) Engine house,
(b) Pumps, gas engine, etc,
(c) 20,000 gallon tank in ferro-concrete on Hennibique principle, on 50ft. legs;
d) 20,000 gallon cast-iron tank on 50ft. legs,
(e) Supply pipes.

Plans and specifications may be seen at the Architect's Offices, and bills of quantities for the engine house obtained on payment of one guinea, which sum will be returned on receipt of a bona-fide tender.

Tenders on forms supplied, endorsed "Tender for Water Supply," to be delivered to the undersigned not later than 9 a.m. on Wednesday, March 9th next.

The Guardians do not bind themselves to accept the lowest or any tender.

By order,

C. F. CHAMBERLIN,
Clerk to the Guardians.

Union Offices, Burton-on-Trent.
February 15th, 1910. 5542

THE URBAN DISTRICT COUNCIL OF WATERLOO, WITH SEAFORTH.
TO BUILDERS AND CONTRACTORS.

The above Council are prepared to receive TENDERS for the erection of a Secondary and Technical School in Cambridge Road, Seaforth.

The plans may be seen, and bills of quantities obtained at the office of the County Architect, Mr. Henry Littler, No. 16, Ribblesdale Place, Preston, by payment of a deposit of £2, which will be returned upon receipt of a bona-fide tender.

Sealed tenders, endorsed "Tender for Secondary School," must be delivered to the undersigned before 12 noon on Monday, the 21st March, 1910.

The Council do not bind themselves to accept the lowest or any tender.

By order,

JOHN I. THOMPSON,
Clerk to the Council.

Town Hall, Waterloo.
15th February, 1910. 5530

Partnership.

YOUNG Architect, energetic, all-round experience, desires position with established firm, with view to partnership; South or West England preferred.—For particulars apply Box 5573, BUILDERS' JOURNAL.

March 9, 1910. Volume 31, No. 788.

THE BUILDERS' JOURNAL

AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Dignity of Decay.

With the pulling down of the old Royal Infirmary, a well-known landmark disappears from the centre of Manchester. As the writer passed it a day or so ago, the only part left standing was the group of pillars which supported the central pediment and their surmounting frieze, which stood up boldly silhouetted against a gloomy rain-dropping sky, and, for the first time in our recollection of the building, produced an imposing effect, and seemed to convey a mute and dignified protest against the destructiveness of man. When the body of the building lay behind them, smoke-grimed as it was, the impression was simply gloomy and uninteresting; but with the sky as a background, the tall pillars and the frieze connecting them reminded one of some relic of a mightier past. The thought came that perhaps much of the beauty and interest of ancient classical ruins is due to a similar cause, and that had we the whole buildings before us in their pristine condition they would be much less impressive. Imagine how grand the great pillars and frieze of the front of St. Peter's at Rome would look if they were all that was left of the huge edifice to which they form the entrance; and imagine how much of interest the Venus of Milo would have lost if she had come down to us with her arms perfect!

Design and Size.

A common foible of architects (or perhaps of their clients) is hit by a writer in an American contemporary when he remarks that "it is a very comfortable thing to see a village hospital that does not look like a child's-size imitation of a city one." The remark is of fairly general application. In our own country, however, the rural hospital does not usually come under the implied condemnation. The so-called cottage hospital usually has quite a distinctive character of its own, and is by no means a miniature St. Thomas's or "Bart's." On the other hand, one has often to deplore the small library, or town hall, or church, or suburban villa that is palpably and grossly out of scale, and miserably fails to please because it so strongly suggests the frog trying to inflate himself to the dimensions of a bull. No doubt the architect often perpetrates these monstrosities at the urgent demand of the client; the former well knowing the important relationship between design and size. Another matter in which the architect of small buildings is often hampered and embarrassed is that of the sizes of materials, mainly decorative. He finds that the particular detail he requires is made in only one size, which may be appropriate for a mansion, but is too large for a villa. Manufacturers should make a note of this. In some instances it might be possible for them to standardize their materials in the same way that printers standardize their types, one size bearing a definite proportional relationship to another, so that, occasionally, the various sizes could be used in conjunction. This, however, is a separate matter from suiting the design to the size.

Cheaper School Construction.

Mr. Walter Runciman, President of the Board of Education, has been much impressed with the great cost of erecting school buildings in accordance with modern standards of suitability and convenience, and has appointed a committee, consisting of three members only, with instructions to proceed on strictly practical lines to consider and report on the possibility of effecting substantial savings in the cost of construction by the adoption of new methods and new materials, as to what steps should be taken to facilitate their adoption, and whether any alteration in the law is required for the purpose. The Committee will sit and receive evidence immediately, at the Office of the Board of Education. This announcement merits the serious attention of practical builders. There is now, we understand, a more liberal construction placed upon the rules of the Local Government Board in regard to the distinction to be drawn between (1) temporary and (2) permanent buildings. Such of the former class as may be reasonably expected to last over twenty years are to be admitted as candidates for the permanent class, and local authorities may obtain dispensation from the Local Government Board in regard to by-laws affecting their erection. Therefore the time seems ripe for inventive minds to turn their attention to more economical methods of construction for schools, workmen's dwellings, and certain kinds of factories. The chief difficulty in the way of successfully carrying out garden city and town planning schemes lies in the difference between the number of buildings per acre in such schemes, as compared with the present method of crowding the land with as many buildings as possible. The necessarily enhanced cost of the land in the former cases will need to be offset by serious reduction of the cost of the buildings themselves, if investments of the kind contemplated are to be a commercial success, and not merely an expensive fad. The fact that the buildings in such cases may stand comparatively isolated favours the adoption of cheaper methods of construction; and the many new ideas now on the market for cheap construction offer a wide choice of suggestions which can either be adapted to the present purpose, or which will suggest analogous developments in other materials. Brick and tile makers might possibly find in this direction some compensation for the loss of trade which will doubtless result from the extensive adoption of reinforced concrete construction which is going on.

School Architecture.

The announcement that the President of the Board of Education has appointed a Departmental Committee to enquire "Whether the cost of buildings for public elementary schools can properly, and with due regard to their suitability and durability, be reduced by the use of materials or methods of construction different from those ordinarily employed at present," will, however, be received with mixed feelings by architects generally. The design of such buildings has, in the past, been greatly hampered by considerations of cost, incurred, on the one hand, in carrying out the necessary educational and hygienic requirements of the Board of Education, and limited, on the other hand, by the not unnatural desire of the education authorities to curb the expense as far as possible. Between the Scylla of an irreducible minimum and the Charybdis of a rigid maximum, the architects of school buildings have by no means an enviable lot, and in the majority of cases are forced to achieve their effects with the simplest materials arranged in the simplest forms. This would matter less from the point of view of civic design if school buildings were not so frequently placed in conspicuous positions, where architectural treatment is essential. And by this we do not mean elaborate ornament. But if the money at the architect's disposal only allows him to build plain brick sheds, from which mouldings and all other reliefs have to be rigidly excluded, it can hardly be said that the architect is afforded a fair opportunity

either for exhibiting his skill or for contributing to the town's amenities. It does not appear from the terms of reference to the committee that the wisdom or otherwise of many of the structural requirements of the Board of Education are to come under consideration; but many architects, we fancy, could give interesting evidence on this head. We do not say that there are no openings for economy in the building of schools, or that unnecessarily extravagant buildings have not, in the past, been erected; but we think the terms of reference are too confined, and that the whole subject is one that should be enquired into. No doubt cheaper buildings could be designed in materials not generally employed for schools, but yet capable of proper architectural treatment. But it must not be forgotten that authorities usually borrow funds from another Government department to erect these schools; and, bearing in mind that same department's attitude to reinforced concrete, it hardly seems likely that the period over which the repayments are extended will be as long for new materials as for the materials now more usually employed.

A Unique Topographical Collection.

The "Gardner Collection," which is perhaps the finest assemblage of topographical prints and drawings ever got together in illustration of old London, is about to be offered for sale by auction, and is therefore in danger of dispersal. The collection comprises nearly 60,000 items, which include, besides views of streets, palaces, and interesting houses, illustrations of interiors, and of architectural details; among them being, for instance, a portfolio of magnificent drawings by William Capon of fine mediæval decoration and tapestries of the old royal palaces of Westminster, of which Westminster Hall is almost the sole remaining part. As the "Connoisseur" urges in a justifiably vehement appeal, this collection certainly ought to be acquired by the nation. Its acquisition would no doubt be costly; but there is a sense in which its treasures are priceless, because, as our contemporary says, "London is the head that planned, the nerve centre that directed, the events that have built up this great empire; and in these pictures are gathered together all that is known, almost all that can be known of the actual life and appearance of this great city from the time it became the Londinium of Imperial Rome to the dying out of the Hanoverian dynasty." The interest of such a collection being of necessity largely architectural, we very gladly support the suggestion that the Gardner treasures should be promptly purchased by the Government, by the Corporation of the City of London, or by the London County Council. The appeal to the Government being ill-timed during the present financial chaos, and the L.C.C. being apparently in no mood for heavy expenditure, it remains for the wealthy City Corporation, or for one or other or a combination of the richer of the City Companies, to seize this splendid opportunity of enriching the public archives, and of sparing us the ignominy and chagrin of an irreparable loss.

Town-Planning Pioneers.

It is gratifying to observe that town-planning problems of the simpler sort are beginning to exercise the minds of the more thoughtful and more influential sections of the community. The matter has come to be regarded by the lay Press as an interesting topic, and those who have anything to communicate upon the subject can pretty safely reckon on the hospitality of the local newspaper. The floodgates, however, are not yet loosed, and the deluge of nonsense that may be looked for as the natural concomitant of a great new movement has not yet appeared in sufficient force and volume to swamp the field. Before it comes, architects, and others possessing authentic credentials, will do well to make the most of their opportunities for conveying instruction and enlisting sympathy. In doing this, they should set to work warily and tentatively, bearing in mind that they will probably be opposed by many reactionary forces, not the least potent of which is the obstinacy of crass ignorance; and the more that can be done, in every conceivable way, in season and out of season, to render the big idea more familiar and less terrifying, the swifter will be the progress made in the right direction. We notice that much—perhaps a disproportionate amount—of this pioneering or missionary work is being done by city engineers, and similar functionaries. While recognising the value of their aid, and while welcoming, we hope in the most catholic spirit, every well-directed effort towards the goal of our desires, we nevertheless urge the architects not to let the engineers have too much of their own way in a matter in which the æsthetic aspect is in need of particular insistence.

Strength and Beauty.

It must not be inferred that we have the least desire to set the architect and the engineer in opposition. There are obviously very many town-planning matters in which they can advantageously combine—in which, indeed, the mutual aid they can render each other is indispensable. The danger that we fear is that the public mind, impressed by the activity and conspicuousness of the engineer, may imbibe the erroneous idea that town planning is chiefly a matter of engineering. The prevalence of this notion would be most injurious, if not absolutely fatal, to the æsthetic interest. In administering the Act, it is all-important that the influence of the architect should preponderate from the beginning. We do not want an engineering lay-out with architectural addenda. We want the architectural interest to inform and inspire the entire scheme—to be vital and organic, not superficially decorative—to be an essential and all-pervading force. There is, however, one respect in which the influence of the engineer should be highly beneficial. He is accustomed to bigness of ideas—to take extensive surveys, and to counsel the adoption of heroic measures. The public are familiar with his audacity, and will tolerate it from him; whereas any suggestion of gigantic operations and huge expense coming from an architect—who in making such proposals would be assuming an unaccustomed rôle—might meet with opposition from those who associate him too intimately with the day of small things. This tradition he might find it difficult to overcome without the moral and material support of the engineer, whom the public regard as a chartered spendthrift, entitled to think in miles and millions, and not lightly to be deterred from his colossal purposes. The object should be, therefore, not to oppose him, but to enlist him on our side, so as to get an ideal union of strength and beauty.

THE GARDNER COLLECTION.

Its Threatened Sale and Dispersal.

From time to time disturbing notices appear in the Press concerning the impending sale and consequent dispersal of "the Gardner Collection." Such a fate would be an irreparable loss to the nation and particularly to London. As "the Gardner Collection" is probably but a name to many of our readers, it may be as well to state that it is a collection of prints and drawings, but of prints and drawings which not only possess their appraisable and intrinsic value as rarities and works of art, which cannot be taken away from them; but, what is of far more importance and beyond any price, they present the most astounding, marvellous, and unique collection of records of vanished and vanishing London.

The collection comprises, in fact, nearly if not quite 60,000 prints and drawings illustrative of Old London, its history and topography, its streets and palaces; famous, curious and interesting houses; and what is more, of their interiors, architectural details, decoration, carving, furniture, and the portraits of celebrities who lived in them. To realise, says a writer in "The Connoisseur" for February. its amazing wealth, let us compare it, for a moment, with the famous Crace and Croll collections of the British Museum. To begin with, in the former there are fewer than 7,000 delineations against the 60,000 of the Gardner collection, and, moreover, it is destitute of the interiors, the decorations, the portraits, and all the *genre* pictures which make the "Gardner" such a vivid and realistic pictorial epitome of London's past; the second great collection, the Croll, contains but 5,500 illustrations.

At present the Gardner collection still reposes in the 110 massive portfolios of "royal" size, each on its appointed shelf in the long gallery or library, planned and built expressly for its reception by the far-sighted antiquary and artist who created it. The gallery lighted by large oriel windows of carved stone filled with antique Swiss and German painted glass, panelled with old oak, and appropriately adorned with mediæval curios, arms and weapons, was a fit casket for such a treasure, insured more than thirty years ago for £20,000. Its value to-day is hard to estimate, but to exhibit it 36,000 feet, or not far short of an acre of wall space, would be needed. No living person has examined it all through, and merely to catalogue it for sale must still occupy many months.

We feel sure that all readers will join in the efforts that are being made to secure this unique collection for the public and save it from dispersal in the sale room.

THE ROYAL ACADEMY, 1910.

Receiving Days.

The receiving days for the various classes of works this year are as follows:—

Water Colours, Pastels, Miniatures, Black and White Drawings, Engravings, and Architectural Drawings, Thursday, March 24; Oil Paintings, Saturday, March 26, and Tuesday, March 29; Sculpture, Wednesday, March 30.

No artist is allowed to send more than three different works.

All works must be delivered at the Burlington Gardens entrance. None will be received at the Piccadilly entrance.

Hours for the reception of works, 7 a.m. to 10 p.m.

Forms and Labels can be procured (during the month of March only) from the Academy. Applications for them made by letter must be accompanied by a stamped and addressed envelope.

As in former years, we shall be happy to undertake for readers the delivery of architectural drawings to Burlington House, on condition that we are allowed to reproduce same while in our hands. All drawings for delivery must reach us not later than 4 p.m. on Wednesday, March 23rd.

Carpenters' Hall Lectures.

"THE ART OF THE PLASTERER."

On Wednesday, Feb. 23rd, at the Carpenters' Hall, London Wall, E.C., "The Plasterer's Art" was dealt with by Mr. George P. Bankart. At the outset, he proposed, he said, to draw attention to the influence of materials both on old work and modern plaster work. This influence is much overlooked at the present day, and is responsible for a good deal of indifferent work.

Plastering a Native Art.

He showed that the art of the plasterer in this country was a native art, quite distinct from any other, and he contended that it should be so again. The plasterwork was carried out everywhere by native plasterers or "daubers," as they were called, in a quite natural and ordinary way, and there is every reason to believe that the plasterer of the future will cultivate the art of these traditional methods. Plasterwork he classified under four heads:— (1) Stucco Duro, (2) Parge work, (3) Plaster of Paris, (4) Modern Fibrous Plasterwork, and discussed the possibilities of each kind of work. Each kind of material has its distinct decorative character, due to different methods of working. It is this confusion of styles and materials that is responsible for much of the inferior plaster decoration of recent years.

Stucco Duro.

This material used by the Italians was rediscovered in the 16th century. It is composed of sand, lime, and marble dust, and through the thorough burning of the lime possesses a smooth and buttery nature. Some slides were shown of examples from the Via Latina, Rome, executed about the first half of the first century A.D. Its chief virtues were its extreme hardness and durability, and smooth surface. It has never been surpassed for simplicity of design, subtlety of modelling, and excellence of execution. Slides were shown from examples in the British Museum and South Kensington, in which could be plainly seen the markings of the steel tool with which the modelling was carried out. The great painter, Raphael, and a little band of pupils, trained the plasterers of Italy in the art of Stucco Duro, and, encouraged by the Church, spread all over Italy and to the palace of the French King. In the reign of Henry VIII., a body of men came over to England and modelled Nonsuch House. The great beauty of this stucco was that work could be carried out in it in high and low relief. In England the art only survived for a short time, and that in the hands of Italians. Some slides were shown of work at Hardwicke Hall, now in ruins, executed by Charles Williams, and also of work at the present Hardwicke Hall carried out by a band of plasterers trained by Charles Williams, not quite so pure as his work, but good. These Italians taught the English plasterer how to make and use this plaster.

Parge Work.

Native parge work was very tough and weather-proof. This parge work could be done by the village plasterer and his sons in their own particular villages, and the work changes within a certain radius of the districts within which they worked. They had their own districts and their own patterns, which varied from time to time. The work was modelled direct on the job with a trowel. Some is combed into a herring-bone pattern, scallop, or wavy line. Inside the building there may be a simple modelled frieze, or perhaps an overmantel. Two examples of the latter were shown from simple yeomen's cottages at Barnstaple, and there are hundreds of others in Devonshire and North Somerset.

Panelled Ceilings.

The ceiling was panelled with mouldings lying into splays. The moulded ribs consisted chiefly of simple rounded forms. Sometimes the pattern radiated from a centre; and where the panel moulds intersected, there was placed a boss of plaster. The panels were often occupied with crests, monograms, heraldic bearings, etc. After the simple panel mould came gradually, a double moulding, in the time of Queen Elizabeth, when courtiers were vying with one another in the grandeur of their staircases, their tapestries, etc., and these mouldings grew gradually more elaborate and with decoration between. Some slides were shown of the ceiling from the long gallery at Knole, very simple in design, and characteristic of the period, and distinctive English work. A centre flower of this period was shown, which, the lecturer said, will compare with those of the Victorian period, and show the difference between plaster and cast iron. In the Early Jacobean period a quarter of the ceiling contained the pattern which was doubled over and then over again, so that the whole ceiling was covered with a most irritating repetition.

Foreign Influence.

Shortly after this when Inigo Jones had been to Italy and Christopher Wren to France, we get stucco of another form, very deeply undercut and casting deep shadows full of life and colour. The greater part of the work was modelled direct *in situ*, with a small tool, by Italian plasterers, assisted by native workmen. This is very fine when done in the right material, but cannot be reproduced in plaster of Paris. After this period of Stucco Duro work in England by Italian workmen and when Wren went to France, was the beginning of the end of English plasterwork. Stucco Duro was now carried out in the French style by Dutch artists. Vanbrugh, Hawksmoor, Archer and others tried to model plasterwork on orthodox lines. Gradually plasterwork died down, except for the last dying flicker during the time of the Adam brothers.

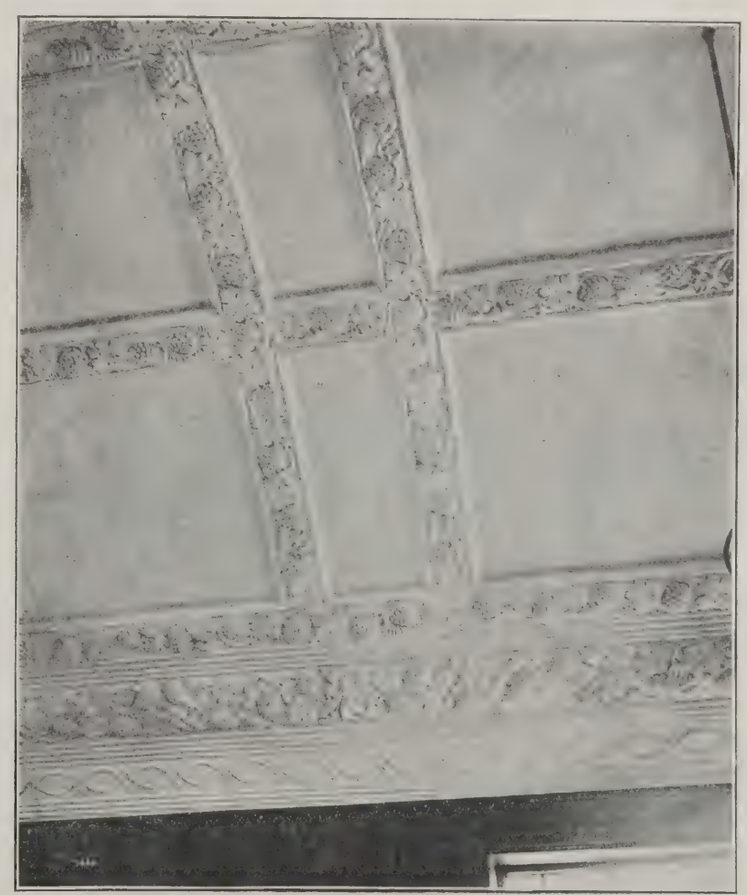
Then we come to that ghastly period in which London streets were lined with rows of houses in that hideous stuff called stucco (not duro). We will pass over this period of disease, and consider present-day materials.

Present-day Practice.

We have Keene's cement, Portland cement, also grit plaster, with which we coat our walls and ceilings, which is not as it should be. This is usually due to the unslaked condition of the lime. Speaking of the difference between plaster of Paris and Stucco Duro, Mr. Bankart said that the difference between the qualities of the two materials and the two processes must be obvious to anyone. Architects want this kind of work, and ask for it, but it can never be done until Stucco Duro is again forthcoming. A ceiling from a sitting room at Groombridge Place exhibited details as thin as paper yet as hard as flint, but it could not have been cast, because the undercutting is so deep. You cannot get from a material technical qualities which it does not possess. Plaster of Paris or sulphate of lime is very soft, and has no sharp edges, it is capable of excellent decorative results, but must have soft treatment; Stucco Duro was an extremely smooth and butter-like substance when moist, but, set hard as flint, could be used as thin as a rose petal, and with edges sharp as a knife. It was looked upon for some time as carving, but there was no carving in it.

Imitation Plasterwork.

The imitation work is carving. Something will have to be done to remedy this, by an arrangement between the architects and the builders. Until then the question is to find a substitute for this kind of work. Examples were shown in which the flowers, leaves, etc., had been modelled in Keene's



THE ART OF THE PLASTERER: CEILING, MILL HILL SCHOOL LIBRARY, BY GEO. P. BANKART.



THE ART OF THE PLASTERER: PANEL FOR WALL DECORATION: PART OF A SCHEME BY STEPHEN WEBB.

cement, and then placed in a hollow ground in the ceiling specially prepared for them by skilled workmen.

Good Modern Work.

Many people think that good modern plasterwork is a forlorn hope. This pessimism is always injurious to a good cause. Good work is being done by modern journeymen plasterers at the present day. Several delightful examples of modern plasterwork were shown, including some charming bedroom ceilings, one done by an Edinburgh plasterer from rough sketches. In these the modelling of the stems, etc., to the flowers was done on the ceiling itself, the flowers and leaves being cast and stuck on. Now we come to another process, that of drawing out the design on the finished coat of Keene's cement, and then working on just so large a space as can be kept wet for one day.

Fibrous Plaster.

Fibrous plaster is a modern process, and one entirely owing to the development of iron and steel construction of our buildings. It is composed of plaster of Paris, canvas, and wood, and has apparently come to stay. Most important of all, it is expeditiously manufactured and fixed by a skilled workman.

Now, Mr. Bankart said in conclusion, I would like to say a few words to the younger plasterers, to appeal to the inner natures of improvers and apprentices. I have not come here to find fault with the modern plasterer. As a mechanic he is excellent, but mechanically and often unconsciously he wipes out qualities from work which might be its beautiful qualities. We have seen past work and modern work, and let me say here that there is any amount of talent among the plasterers of the present day. In old work there was plenty of reserve and restraint, which came from natural causes. Learn from the simplest and purest examples what was done in the past, for what men have done in the past can be done to-day. Find out the beautiful qualities which are possible in the material. Train yourself to appreciate scale. The instinct depends upon a man's natural endowments. The art is in him, and must be developed. Learn from old stuff, use your fingers, your sketch-books, and your cameras, and don't be content to exist mechanically only.

THE COST OF SCHOOL BUILDINGS.

Departmental Committee.

Mr. Runciman, President of the Board of Education, has appointed a Departmental Committe to inquire and report:—

(a) Whether the cost of buildings for public elementary schools can properly, and with due regard to their suitability and durability, be reduced by the use of materials or methods of construction different from those ordinarily employed at present; and, if so,

(b) What steps should be taken to facilitate the adoption of such materials or methods, and whether any alteration in the law is required for the purpose.

The committee is composed of:—

Chairman, Mr. L. A. Selby-Bigge, C.B., Principal Assistant Secretary of the Elementary Education Branch of the Board of Education.

Mr. N. T. Kershaw, C.B., Assistant Secretary of the Local Government Board.

Mr. F. Clay, Architect of the Board of Education; with

Mr. J. G. Milne, Senior Examiner of the Board of Education, as secretary.

The committee will sit and receive evidence immediately at the office of the Board of Education, and their procedings will be conducted with a view to reporting as soon as possible. The matter is referred to in our leaders this week.

EXHIBITION OF APPRENTICES' WORK.

An exhibition of apprentices' work, organised by the Apprenticeship and Skilled Employment Association, is being held in the Drapers' Hall, Throgmorton Street, through the courtesy of the Drapers' Company. At the opening ceremony, which was performed by the Lord Mayor, Lord Henry Bentinck, who presided, said the fact was now recognised that there was nowadays a large amount of unemployment among young people, whereas formerly it was mostly old people who suffered from unemployment; and the work of the association was to show

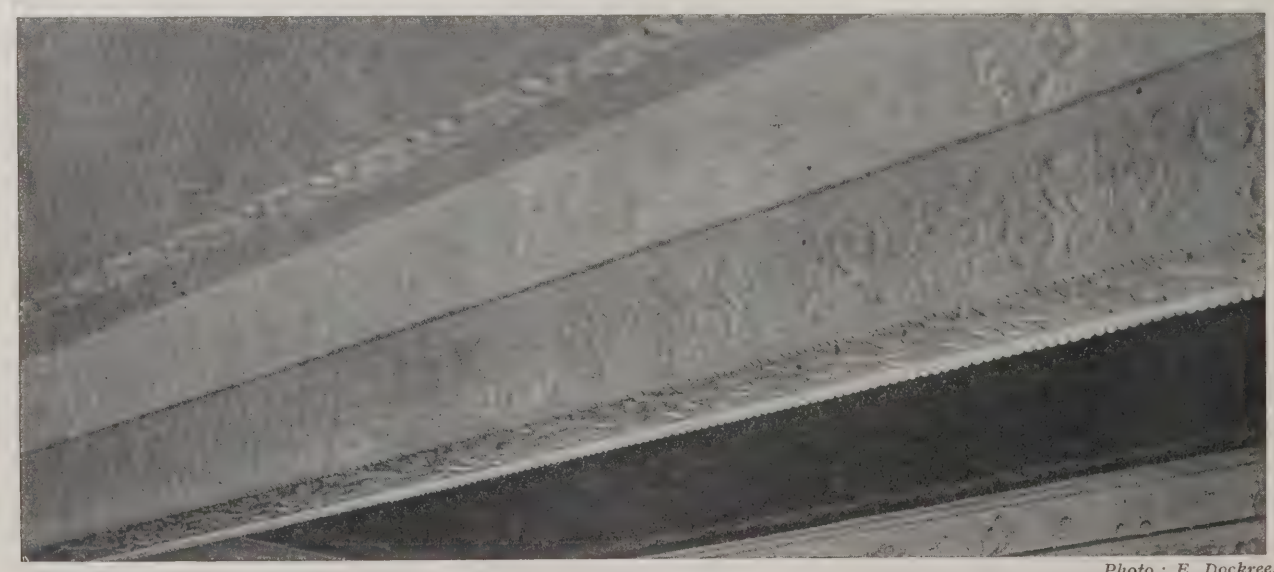
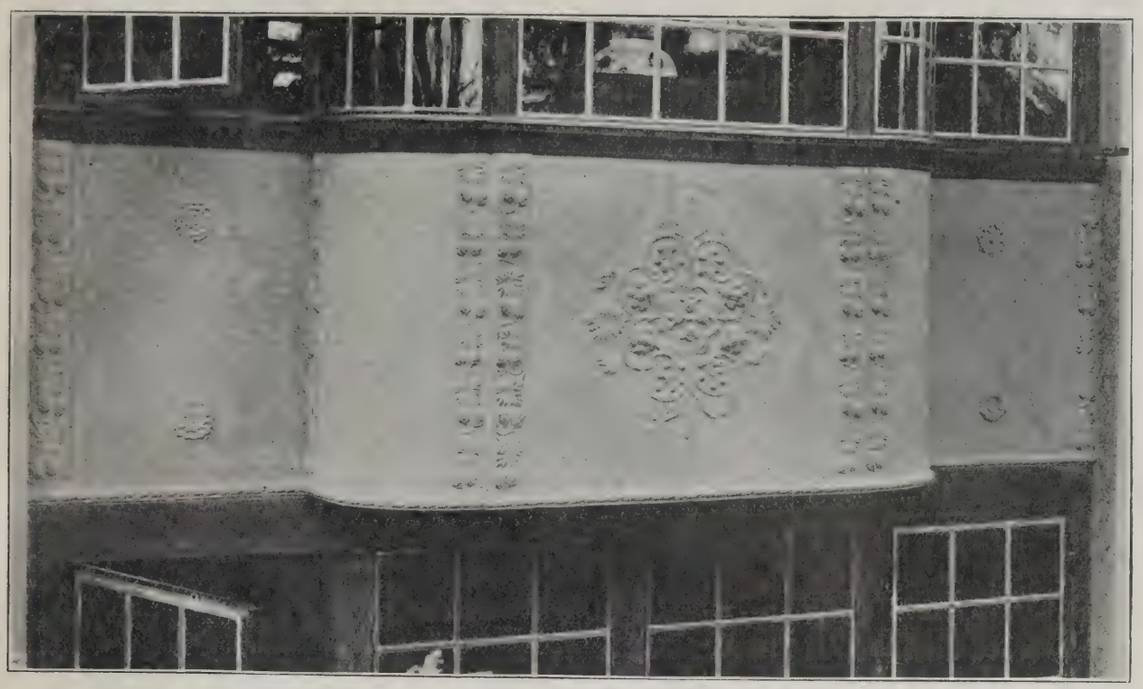


Photo: E. Dockree.

MODERN PLASTER WORK: DETAIL OF CEILING BY ERNEST GIMSON, HOUSE AT SAPPERTON, NEAR CIRENCESTER.



THE ART OF THE PLASTERER: WINDOW BAY, DOWNE TERRACE, RICHMOND, SURREY, BY GEO. P. BANKART.

them how to enter skilled trades and avoid "blind-alley" employments; this was followed up by supervision to see that the young people were duly apprenticed and properly instructed. Efforts were also made to remove the apathy of parents on the subject.

The Lord Mayor said he would like to see the old system of apprenticeship revived, and an Act of Parliament passed requiring every young person to learn a trade.

Sir Melvill Beachcroft, chairman of the L.C.C., said that efforts had been made for more than thirty years to provide technical instruction for the youth of London, and that there were now some 32 secondary schools maintained for such instruction. He feared that a revival of the old system of apprenticeship might not be practicable, and, if not, the next best thing would be technical instruction combined with workshop instruction. He also urged the need for the introduction of new industries into London, so as to widen the opportunities for employment.

Mr. Cyril Jackson, chairman of the Education Committee of the L.C.C., expressed the hope that the existing voluntary organisations comprising the Apprenticeship Association would not find themselves superfluous in consequence of the Government taking up the question of finding apprentice employment through the Labour Exchanges, because boys and girls would still need supervision to help, both during and after their apprenticeship, and he thought there was scope in such work for valuable co-operation on the part of these voluntary associations.

The exhibition consisted of examples of apprentices' work in the needlework, jewellery, and silversmithing, designing, printing and binding, building, furnishing, coach and barge building, engineering, instrument-making, leather and miscellaneous trades, about 575 exhibits in all. In the building class there were about 40 exhibits. The chief impression produced was that there is a mine of ability among the youth of both sexes in this metropolis, which should well repay any encouragement and development that can be given.

It is anticipated that the Irving Memorial will be completed by the end of June or the beginning of July. Sir John Hare has consented to perform the ceremony of unveiling.

Societies' Reports.

Northern Architectural Association.

At a students' meeting of this association held on the 23rd February, 1910, Mr. Wm. Milburn, jun., A.R.I.B.A., read a paper on the Continental Hospitals, which he had visited during his tour as the Saxon Snell Prizeman of the Royal Institute of British Architects for 1908. It was pointed out that the large majority of these institutions are constructed, equipped and maintained by the municipalities, and that the greatest study and attention are devoted to their design and construction, so as to keep step with the strides which are being made in the domain of medical science and skill. The sites for these hospitals are whenever possible situated on the outskirts of the cities, so as to obtain pure air, ample space and freedom from noise and dirt, a very large proportion of the site being laid out as parks and gardens.

In describing the general arrangement and disposition of the buildings on the site, Mr. Milburn referred to the Eppendorf Hospital, Hamburg, one of the most celebrated of Continental hospitals, which is planned on the pavilion system, and now comprises over 100 separate buildings, of which 85 are used for the reception of the sick, and are arranged in separate departments for medical, surgical, tuberculosis, infectious diseases, maternity, ophthalmic and epidemic cases. The Rudolf Virchow Hospital, Berlin, also constructed on the pavilion system, which was opened in 1906 with an accommodation for 2,000 patients, and is in many respects the finest hospital in the world, was also fully described. Owing to the great area covered by these hospitals, and the difficulties of transporting the patients to and from the operation house, and the conduct of food and general services in wet and stormy weather, many of the recent German hospitals are adopting the plan of linking up the separate buildings by closed corridors, and constructing wards of two and more stories in height. In dealing with the design and planning of the pavilions, the double pavilion type with two large wards, as at the Virchow Hospital, which has succeeded the Eppendorf type with one large ward, was described and the points of difference in the wards and adjoining rooms for medical, surgical, children, maternity, insane or infectious cases were discussed. The Operation Houses, as at St. Georg, Hamburg and Dusseldorf, which, owing to the great advances in surgery and the use of antiseptic and aseptic methods are among the most interesting of the buildings in the Continental hospitals, were fully described. Special note was made of the heating, which is remarkable, the whole of the theatres being surrounded by what is termed a "mantle" of hot air, in order to raise the temperature much above the normal, which is necessary for many operations. The bath-houses are among the most interesting of the buildings in these institutions, and the cooling and massage rooms, the hydropathic, electrical, hydro-electrical, cabinet, Turkish, steam, carbonic acid gas, sand, and permanent baths, and the medical gymnasium for the orthopædic surgery, were all fully described, and the pathological departments, lecture theatre, dissecting rooms and animal houses illustrated. Referring to the Administrative and Domestic blocks, it was shown how in most cases the kitchens and stores' departments are entirely separated from the officer and admission department. The paper, which was illustrated by over 80 lantern slides, concluded with a description of the systems of heating, ventilation, lighting, drainage and sewage disinfection employed.

The Institution of Municipal Engineers.

At a meeting of the Council of the Institution, held at 39, Victoria Street, London, S.W., on Wednesday, February 23, 10 applicants were elected to membership and 1 to studentship. One student was transferred to the member class. The roll of the Institution now stands at 697 members and 96 students, making a total of 793.

Examinations Committee.—This committee presented its report, which it was decided to refer to a committee of the whole Council (and of the non-Council members of the original committee) to consider the arrangements for the appointment, duties and remuneration (if any) of the proposed Board of Examiners.

Revision of By-Laws Committee.—A draft of the proposed amended by-laws was pre-

sented by this committee, and the secretary was instructed to call a special Council meeting for its consideration, prior to submission to the members of the Institution.

Surveyors' Institution Meeting.—The Secretary reported that at the Surveyors' Institution, 12, Great George Street, Westminster, on Monday next, at 7 o'clock, a paper, "Prospects in Municipal Surveying," was to be read by Mr. Edgar A. Rogers, and that an invitation to attend and discuss the paper had been extended to members and students of the Institution.

Birmingham Clerk of Works and Builders' Foreman's Association.

A lecture was given recently at the Midland Institute to the members and friends of the above association by Mr. Guy Pemberton upon "The Cotswolds," By means of a series of excellent lantern slides, the lecturer illustrated the beauties both natural and architectural of that picturesque and old-world district, and at the same time pointed out the peculiarities of the methods of building and the unusual uses made of the local materials. The lecturer, who has made extensive tours and carefully studied the characteristics of the district pointed out the objects of historic, architectural and general interest to be found in such well known old Gloucestershire villages as Winchcombe, Chipping Campden, Broadway, Bibury, etc., where such stirring and epoch-making scenes took place during the Wars of Cromwell, and mentioned that these villages have been described by Mr. Guy Dawber in his book, "Cotswold Cottages," and by Mr. Duckworth in his interesting work, "The Cotswolds." At the conclusion of the lecture, a vote of thanks was accorded to Mr. Pemberton, who, in reply, said that he hoped the interest which has lately been aroused among the public generally, and among the lovers of English beauty and Elizabethan architecture in particular by Mr. Dawber, Mr. Duckworth, and others in this picturesque and most interesting corner of England will not be allowed to fade, but will be maintained and increased by architectural, archæological, photographic, and such-like societies, so that the present beauties may be preserved and not ruthlessly destroyed by modern "renovations," which has already, in some cases, been done.

Gloucestershire Architectural Association.

A meeting of this association was held in Gloucester on Thursday evening, the president (Mr. H. W. Chatters) being in the chair, and members present included Messrs. W. B. Wood, J. F. Trew, E. A. Pryer, A. H. Smithson, T. Malvern, S. H. Healing, W. J. Jones, R. Phillips, H. S. Davis, W. J. Knight, D. R. Lyne, S. W. Thurston, W. E. James, and T. Overbury (hon. secretary), and several visitors. A paper was read by Mr. Mowbray Green, F.R.I.B.A., of Bath, entitled "The 18th Century Architecture of Bath," which dealt most fully with the growth of that city from A.D. 1550 to the close of the 18th century, the works of John Strahan, John Wood and his son, Thomas Baldwin, and Robert Adam, being treated in detail. The lecture was illustrated by a splendid selection of lantern views, showing many works of each architect, and in several instances the photographic slides gave the original drawings of the designer as well as the finished work, which proved very interesting. The views of Prior Park, that fine mansion built to advertise the Bath stone, were especially beautiful, as also were the series of staircases and interiors. On the proposition of the president, seconded by Mr. R. Phillips, a vote of thanks was enthusiastically passed to Mr. Green for his paper.

Glasgow and West of Scotland Technical College Architectural Craftsmen's Society.

Mr. James Flett presided at the regular meeting of this society last Friday week, 25th ultimo, when Mr. Geo. U. Watson delivered a paper entitled "Excavations and Timbering." He divided his matter under three headings: (1) Open cut, (2) tunnelling without air pressure, and (3) tunnelling with air pressure. The first method was generally adopted for sewers 12 to 20ft. deep. Reference was made to essential points in this method, such as nature of ground, scantling of timber used, and the method of timbering to be adopted. The style of boarding best suited to withstand soft leaky soils was grooved and feathered, and all possible leaking points caulked with lead. Under the second heading, blasting was described at some length, as were also the types of centreing suitable for tunnelling. Under the third method, the system of air pressure was fully described, this being resorted to generally in muddy or dangerous grounds. The lecture was illustrated with numerous plates and blackboard sketches. A discussion followed, which was taken part in by several members.

Leeds and Yorkshire Architectural Society.

The great Church of Santa Sophia at Constantinople formed the subject of a paper read by Mr. J. B. Fulton, A.R.I.B.A., before the Society at a meeting held on Thursday evening, February 24th. Mr. Fulton, who has made an extensive study of this building, dealt in detail with the historical circumstances surrounding its erection. Built in the 6th century A.D., by order of Justinian to replace the old church which had been destroyed by fire—the cause of which may have been a suggestion from the Emperor himself—it occupied 5 years 10 months from commencement to dedication. The work of Anthemius of Tralles, the greatest architect the world has ever known, Santa Sophia ranked with the temples of Karnak and the Athenian Parthenon as one of the great pinnacles of architecture.

Spanned by a great dome, Anthemius' masterpiece surpassed all previous works, and stands to-day—to quote Mr. James Fergusson—"the most perfect and the most beautiful Church which has been erected by any Christian people." It was the culminating point of ancient art, at which for once in the history of art East and West joined hands, a lasting monument to the genius of Anthemius.

Structurally, Santa Sophia, on the authority of M. Auguste Choisy, astonished its contemporaries by its wonderful lightness; to them it appeared—to use their thoroughly Oriental form of admiration—that its dome was suspended in space by an invisible power, so slender were the supports that up-



MEMORIAL TO THE LATE H. A. PROTHERO, F.R.I.B.A., AT CHELTENHAM COLLEGE CHAPEL. L. W. BARNARD, ARCHITECT

The Memorial takes the form of a vaulted narthex or porch with elaborately carved oak doorway and mosaic tympanum.

held it. Yet, so sound and logical was the construction that with the exception of the four corners which were evidently the weakest points of the building and had been thrust about 18ins. back from their original positions, the vast system of arches stand today apparently sound. Everywhere—both within and without—great piers had been built, and after the Turkish occupation, the four minarets were built in the 16th century.

Internally, the acoustics were perfect, and the original arrangements were such as to give appropriate emphasis to the altar. In the words of Professor Aitchison, "As the interior of the Pantheon strikes one as the most sublime building, the exterior of the Parthenon as the most perfect, the exteriors of some of the French Cathedrals the most wonderful, the interior of St. Mark's as the most gorgeous, so the interior of S. Sophia strikes ones as the vastest building one has seen."

The great beauty and charm of the interior lay, not only in the constructive features, but also in the power and beauty of great horizontal cornices, placed at the correct relation to heights and broken only on plan. Mr. Fulton thought this was the secret of Byzantine design, and nowhere had it been used to greater advantage than in this vast pendentived hall.



CENTRE BOSS OF VAULT, PROTHERO MEMORIAL PORCH, CHELTENHAM COLLEGE CHAPEL. L. W. BARNARD, ARCHITECT

Standing at any point in the nave, the eye moved from one vista to another in endless variety. The golden vaulting of the aisles and galleries gave colour and distance, while all the nearer features carried the eye to the great dome crowning all. The views of the nave from the aisles and galleries were unsurpassed, the columned low-vaulted richness of the aisles contracting with the seemingly infinite height of the nave.

Analysing the details of the plan, Mr. Fulton explained that the four great stone piers or buttresses measured 67ft. 6ins. by 25ft. 2ins. by 101ft. 8ins. apart from North to South, and not only did they carry the weight of the cross arches but were also designed to take the thrust of pendentives supporting dome and cross connecting arches supporting dome.

The necessary depth of the buttresses allowed for openings to be left forming the north and south aisles; while the thrust of the dome necessitated the buttresses being carried to the height of the base of the dome far above the roofs of aisles, forming features in the elevation which are so charming and logical.

The dome supported upon 40 piers rose 46ft. 9ins. above the cornice and internally ribbed ascended to a great circle 37½ft. in diameter. The length of the Church exclusive of apse, was 244ft. 6ins., while its breadth including aisles was 228ft. 10½ins.

A vote of thanks was accorded Mr. Fulton for his lecture, and a discussion led by the president, Mr. Percy Robinson, F.R.I.B.A., followed.



THE NEW HERON MILL OLDHAM NEAR THE OLDHAM ARDEN SUBURB.

OLDHAM'S GARDEN SUBURB.

By J. H. Crabtree.

Oldham has long had a reputation for progress in the building-world, and its present activity affords a striking illustration of what can be accomplished in a manufacturing town.

In all directions new buildings of a superior order are rising, so that the house-famine with which the town was threatened during the recent cotton-boom, is likely to be warded off for many years to come. Scores of cottages, unfit for habitation, have been closed or completely demolished to make way for houses suitable for occupation by Oldham's workers. Several parts of the town are assuming a pleasing aspect at the builder's hands. The schemes of improvement which are well afoot are finding ample occupation for hundreds of bricklayers, joiners, plumbers and general labourers whose employment was so seriously depleted when the construction of new factories was sealed by adverse trade in cotton-spinning. Contractors, too, welcome an impetus in business. At a period when mill dividends are few and sparing, there is some incentive to launch forth in house-building and many persons with savings prefer to invest in property when mill-shares are so fluctuating. The recess in the staple trade, therefore, is giving a favourable opportunity for activity in general building-work other than the erection of mills.

Just now, in addition to all its other enterprises, Oldham is turning serious attention to the erection of a new suburb on the South side of the town. This movement emanated from "The Beautiful Oldham Society" which has for its object the betterment of Spindledon from centre to circumference. The society means to cleanse the slums, to close houses unfit for habitation, and promote horticultural pursuits among the juvenile population. Then there arose a desire for superior dwellings, an improvement in town-planning, with an equitable return for a generous outlay.

A new company was formed—the Oldham Suburb Tenants, Limited—and a plot of 50 acres was surveyed near Hollins Road, the main thoroughfare leading from Manchester City to Hollins and Ashton-under-Lyne. The



OLDHAM GARDEN SUBURB A CORNER VILLA.

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HOUSES, OLDHAM GARDEN SUBURB.

site and outlook were auspicious. The land presents a gentle slope to the south, and is open to the green fields for miles ahead; while townwards it is amply protected from the evolutions of Oldham's chimney-stacks by intervening space and buildings.

The purchase price, £150 per acre, was distinctly encouraging. For estates similarly situated, the usual price is from £200 to £350 per acre.

Since the cutting of the first sod in March, 1908, the development of the estate has proceeded with commendable swiftness. Already over sixty houses are either completed or are in course of erection; these let at rentals varying from 5s. 6d. to 7s. 6d. in addition to local rates. All buildings are subject to plans drawn by the architects of the estate, and to the approval of the town authorities. The scheme contemplates the erection of about 600 dwellings forming a model colony for some 3,000 people.

The bulk of the houses have five or six rooms, and do not exceed in rental that of ordinary middle-class cottages in the town. Further, these rents being fixed by the owners of the estate, there can be no interference from external agencies. On the north side the suburb is banked by a continuous line of cottages with gardens and lawns in front. In other portions of the estate the houses are semi-detached with ground on three sides available for gardening. These semi-detached cottages have a living-room 14ft. 6in. by 14ft. 3ins; a sitting-room, 10ft. 2ins. by 10ft. 9ins.; a scullery, 7ft. by 10ft. 9ins; two bedrooms measuring 14ft. 6ins. by 14ft. 3ins., and 14ft. 6ins. by 10ft. 9ins. respectively. The sitting-room may, if desired, be easily converted into a bedroom. The height of the ground-floor rooms is 9ft. The bedrooms are 9ft. 9ins. at the highest point, sloping down to the roof-edge. Other houses are in contemplation with larger rooms, to be completed at rentals of about 6s. weekly. It is thus clear that all the best types of middle-class dwellings will be in vogue, and being in close touch with the local tramway, Oldham business men may pass from town to garden-suburb in twenty minutes.

There is to be no over-crowding at Hollins Green. Not more than fourteen houses are allotted to the acre. The whole plot is now full of human energy; labourers are cutting new roads, contractors are fixing new erections, and the suburb is breezy with bricks, mortar and floor-boards. The present main thoroughfare, aptly termed "Green Lane" is 12 yards wide from curb to curb; this is flanked on either side with 4 yards of space, allowing for the cultivation of garden-lawns, flower-beds, and small shrubberies. A green band of grass lines the roadway, with sprouting trees planted at convenient intervals.

The estate includes facilities for recreation for the young and middle-aged. A plot of 1½ acres has been reserved for the children's recreation ground; while another similar area is planned for allotment-gardens and nurseries. The main streets are gracefully arranged in sweeping curves; there is a studied avoidance of straight lines, squares and oblongs; and yet all parts of the estate are utilised with economy. There is no wastage of land in any quarter.

The town itself has signally approved the new undertaking, its principal business-men holding shares and promoting tenancies. The suburb is another venture in a town full of business tact and energy. The architects to the estate are Messrs. Heywood and Ogden, of Oldham.

Mr. Herbert Kendall, M.S.A., has commenced practice at Parkstone, Dorsetshire.

* * *

Messrs. Joseph Kaye and Sons, Ltd., Lock Works, Leeds, and 93, High Holborn, W.C., have just received further orders from the British Navy, 3,918 Kaye's patent seamless serrated oil cans, and 6,963 Kaye's patent seamless spouts, for H.M. Dreadnoughts.

Proposed New Works.

ABERDEEN.—The Harbour Commissioners of Aberdeen yesterday discussed a report by the engineer, Mr. R. Gordon Nicol, on the method of carrying out the construction of the new dock scheme in the river Dee and new wharves in Albert Basin. The estimated cost is £85,000, and the work will occupy about three years.

ABERDEEN.—The Town Council have approved the scheme for the provision of a dust destructor for the town.

ABERDEEN.—The directors of the Music Hall intend to make a structural addition to the building in the near future.

ABOYNE.—It was unanimously decided at a public meeting to purchase the existing Aboyne Public Hall, and to prepare plans for its extension. The present accommodation is entirely inadequate.

ALDERSHOT.—The plans for the enlargement of Aldershot parish church have been formally approved.

AMERSHAM.—The Buildings Committee of the Rural Council have approved the following plans:—Additions to Little Afric, Little Kingshill, submitted by F. D. Whitwell; additions to house, Packhorse Road, Chalfont St. Peter, Messrs. Johnson and Boddy; house, Bois Farm Estate, Chesham Bois, E. J. Gee; two cottages, Chalfont Common, R. Ramm; motor garage and stables, North Park Road, Gerrards Cross; two houses, Horn Hill Road, Chalfont St. Peter; five cottages, Moor Road, Chesham Bois; additions to house, Ley Hill; and three cottages, Prestwood, Hemp and How.

BANGOR.—Mr. Brook Kitchin, Local Government Board architect, has condemned as unsuitable and inadequate the present Bangor workhouse infirmary, and has recommended its destruction and also its erection on another site.

BIRMINGHAM.—The Local Government Board held an enquiry into the application of the Corporation for sanction to borrow £1,600 for the extension of the Woodside recreation ground and £867 for work of sewage.

BIRMINGHAM.—Mr. M. K. North, M.Inst.C.E., one of the inspectors of the Local Government Board, held an enquiry into the application of the Birmingham City Council to borrow £1,050 for the purchase of Nos. 14, 16, 18, and 20, Aston Church Road, for purposes of public baths, £750 for purposes of street improvement, and sums



HOUSES IN THE GREEN LANE, OLDHAM GARDEN SUBURB.

amounting to £8,945 for works of sewerage and surface water drainage.

BLACKPOOL.—The borough surveyor, Mr. J. S. Brodie, has submitted a scheme for the linking up of Blackpool's two promenades between the North Pier and the three Claremont Marine Parades, which has been approved by the Highways Committee. The approved scheme is a modification of one formerly presented, so much improved as to be practically a new plan.

BOSTON.—The plans of Messrs. Gordon and Gunton, architects, London, have been accepted by the trustees for the new Wesleyan chapel to replace the building in Red Lion Street, destroyed by fire some months ago.

BRIDGEND.—The Local Government Board have approved the plans of the proposed new offices, and the committee now recommend that the architect should be authorised to prepare specifications, for the purpose of obtaining tenders.

BUCKHAVEN.—Plans were submitted to the Town Council, for a proposed new slaughter-house at Toll Park, which were approved. The building is to be extensively lined with tiles, and is expected to cost about £4,000.

CAMBUSLANG.—The building will shortly be commenced of a new police station here.

CHESTER.—A Local Government Board inspector held an inquiry yesterday into the application of the Chester Town Council for sanction to borrow the sum of £3,000 for the provision of a new fire engine station in Northgate Street.

COVENTRY.—The General Works Committee of Coventry City Council has decided to invite architects to send in alternative plans showing how the vacant land in Earl Street can be best utilised for the erection of municipal buildings, and for a scheme for such buildings and Town Hall, the latter absorbing adjoinlng property.

CRICKLEWOOD.—On a site given by the Ecclesiastical Commissioners, the erection of a church hall and institute at St. Peter's Church, Cricklewood, has been commenced.

CROYDON.—The Plans Sub-committee have approved the following plans:—Kirby and Jordan, workshop, The Causeway, Mitcham; A. E. E. Hill, two houses, Park Hill Road, Wallington; A. E. Brown, two houses, Higher Drive, Coulsdon; B. Bryant, room in roof to house, Woodcote Road, Wallington; H. L. Wettern, additions to "Waratah," Sanderstead; J. Ivall, alterations to "Lynwood," Foxley Lane, Beddington; E. and A. Wates, ten. houses, Purley Park Road, Coulsden; Corporation of Croydon, additional pavilions to the Borough Hospital, Waddon, Beddington; C. Farley, two houses, Longfield Avenue, Wallington; C. G. Reed, house, corner of Julien Road and Bramley Avenue, Beddington; T. J. Edwards, four villas, Longfield Avenue, Wallington; C. Thomas, two houses, Edgar Road, Sanderstead; H. Nicholls, additions to "The Copse," Welcomes Road, Coulsdon; Miss E. F. Copley, house, Monahan Avenue, Beddington; A. A. Secrett, house, Osmond Gardens, Beddington; Mrs. Turner, house, Commonside West, Mitcham; A. E. Bates, three pair houses, Windermere Road, Coulsdon; W. Webb, new street, "Silver Lane," from Furze Hill to the Model Village, Beddington; Webster and Hawkes, four houses, Heathhurst Road, Sanderstead; A. Boulter, five houses, London Road, Hackbridge, Wallington; T. J. Edwards, mission room, London Road, Hackbridge, Wallington; G. Ive, house, Julien Road, Beddington; Minty and Dollimore, offices, Lower Road, Coulsdon; Pascall, Ltd., addition to factory, Streatham Lane, Mitcham; E. J. Tinniswood, six houses, Senga Road, Wallington; F. Miller, four cottages, Cavendish Road, Mitcham; J. T. Deakins. amended block plan of houses, Furze Lane, Purley, Beddington; C. H. Cearn, eight detached houses, Red Down Road, Coulsdon; Mizen Bros., six cottages, Feltham Road, Mitcham; G. Hyde, addition to shop, Brighton Road, Beddington.



HOUSES IN THE GREEN LANE AT THE OLDHAM GARDEN SUBURB.

DALBEATTIE.—Extension of Dalbeattie school.—At a special meeting of Urr School Board—Mr. Maxwell of Munches presiding—plans of an addition to Dalbeattie school buildings were submitted. The Board decided to proceed with the work, subject to the approval of the department. The cost is estimated at between £1,300 and £1,500.

DOUGLAS.—A special meeting of the Douglas Town Council considered the recommendation of the Finance Committee to purchase the Villa Marina and its beautifully wooded grounds, in the centre of Douglas Marine Promenade, for £60,000, from the trustees of the will of Henry B. Noble, the trustees undertaking to return £20,000 for the erection of a hall and museum.

DROYLSDEN.—The cost of the proposed new church will be £4,000, and it is hoped to begin building at an early date.

DULWICH.—Subject to the sanction of the Local Government Board, the Camberwell Board of Guardians propose to erect further accommodation for nurses at Constance Road Workhouse, Dulwich, at a cost of £3,200.

DUNDEE.—It is proposed to build a new mechanical laboratory at University College, Dundee. The architects, Messrs. Rowand Anderson and Paul, of Edinburgh, have been authorised to obtain tenders for the carrying out of the work.

DUNDEE.—It is proposed to erect a new Music Hall in Dundee. An architect has, on behalf of the promoters of the scheme, inspected several sites, but so far nothing definite has been decided upon. A palatial music hall is likely to be the outcome of the scheme.

DUNDEE.—The proposed Observatory is coming nearer realization. The late Mr. John Mills bequeathed £6,000 to the city for this purpose. The idea is to spend £2,000 on a building, £2,000 on equipping it with the necessary astronomical instruments, and to reserve £2,000 for maintainance. As soon as the question of a site is settled there will be very little difficulty in the way of making a start with the construction of a suitable building. Places suggested are the Law, Balgay Hill, Baxter Park, and Reves Hill, Broughty Ferry.

EALING.—The Ealing Town Council have decided to petition the Privy Council for the establishment of a police court at Ealing. It is proposed to adapt the present vestry hall for that purpose, and to erect a new vestry hall on land adjoining at a cost of £1,000.

EALING.—A new hospital is about to be built at Ealing at a cost of over £20,000, of which all but £5,000 has already been raised.

EAST HAM.—On Wednesday morning Dr. R. Deane Sweeting held an inquiry at the Town Hall respecting the application of the Town Council to borrow a sum of money for the provision of a mortuary and post-mortem room at the rear of the Town Hall.

ELGIN.—Mr. John Wittet, architect, has prepared a scheme for the proposed improvements at the municipal buildings. The cost is likely to be about £125.

ENFIELD.—The District Council have approved plans of the following proposed works:—The erection of one house in Station Road, and five houses in Oakhurst Road, Freezywater; the making-up of Rotherfield and Suffolk Roads.

ETON.—The following plans of new buildings were approved by the Rural Council, some of them being subject to certain conditions:—New cottage, Potter's Cross Road, for Mr. Tonman Mosley; pair of semi-detached houses near Packhorse Road, Gerrards Cross, for Mr. J. R. Wignall; new house, St. Huberts, Fulmer Way, Gerrards Cross, for Messrs. Boddy and Johnson; new washhouse at the "Chequers" Inn, Iver, for Messrs. Nevile Reid and Co.; alterations to gardener's cottage, new coach-house and stable for Mr. E. Clifton Brown, Burnham; new piggeries at Jersey Farm, Eton Wick, for Mr. M. D. Hill; two cottages at Beaconsfield Road, Farnham Royal, for Mr. Charles Luker; two houses, Gray's Park Estate, Stoke Poges, for Messrs. R. Jewell and Sons; New house, South Park, Gerrards Cross, for Mr. Malcolm Sparkes; pair of cottages, Bath Road, Langley Marish, for Mr. W. A. Owston; new house, Hillbrook Place, Iver, for Sir Henry Yorke, K.C.B.; new house, Layer's Way, Gerrard's Cross, for Messrs. Green and Co.; alterations and additions to Delaford Manor House, Iver, for Mr. Tonman Mosley.

ERDINGTON.—Mr. F. H. Tulloch, the Local Government Board inspector appointed for the purpose, held an enquiry at the Council Offices, Erdington, into the application of the Urban District Council of that place for sanction to borrow sums of £3,000 and £540 for works of sewerage and street improvement respectively, in Slade Road, Erdington.

FORFAR.—It is proposed to provide retiring rooms at the Town Hall, and also to improve the present lavatory accommodation.

FOUNTAINBRIDGE.—The plans and works committee of Edinburgh Town Council considered a motion as to providing washhouses in the Fountainbridge district. The matter was remitted to a sub-committee.

GLASGOW.—Arrangements have been made for the erection of a skating rink in Dunoon Castle Gardens.

GREAT HANWOOD.—The Council have decided to build public baths in the town.

HALTWHISTLE.—Plans were submitted to the Parish Council for the following proposed new works:—Mineral water works, at Eden's Lawn, for Messrs. Saint and Murray; two cottages at Wydon Terrace, for Jos. Hunter.

HAMILTON.—The Burgh School Board have decided to proceed with the excavation of the site and the erection of the necessary fences for the proposed new Academy for Hamilton, and instructions were given for the issuing of specifications to contractors. The plans have been approved, and the estimated cost of the building and site is £45,000.

HARROGATE.—The Local Government Board held an inquiry at the Harrogate Municipal Offices into an application by the Town Council for permission to borrow £950 for the erection of a shelter and the provision of lavatory accommodation in the Crescent Gardens.

HATFIELD.—Between Hatfield and St. Albans a fine estate is to be developed, known as Nast Hyde. No speculative building will be permitted.

HESTON.—The Works Committee of the District Council reported that the following plans had been approved:—From Mr. F. R. Wood, for six semi-detached villas at Haward Road, Isleworth; Mr. E. A. King, for eight terrace houses, at Kilmorey Road, St. Margaret's; Messrs. H. Tinckler and Son, for addition and alterations at No. 135, Haliburton Road, Isleworth. New houses approved:—Heston 6, Isleworth 8.

INVERURIE.—Messrs. Jenkins and Marr, architects, Aberdeen, submitted a report on the town house buildings. The report stated that the fabric of the clock tower was in good condition, but was in want of a thorough pointing. They recommended that the tower be pointed every three years, which would cost about £10. Some minor repairs to the roof were also suggested at a probable cost of about £12. The ventilation of the Town Hall was very defective, and the cost of a scheme for its improvement would be about £35. The heating of the Town Hall by means of hot-water radiators was suggested. This method would probably cost about £85. An alternative method of heating would be to use gas-steam radiators, costing probably about £56.

JOHNSTONE.—The Postmaster-General has purchased the post office buildings, along with the adjoining tenement and ground attached. Plans have been prepared for the remodelling and enlarging of the office, and operations are to be started immediately.

KEADY.—The Urban Council propose to erect new gas-works and plant.

KIRKWALL.—Mr. George Mackie Watson, Edinburgh, has prepared a plan for the proposed restoration of Kirkwall Cathedral, which has been approved of. The Town Council are the proprietors of the fabric.

KYLES OF BUTE.—It has been decided by the Kyles of Bute Hydropathic Company to proceed shortly with the rebuilding of their establishment at Port Bannatyne, which was recently destroyed by fire. Three Glasgow architects have been invited to send in competitive plans, and one condition is that the cost is to be about £15,000. The main outline of the old building is to be adhered to, and the existing walls and foundations utilized as much as possible. The architects invited are Messrs. George Bell, A. Balfour, and Thomson and Sandilands.

LEEDS.—An effort is being made to beautify the surroundings of the Leeds Town Hall. The process of improvement has commenced with the demolition of a block of shops and offices, half brick and half stone, with a frontage to East Parade, to Park Lane, and to South Parade. Some forty places of business are doomed. On this important site a handsome structure is to be built of white Portland stone for the Pearl Assurance Company.



Photo: C. H. James.

CENTRE DETAIL, NEW UNIVERSITY COLLEGE, CARDIFF. W. D. CARÖE, M.A., F.R.I.B.A., F.S.A., ARCHITECT.

LEWISHAM.—Lewisham is to have a large theatre of varieties at the corner of Rushey Green and Brownhill Road. The designs are by Messrs. F. Matcham and Co., and the building will be completed by the end of the year.

LIVERPOOL.—The Midland Railway Company has purchased, for £55,000, the land lying between the Adelphi Hotel and Hawke Street, and it is proposed to cover the whole of the site with an extension of the hotel, afterwards rebuilding the Lime Street frontage. The present hotel will probably remain unaltered for about three years, pending the completion of the block extending from Talim Street to Hawke Street. The existing block will then be taken in hand for remodelling, which may involve rebuilding.

LIVERPOOL. — Liverpool Municipal Offices.—The Local Government Board held an inquiry relative to the application of the Corporation for permission to borrow £225,000 for the purposes of schemes under Part 1 of the Housing of the Working Classes Act, 1890, for the improvement of Beau Street, Bevington, Holly Street, Frank Street, Grafton Street, and Saltney Street, including the erection of new dwellings for persons of the working class on lands within those areas.

LLANDUDNO.—Plans for the erection of the following buildings have been approved of by the Llandudno Council, viz.: Two houses in Mostyn Avenue, for Mr. H. F. Hall; house in Vicarage Road, for Mr. W. Broomfield; additions to the Empire Hotel, for Mrs. Hall; temporary shelters on the West Shore, for the Light Railway Company; stable, rear of St. David's Road, for Mr. T. Edwards; dormer, Spring Grove, Clifton Road, for Mr. J. Gatley; attics, Engadine, Roumania Drive, for Mr. A. Wilkes Green; residence, Fferm Bach Road, for Mr. Rawstron; alterations, Market Hall, for Llandudno Market Company; and alterations, Dorothy Café, Mostyn Street, for Mrs. Payne.

LONDON.—London Docks Improvements.—Mr. Harry Gosling, a member of the Port of London Authority, speaking at St. George's-in-the-East, said that at a meeting of the Authority it was decided to spend £52,000 on the erection of new sheds and other improvements at the London Docks.

LONDON.—It is expected that the work of painting the exterior of Buckingham Palace will be proceeded with in the spring. The roof of the building requires attention, and this will also be undertaken during the next few weeks.

LONDON.—It is proposed to construct a handsome approach to Southwark Cathedral.

LONDON.—Negotiations are in progress for the erection of a new concert hall near Regent's Park, not far from Queen's Hall and the new St. James's Hall. It will have a seating capacity of 3,000. The shape and general plan of the building will be after the style of the old St. James's Hall.

LONDON.—At a recent meeting of the Metropolitan Water Board, the Finance Committee was authorised to invite and accept tenders for Metropolitan Water Board bills to an amount not exceeding in the aggregate £750,000, in respect of authorised capital expenditure.

LONDON.—The Highways Committee recently decided, at a cost of about £1,200, to erect a tramway shelter on the Victoria embankment near Blackfriars Bridge alongside the northern tramway track.

LUTON.—At a meeting of the Town Council, the General Purposes and Fire Brigade Committee reported that the following plans had been approved:—W. H. Wren, alterations, Guildford Street; Hill Bros. and E. Hill, twelve cottages, Harcourt Street; Hill Bros. and E. Hill, house, Harcourt Street; D. Stonnell, eight houses, Warwick Road; A. Carter, four houses, Reginald Street; T. and E. Neville, workrooms, Hastings Street;



Photo: C. H. James.

FRONT ELEVATION OF THE NEW UNIVERSITY COLLEGE, CARDIFF. W. D. CARÖE, M.A., F.R.I.B.A., F.S.A., ARCHITECT.

J. R. Brown, open shed, Cheapside; S. Hubbard, stable and dye-yard, Regent Street; Luton Miniature Rifle Club, new shed, off Dallow Road; W. Mardle, four cottages, Clifton Road; J. Saunders and Son, two cottages, Shirley Road; J. C. Kershaw, w.c.'s, and lavatories, George Street; H. I. Sell, w.c.'s, etc., Langley Place; F. Chandler, two houses, Reginald Street; H. Cook, four houses, Leagrave Road; Vauxhall Motors, test room, off Kimpton Road; P. Allen, motor garage and store, Downs Road; S. W. Johnson, two houses, Conway Road; H. W. Cowell, two houses, Talbot Road; F. Merchant and Sons, alterations to shop, Manchester Street; Mardle Brothers, two houses, Round Green.

MERTHYR.—Mr. M. K. North, M.I.C.E., one of the inspectors of the Local Government Board, has held an inquiry at the Town Hall, Merthyr, into an application by the corporation for sanction to a loan of £2,000 to cover the cost of the purchase of seventeen acres of land at Gellifaelog for the erection of a new council school and working-class dwellings, and for the making of a recreation ground and other purposes.

NOTTS.—The directors of the Notts County Football Club have accepted plans, prepared by Messrs. W. and R. and F. Booker, for their new ground at Meadow Lane, and operations will very shortly commence. There will be accommodation for a crowd of 35,000 persons.

OMOA.—At a meeting of the Omoa Combination Poorhouse Committee a discussion took place regarding the damage caused to the Poorhouse buildings by underground workings. The committee were instructed to convene a meeting with the architect, so that an early inspection of the buildings may be made. The Poorhouse at Omoa was erected only five years ago at a cost of upwards of £40,000.

OSBORNE.—The authorities have definitely decided that the Royal Naval College at Osborne shall be entirely rebuilt.

OXFORD.—The plans of the proposed additions to the County Buildings, prepared by the County Surveyor, Mr. S. Stalland, have been adopted by the City Council. The estimated cost of this scheme will be £7,750.

PERTH.—The plans prepared by Mr. James Miller, A.R.S.A., Glasgow, of the proposed new infirmary for Perth, have been generally approved, and the directors of the Institution have been authorised to proceed with the erection of the buildings in conformity with them. The directors have also been authorised to dispose of the existing infirmary buildings. The estimated cost of carrying out the original plans is £36,190. Over £4,000 is required to complete the necessary sum.

RASTRICK.—It is proposed to build a new school to take the place of Rastrick Church and New Road Schools.

RENFREWSHIRE.—The following plans have been submitted to the building committee:—Double cottage at Carnwadric, Thornliebank, for Sir John Stirling-Maxwell, Bart.; double cottage in Florence Drive, Giffnock, for Messrs. James Dunbar and Co., Well Lane, Partick; and villa at corner of Auchenlodment and Craigenfeoch Roads, Johnstone, for Peter Jaffrey, Grahame Street, Johnstone.

RICHMOND.—The following plans have been approved by the Town Council. Mr. E. J. Partridge, additions to Elm Lodge, Petersham; Messrs. Brewer, Smith, and Brewer, new house, Mount Ararat Road; Messrs. Brewer, Smith, and Brewer, six new houses, Grosvenor Road; Mr. T. J. Davies, additions to No. 4, West Park Exchange; Messrs. Boore and Parker, two new houses, Mortlake Road; Mr. E. Taylor, new house, Leybourne Park; Messrs. Boroughs and Dixon, additions to No. 46, Church Road; and Messrs. Soole and Son, additions to Holy Trinity Parish Hall, Lower Mortlake Road.

ROMFORD.—The Urban Council have approved the following plans:—Two houses in Pretoria Road, for Mr. J. Butterfield; alterations and additions to "Priests," Havering Road, for Mr. P. C. Haydon-Bacon; and four houses in Carlisle Road for Mr. G. J. Harvey.

ROSYTH.—The proposed laying out of the ground at Rosyth town in conformity with a town-planning scheme on garden city lines is under the consideration of several Local Government Board authorities who visited Rosyth recently. The planning applies to the land south of the new road at Rosyth.

SOUTH AFRICA.—A scheme has been prepared for the proposed new Government buildings at Pretoria. Mr. Herbert Baker, architect, is the author of the scheme.

SOUTHEND.—The Southend Town Council have resolved that the following plans be approved:—Alterations, 8, Victoria Road, G. Clarke; tool shed, 4, Leighcliff Road, F. S. Oram; wash-house, Cardigan Avenue, H. M. Tickell; ten houses, Silversea Drive, A. F. Kerridge; alterations and shop front, 110, Broadway, High Street, Maypole Dairy Company; three houses, Ailsa Road, J. Poulton; warehouse, Park Road, J. T. Payne; stable, rear 90, Leigh Road West, H. Trist; new w.c., Theatre De Luxe, London Road, B. Tolhurst; one house, Old Leigh Road, E. H. Budd; one house, Old Leigh Road, G. G. Tarrap; new sewer, Rockleigh Avenue, The Land Company; twelve houses, Wenham Drive, G. A. Rogers; new vestry and porch, Trinity Church, Southchurch Road, rector and churchwardens, Trinity Church; one house, Lancaster Gardens, B. Jones; additions, St. Erkenwald's Church, York Road, Rev. Dormer Pierce; six houses, Beach Road and Uplands Road, J. Blanch; four houses, Glen Road, J. Blanch; one house, San Remo Parade, Miss Hall; four houses, Beach Road, W. Grey; stable, rear 117, Victoria Avenue, J. Bentall; and four houses, Southview Drive,, C. Denny.

STANLEY.—Mr. John W. Wilson, Sutton Coldfield, Warwick, has prepared designs for a proposed new Council House at Stanley.

STOURPORT.—It is proposed to erect a new drill hall, a scheme which has been approved by the Urban Council General Purposes Committee.

TORQUAY.—An inquiry has been held at Torquay by Mr. H. S. Bidwell, Local Government Board inspector, into the application of the Town Council to extend the borrowing powers of the Corporation for the provision of a new town hall and municipal offices.

WALLASEY.—It is proposed to erect a new church and parsonage house in this village.

WATERLOO.—At Waterloo Town Hall, Mr. E. Dudley, F.S.I., has held an inquiry into the Waterloo-with-Seaforth Urban District Council's application to the Local Government Board for sanction to borrow the sum of £1,020 for the purchase of property for the purpose of widening Mount Pleasant and Mersey View, Waterloo.

WHITLEY.—The Whitley and Monkseaton Urban District Council have applied to the Local Government Board for sanction to borrow £3,600 for the extension of the promenade from Eastcliffe to Promontory Terrace, and £800 for improvements to the sea banks adjoining such extension.



NEW ENTRANCE AND VESTIBULE, SILVERLANDS, CHERTSEY. RONALD P. JONES, M.A. ARCHITECT.

WILLINGTON.—The following plans have been presented to the Urban Council:—Proposed alterations to property in Chapel Street, Willington, by Messrs. Wetherall; and block plan for 30 houses in North Lane, Willington, by Mr. J. H. Armoury. The former was approved, but the latter was referred back for further consideration.

WIMBLEDON.—The question of erecting new municipal buildings for Wimbledon, with or without a town hall, has been revived through Moss Empires, Ltd., having offered to purchase for £8,000, the site on which the present municipal offices stand, for the purpose of erecting an entertainment hall upon it.

WITHINGTON.—The proposed new baths are to cost £15,000, in accordance with the proposals of the Local Government Board.

WORKSOP.—It has been decided to enlarge the Priory church by rebuilding the choir and restoring the ruined Lady Chapel. It is also proposed to restore the Priory gatehouse. The architect is Mr. Harold Brakspear, F.S.A.

WYKE.—At Bradford an inquiry was conducted on behalf of the Local Government Board with reference to the application of the City Council for sanction to borrow £359 for the purposes of laying out bowling greens at Horton and Wibsey Parks, and £2,900 for the purchase of the premises known as Victoria Hall, Wyke, and the adaptation of the same for the public baths and public library.

WYE.—It has been resolved by the Governors to extend considerably the present South-Eastern Agricultural College.

YARDLEY.—A Local Government Board inquiry was recently held at Sparkhill Council House by Mr. H. C. Monro in the application of the Yardley Rural District Council for sanction to borrow £820 for works of surface water drainage at Hay Mills, £6,150 for the construction of a bridge over the River Cole in Forman's-road, Sparkhill, and for the widening and improvement of the approaches thereto, and £1,250 for the purchase of the share of the Solihull Council in the Isolation Hospital at Lyndon End, Olton.

Notes and News.

With the assembling of Parliament the Rosyth Granite Controversy has again revived. Mr. McKenna, in answer to Mr. Goldman, M.P., for Penryn and Falmouth, stated that the granite for Rosyth had been submitted to physical, but not to chemical or microscopic tests. The result of the test was satisfactory, and showed Norwegian granite to be as suitable for the purpose for which it was required as British or Irish stone.

* * *

Mr. Frank H. Jones, A.R.I.B.A., of Buenos Aires, writes concerning a leader on buildings in that city, appearing under the title of "The Broader View," in our issue of January 12th. He states that the architect of the new Central Argentine Railway Station is Mr. E. L. Conder, F.R.I.B.A. Mr. Chambers, who in our remarks was associated with Mr. Conder, is a member of an entirely separate firm, Messrs. Chambers and Thomas, who had no connection with the building in question.

* * *

The text has been issued of the Bill to amend the Ancient Monuments Protection Acts, 1882 to 1900, with respect to the gift, devise, or bequest of monuments to the Commissioners of Works. The memorandum states that power is given under the earlier Act for any person to bequeath to the Commissioners of Works any ancient monument to which that Act applies, and to the Commissioners of Works to accept any such bequest, if they think it expedient to do so. The ancient monuments to which the Act of 1882 applies are the monuments described in the schedule to that Act and any other monuments of a like character indicated from time to time by Order in Council. The monuments described in the schedule to the Act are such that it is impossible to include as monuments to which the Act applies any ruined buildings of historic or architectural interest. Inconvenience has arisen in practice as a consequence of this limitation, and to remedy this, the Bill extends the provisions of section 4 of the Act of 1882 to all monuments within the meaning of the Ancient Monuments Protection Act, 1900—that is to say, to any structures, erections, or monuments of historic or architectural interest, or any remains thereof.

* * *

The projected enlargement of the chancel of Puddletown Church, Dorsetshire, is the subject of a protest to "The Times" by Mr. Thackeray Turner, of the Society for the Protection of Ancient Buildings, which protest is supported by Sir Frederick Treves and Lady Dorothy Nevill. The church has been untouched since the 17th century, and possesses the high-backed pews, pulpit and clerk's desk, etc. The Dorset Natural History and Antiquarian Field Club have also passed a resolution of protest.

* * *

Mr. Ronald P. Jones has advised us of a slight error which occurred in our issue of the 23rd ult., which stated that to the sum of £50 given to the Liverpool University by Mr. Jones, for the purpose of a travelling scholarship, a further £5 had been added by the British School at Rome. The amount which has actually been given is £25, thus making a sum total of £75.

The ancient castle at Richmond, Yorkshire, has by arrangement between the Duke of Richmond and Gordon and the Commissioners of Works and Public Buildings, passed into the hands of the latter body. The Commissioners, in undertaking the care of the ruins, are exercising their powers under the Ancient Monuments Protection Act, 1882, and the amending Act of 1900. When the Commissioners have been constituted guardians of a monument they do not acquire the freehold, which remains vested in the owner, but it is their business to maintain the structure and to do all that is necessary for the purpose of repairing it or protecting it from decay and injury.

LIVERPOOL DEPARTMENT OF CIVIC DESIGN: MUNIFICENT DONATION.

A donation of nearly £100,000 is being offered by Mr. W. H. Lever to Liverpool University. In making this announcement last Saturday Mr. Lever stated that the option of purchasing the Blue Coat School in Liverpool rests with the University, and he would either pay the purchase-money (£24,000) or provide a similar amount for the erection of buildings adjoining the University to accommodate a Department of Civic Design and School of Architecture. He also promised to endow with £800 a year for ten years the Civic Design Department, as well as endowing two other departments, one with £800 a year and another with £200 a year.



NEW LOGGIA, SILVERLANDS, CHERTSEY. RONALD P. JONES, M.A., ARCHITECT.



VESTIBULE, SILVERLANDS, CHERTSEY. RONALD P. JONES. M.A., ARCHITECT.

The woodwork is in oak, elaborately carved and enriched. The ceiling is decorated with modelled plaster work. The flooring is carried out in Cipollino and white marble.

R.I.B.A.

A special general meeting was held on Monday, February 28th, 1910, Mr. A. W. S. Cross, M.A., Oxon., vice-president, in the chair.

The Chairman announced that the meeting was convened, pursuant to by-law 64, to elect the Royal Gold Medallist for the current year, and having moved in accordance with notice that Mr. Thomas Graham Jackson, R.A., be elected for the honour, it was unanimously resolved that, subject to His Majesty's gracious sanction the Royal Gold Medal for the promotion of architecture be awarded this year to Mr. Thomas Graham Jackson, R.A., for his executed works as an architect.

The ninth general meeting (business) of the session 1909-10 was held at the conclusion of the special general meeting above referred to.

The Hon. Secretary announced the decease of Edward Shewbrooks, Fellow, Osman Hamdhi Bey, Hon. Corresponding Member, and Alfred Burnell Burnell, Fellow.

The following candidates were elected by show of hands under by-law 9:—

As Fellows: T. D. Atkinson (Cambridge); P. E. Nobbs, M.A. (Montreal); A. N. Paterson (Glasgow). As Associates: J. C. Ainsworth, M.A. (Manchester); J. G. Allen; R. Atkinson; J. Auty (Morley); Q. M. Bluhm (St. Anne's-on-the-Sea); C. G. Boutcher; A. F. Bryan; G. H. Burstow (Brighton); R. T. Chapman (Bolton); S. E. B. Claypole; J. A. Davidson (Londonderry); C. W. Davis (Birmingham); H. A. Dickman (Nottingham); A. H. Douglas; P. I. Elton; E. Finn (Canterbury); W. Goodchild (Ipswich); L. R. Guthrie; C. E. Hanscomb; R. E. Hastewell (Northumberland); F. G. B. B. Hawkins; F. H. Heppel (Worcester); H. C. Hollis: W. C. Maxwell (Belfast); W. Milburn, jun. (Sunderland); A. H. Moberly, B.A.; R. W. Orme (St. Annes's-on-the-Sea); R. Orr; F. Osler; J. Page; W. J. Roberts, M.A.; G. H. Rowledge (Manchester); W. H. Sagar; H. H. Scott-Willey; G. M. Stone; C. Stonehouse (Bolton); F. G. Troup; V. Ware (Bournemouth); J. Woollatt (Nottingham); C. L. Wright. As Hon. Associate: A. Dunn (Bournemouth).

Consideration of the Revised Regulations for the Conduct of Architectural Competitions adjourned from the meeting of the 7th February having been resumed, the document was discussed and various suggestions for amendment were offered. Whereupon, on the motion of the Chairman, seconded by Mr. Frank Lishman [*A.*], it was resolved, that the revised Regulations for the Conduct of Architectural Competitions be referred back to the Competitions Committee, with a recommendation that they co-opt on to the committee provincial members and others interested in the subject.

THE ARCHITECTURAL ASSOCIATION.

The following is the "House List" proposed for the session 1910-11. The list will be discussed and voted upon at the next meeting. President: *Arthur Keen. Vice-Presidents: *Sir A. Brumwell Thomas, *Gerald C. Horsley. Ordinary members: C. C. Brewer, W. D. Cathcart, *F. Dare Clapham, F. C. Eden, *Horace Field, W. Curtis Green, *Herbert A. Hall, P. W. Lovell, *Percy May, *F. Winton Newman, H. Passmore, *C. Wontner Smith, J. H. Squire, W. J. Tapper, S. J. Tatchell, Stanley Towse. Hon. treasurer: *Henry Tanner. Hon. secretaries: *Edwin Gunn, *G. Leonard Elkington. Hon. librarian: T. W. Watkins. Hon. Editor "A.A. Journal": Allen Foxley.

*Member of present Council.

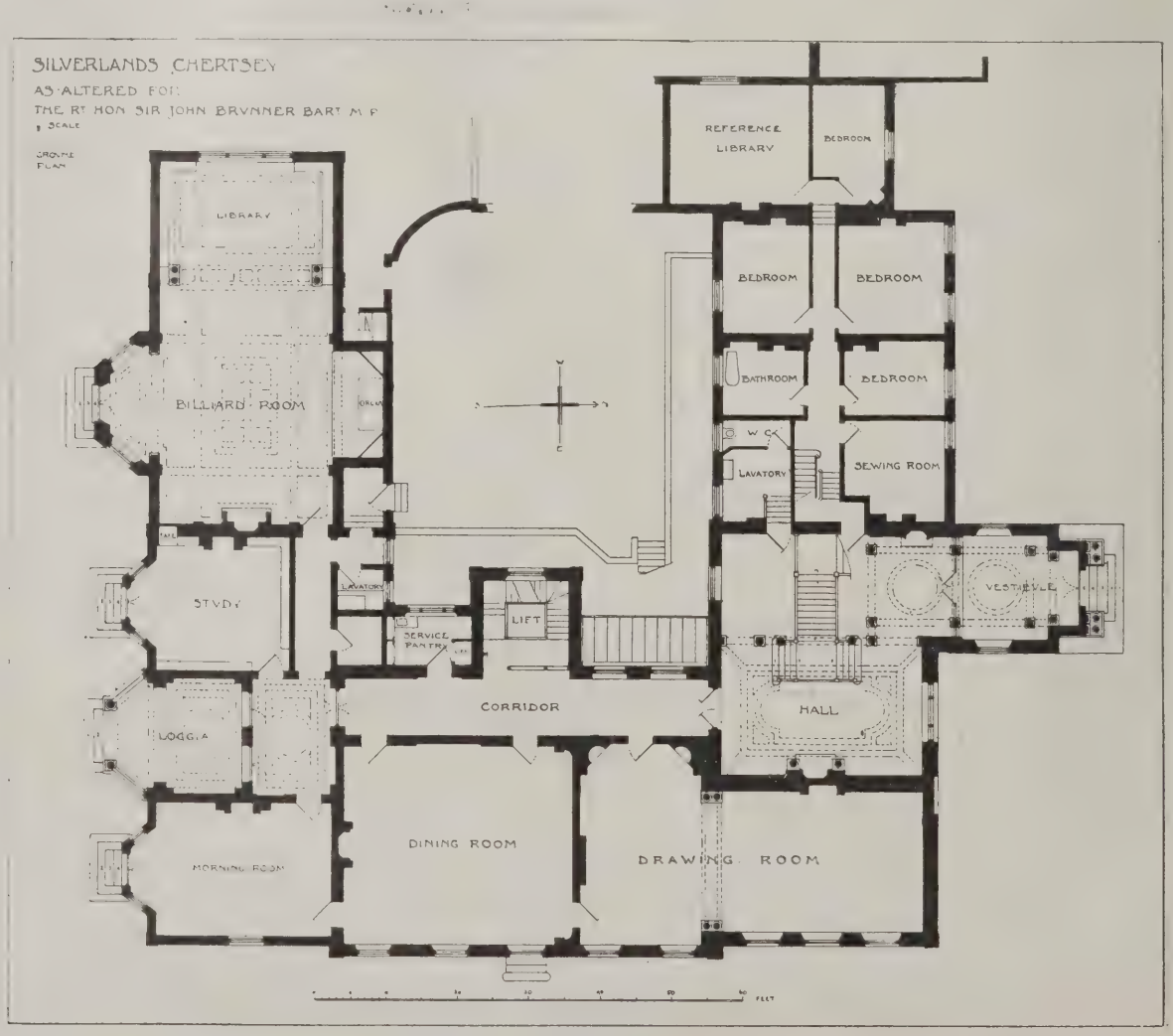
Our Plate.

Additions, etc., to Silverlands, Chertsey.

The additions and alterations to Silverlands, Chertsey, for the Rt. Hon. Sir John Brunner, Bart., M.P., consist of a new entrance porch and vestibule on the north side, an extension of the garden loggia, and the rebuilding and enlargement of the billiard room. Several small rooms were demolished to form a large entrance hall, rising through two floors, with a broad central staircase. New doors were provided in the dining room and corridors, and the interior of the loggia was panelled. In the billiard-room some of the old panelling had to be reused; its extension westward was fitted up as a library, and a case was provided for an organ.

All the interior woodwork is in oak, elaborately carved and enriched. Cipollino and white marble floors are used in the vestibule and loggia. The whole house was renovated inside and out. A complete new system of electric wiring, sanitation, and heating was installed. Fixed lavatory basins and hot towel-rails were fitted in each bedroom and dressing-room. An electric lift was placed in the well of the back stairs.

The architect was Mr. Ronald P. Jones, M.A., of 7, Stone Buildings, Lincoln's Inn; and the general contractor, J. A. Hunt, Hodesdon, Herts. Woodwork-carving by J. Aumonier. Stone, Bath Stone Firms. Plumbing and sanitary work, heating and ventilating, Matthew Hall and Co., London. Mosaic, marble and stone, marble-work mantelpieces, Farmer and Brindle, London. Plasterwork, G. Jackson and Son, London. Art metal work and door furniture, Birmingham Guild of Handicraft. Electric light fixtures, Veritys. Electric lifts, Waygood and Co., London.



RONALD P. JONES, M.A., ARCHITECT.



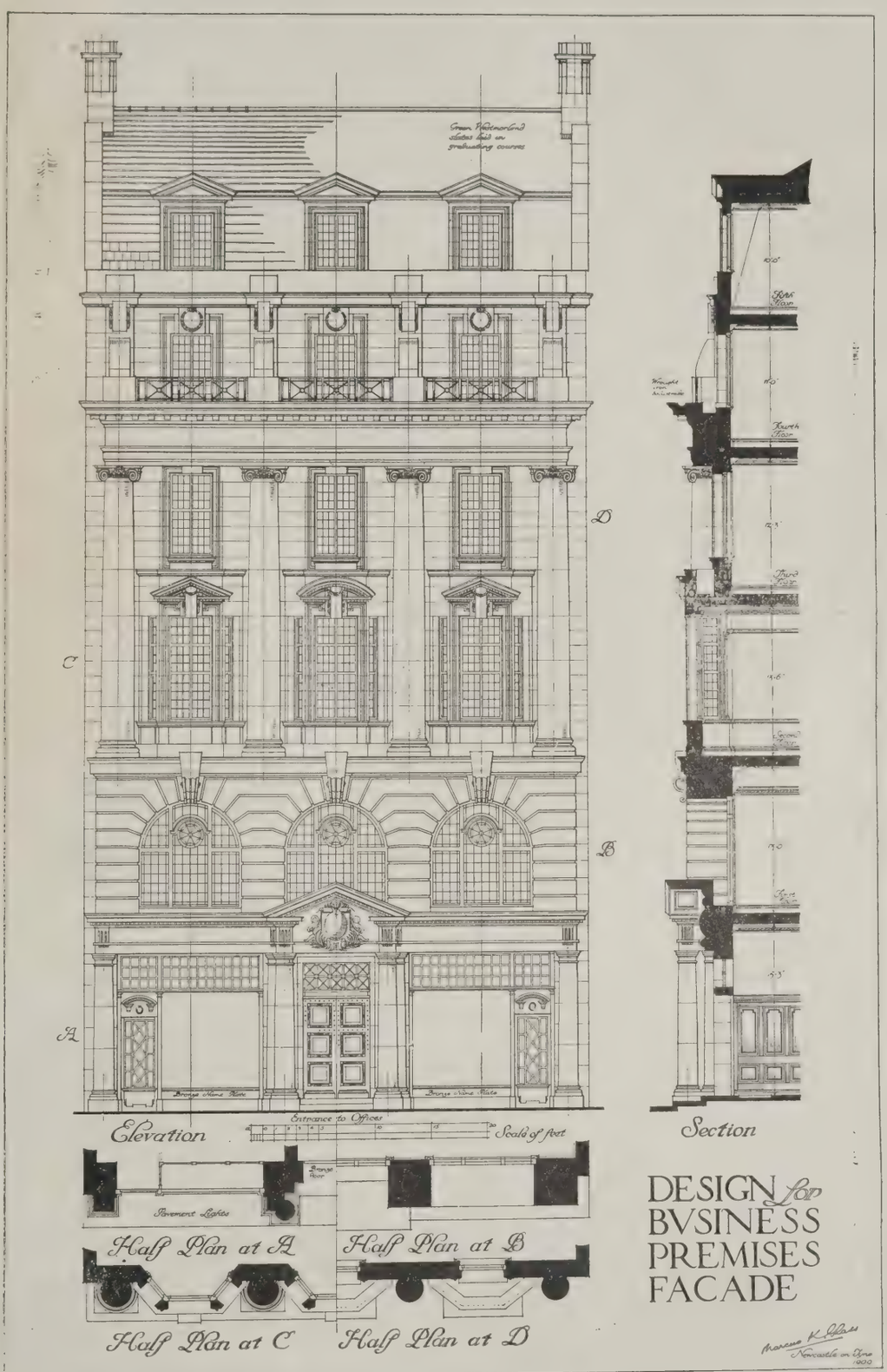


The Hall.



The Organ in the Billiard Room.

ADDITIONS TO SILVERLANDS, CHERTSEY. RONALD P. JONES, M.A., ARCHITECT.



This is a design by Mr. Marcus K. Glass, of Newcastle-on-Tyne, for a business premises façade, with the main offices floors suitable for an insurance company's offices, in a main thoroughfare on a site 45 ft. wide. Portland stone would be used for facing, and the roof covered with green Westmorland slates laid in graduating courses. The woodwork to the shops and first floor windows would be of teak, and the windows generally would have steel casements and leaded lights. The entrance doors and fanlight would be sheathed with bronze.

THE LIFE AND WORK OF WILLIAM BUTTERFIELD,*

By E. Swinfen Harris, F.R.I.B.A.

William Butterfield, F.S.A. was born in Gordon Square, London, on the 7th of September, 1814; he departed this life on Friday, the 23rd of February, 1900, at his residence, 42, Bedford Square; he was buried on the Friday following, 2nd of March.

Some of his best architectural efforts have been already well described, illustrated, and criticised in an admirably written article which appeared in the "Architectural Review" for June and July, 1900; an excellent and life-like portrait is given with the letterpress of the memoir, over which Mr. Halsey Ricardo has, in his thoughtful critique, in no one particular spared himself.

It has been my great good fortune not only to see and handle very many of his carefully made drawings, so full of the results of deep thinking as they one and all are, but also to visit and carefully examine the following buildings of his.

All Saints' Church, Clergy House, Choir School, and the Parochial Schools in Margaret Street.—Mr. Ricardo has summed up the salient points, but it may be of some interest to you to know that his designs and drawings for this church were on view in the first Great Exhibition of 1851.

The School Chapel, School Buildings, Gymnasium, Racquet Court and Fives Courts—Rugby School.—The way in which the many difficulties as to the chapel in so limited an area were overcome is a great sign of his patience, which must have been tried by the insistence on the retention of many of the hallowed if incongruous features.

The rebuilding of Saint Andrew's Parish Church, Rugby.—Here, too, he was seriously hampered in having to incorporate an old tower with his new work. The retention, too, of the old nave as an aisle is a very clever piece of work; the two hagioscopes recall his earlier sympathy with old methods, specially when, as here, they could be made subservient to his needs.

The Church and Clergy House of St. Alban the Martyr, Brooke Street, Holborn, 1861-2.—A noble, dignified, and well-arranged church; its west end specially reveals the work of a master mind, embodying great height and scale.

Balliol Chapel, Oxford, is a fine piece of design.

Saint Matthias, Stoke Newington, 1851-3, an early work, full of quiet grace and dignity. The ritual arrangements here, as elsewhere, are admirable.

Keble College Chapel, Dining Hall, etc.—The chapel, containing among its treasures Holman Hunt's "Light of the World," besides its importance as a vaulted structure, has the congregation placed parochially; good proportion as here shown is as necessary to success as is that of mere loftiness.

St. Ninian's Cathedral, Perth, N.B., 1851 (since completed by the late J. L. Pearson, R.A.).

Fulham Palace Chapel (1860-67).

Works in the Church of Ottery St. Mary, Devon, and the new house of Lord Coleridge, "Heaths Court," hard by it.

A Parsonage House in Burleigh Street, Strand.—The plan, in a confined area, is very clever.

All Saints', Babbacombe.—A church glowing with the marbles of the beautiful county in which it is placed.

Buildings in Winchester and St. Cross.

A New Church at Newbury.—A thoughtful and interesting piece of work. Of some of the stained glass noticed when I visited it perhaps the less said the better.

Chapel for St. John's College, Battersea, and New Parochial Schools there.—These you probably know—so I leave them for others to criticise. The chapel has been recently dealt with by my old friend and pupil, Mr. A. H. Ryan Tenison.

St. Augustine's Church, Queen's Gate (1871). In this church as in that of St. Andrew's, Rugby (in the walls), both works of his later years, he evolved what, for want of a better term, may be called the open stone rood, by cutting off the apex above the chancel arch, and raising the rood on high over and upon its horizontal line. Whether it will have an abiding influence remains to be seen.

The old Home and Chapel of the S.P.G. (1871), since rebuilt on another site hard by from the designs of Sir William Emerson, showed some of his quaint and most original dealing with brick patterning.

Melbourne Cathedral (1884).

St. Augustine's College, Canterbury (for the late Mr. Beresford Hope).

Ascot Priory Church.—This was done about 1865.

Churches at Belfast, at Enfield, Studley (Oxon), Bexhill, Isle of Cumbrae, together with very many others, as well as houses and schools all over the country.

S. Clement's, City Road (1882).

His masterly care in the design and arrangement of tile pavements, and specially as to the right place for a peculiarly beautiful blue-grey tile of his, greatly exercised him; not content with this, his formulæ for their laying, and retention in a cleanly state when laid, appears in a somewhat lengthy document well worth perusing; it shows his great thoroughness.

His mouldings usually are simple in section but very telling in effect, and show his great gift of self-restraint and an entire freedom from fussiness; perhaps some of us might think the charm of a little more variety might have been better, but that was not his way.

His loyalty to, and love of, the English square end once led him, when at Norwich, playfully to describe the great apse of its cathedral as "a piece of Norman extravagance!" Rugby Chapel, a case of necessity, is the only apsidal end of his of which I am aware. His love of the blue known as "cerulean" was often gratified in the decoration of his woodwork. His beautiful ridge-crestings, after all that has recently been said in favour of the half-round ridge, were but a survival or revival of old methods. Possessed as he was of the "single eye," there was nothing trivial, flighty, evanescent, or fashionable about his work; his natural reverence of mind and high sense of responsibility and duty, as he understood it, prevented this.

He objected to the term "organ chamber," preferring "organ room," and he preferred "nimbuses" to the more usual "nimbi."

That there was a certain lack of repose in some of his later works many of his staunch admirers will be unable to deny; generosity in his patrons may have contributed to it, proving that "the lean hound hunts the best."

His many designs in "Instrumenta Ecclesiastica" show great refinement, restraint, and originality. His great love of constructional colour only wants "the kindly hand of Time" to sober it into perfect beauty; may at least some of his works be left intact to receive it!

The Man.

So little that is known of his character as a man as I have, after some effort, been able to get together, must be the sole apology I can offer for writing a comparatively brief paper when I had fully hoped to be able to prepare a much longer one with which to test your forbearance.

His familiar figure was fairly well known when walking out for a visit to his club, the "Athenæum," to get his "dish of tea," and perhaps to hold conversation with those persons there whose privilege it was to know him, or to write occasional letters on various church matters, in which his trenchant and caustic humour found a congenial outlet.

He not only wrote long and very scholarly letters, but every sentence and every word of them had its due place, weight, and measure most exactly proportioned. In courteous terms few could hit harder, or in more knightly fashion, those delinquents, be they who they might, whose faults and failings he deemed it to be his duty to hit. That word "duty" was to him in all ways and at all times a masterful monitor who would put up with no shuffling and tolerate no form of weakness that could be cured or averted.

Excellent letters of his on theological subjects have appeared from time to time in the Church papers signed "A Churchman."

It may, perhaps, seem somewhat out of place here to say much as to his deeply religious life, and yet how still more feeble than they are would be my remarks, or indeed those of anyone else, were all mention of it to be omitted.

That he came so little out of his shell was a distinct loss to his professional brethren, but he could not change his nature, and probably never attempted to do so. No better illustration of his hermit-like life and his retiring habits can perhaps be recalled than the fact of his non-appearance to receive in person the gold medal given by the late Queen Victoria to the nominee, as he was, of the Royal Institute of British Architects (for the reception of which many of us would cheerfully walk a long way barefoot), on the plea that it would be "contrary to the habit of his whole life.

Very few of the so-called practical men ever took more pains than did Mr. Butterfield to prevent chimneys from the chance of smoking.

His loyalty towards good builders, when found worthy after experience of them, showed his keen sense of justice; his firmness in rejecting bad material soon revealed him to the slippery ones who had made experiments with him, as a man who would in no way allow himself to be trifled with. One of the former kind who built a house for me was so loyal to all his ways and habits that, though I was delighted to find such a rare form of virtue, I confess it became at times somewhat of a trial of patience to myself.

A frequent remark of his was "Are you quite sure of your measurements?" And yet another: "People will abuse me because I will use brick!" This latter was certainly made by one who well knew how to use it; his strong sense of the value of "texture" was very real, years before it became a popular word with us of to-day. There was little sympathy shown by him in the use of any art-cant, his method being rather to be art, than to talk about it.

A frequent reply to questions in conversation was "with a view to what?" As was another, used during his works, towards adverse criticism, oftentimes as unreasonable as illogical: "Mr. ——, I have a conscience!"

His remarks on "Church seats and kneeling boards," excellent in many ways, are somewhat marred by a too dogmatic spirit, avoiding deliberately, as they do, all elasticity or compromise to suit them to the possibility of adaptation to varying positions or circumstances.

In his later years he drew but little with his own hand (though few of his brethren had probably drawn in their time more than he). He spent very much thought and care in criticising and amending the work of his staff, his then idea being that it was a "waste of effort" to do otherwise.

It is perhaps to be regretted greatly, even from an archæological point of view, that the countless measured drawings of old work made by him (very much of which it is to be feared is now no longer in existence), have not descended to us for careful preservation, or, better, for opportunities of study, and perhaps of fruitful inspiration.

The Friend.

Grave and unsympathetic as he was supposed to have been to and by many, he was by nature one of the kindliest and most hospitable of men to those few who had the good fortune to possess his friendship; such always prized it.

Among the architects of the Victorian age alone, what a wide field for study and observation might be evolved by any earnest young student among us as to their varied and various methods of producing their effective characteristics in their several works!

*Summary of a lecture delivered before the Architectural Association on Friday, February 18th.

For instance, if we compare those of William Butterfield and William Burges we shall find in those of the former a simple directness of aim produced by the use of ordinary materials trained and used for a definite effect, while the other puts up huge stones for the sculptor to do his bidding by liberating from them, as it were, the racy figures full of humour, of forms, both human and animal, sacred and profane, hidden within them, full as they are of exhaustive (and possibly exhausting) studies from Greek and mediæval lore. So varied are the motives at work in various brains! As restorers or preservers of old work we shall do well to act on the wording on the tomb of another great architect of the same era (J. L. Pearson) "Sustinuit et Abstinuit."

Let us (when we can do so with a clear conscience) try and speak kindly of one another's work.

It is a good and hopeful sign that we are now so keen in our wish to know more of the ways, characters, and personalities of the men themselves, as well as of their works, far more than has hitherto been cared about; like the pleasant re-unions of the R.I.B.A., unknown in old days, this cannot but be helpful to us. The more we know of each other the better for the progressive influence of our art; nor is it at all inimical to that friendly rivalry which should lead us on to greater excellence.

We architects are not a wealthy body, and the exception does but prove the rule; may be, our epitaphs will resemble the last words of a divine: "I die, as a Bishop should, without money"—may we also resemble that Bishop in the latter half of the sentence too —"and without debts!"

Discussion.

Mr. G. Fellowes Prynne, in proposing the vote of thanks, said that Mr. Harris, being a friend of long standing and an enthusiastic architect and art lover, it afforded him (Mr. Prynne) the greatest possible pleasure to perform that duty. These essays upon the past leaders of the profession were of enormous value to students; and this particular instance dealt with a man of strong feeling and definite originality. In admiring the work of these past masters, one was only too apt to become blind to its faults. He counselled kindly criticism of their professional brethren; for the disparaging remarks so very frequently heard were of doubtful value to the cause of architecture.

In many instances, work that had been severely criticised by contemporary judges had afterwards been greatly admired. The man who criticised with bitterness was not qualified to criticise. Nothing was better than fair criticism, which became of inestimable value in after life. He did protest, however, against the superficial trash called criticism. He remembered the Dean of —— (the name he was unable to recall) saying that Butterfield was the Fra Angelico of the age, thus putting him upon a pedestal so high as to threaten a fall. Butterfield had been regarded as a god in art, but many of his restorations failed to prove his right to such a position. He was, perhaps, not so much a restorer as an originator. His (Mr. Prynne's) first introduction to Butterfield took place while visiting at the house of a friend. An old gentleman who was lying on a sofa asked him how he liked a church that Butterfield had recently restored. He (Mr. Prynne) replied that it was not a restoration, but pure Butterfeld. The old gentleman was Butterfield; and it was perhaps not very remarkable that he afterwards became somewhat cold and off-handed. Mr. Prynne then commented upon the coincidence of the appearance in one week of two papers exactly alike in character. He then drew a comparison between Bodley and Butterfield, who, he said, in common with all old architects, had studied ancient work, but still retained a strong individuality of his own.

Mr. H. H. Statham, in seconding the vote of thanks, observed that the illustrations noticed on the wall, representing what might be called Butterfield's conservative attitude, were distinctly interesting to him as one who remembered the time of the Gothic revival. That passion for Gothic had now passed with himself, but the church of All Saints', Margaret Street, possessed an originality which kept it alive still. The treatment of the whole church, especially of the courtyard, was wonderfully enjoyable.

Butterfield was certainly a man influenced by the Gothic revival, but expressing it in his own style. The church of St. Cross, to which he (Butterfield) had added nothing but colour, he thought somewhat overdone.

Mr. F. R. Farrow supported, and remarked that, although Butterfield was a man naturally of a retiring disposition, he took a keen interest in the work of the Architectural Association. While he (the speaker) was delivering a series of class lectures there, he had received a letter from Butterfield pointing out very clearly the best method of laying tiles on roofs; and this, he thought, proved that Butterfield must have read the Brown Book, and must have taken unusual interest in the instruction given to students. As had been remarked, they had had two lectures on Victorian architects in one week Both had expressed their individualities in their work. The men of the nineteenth century were unquestionably ardent students of old work. Although Butterfield differed in many respects from Bodley or Street, his work was well worthy of study by present-day students.

Mr. Walter Millard said that he had never known Butterfield, and had only seen his work from the outside. He would like to know what right anyone had to judge buildings before they had been thoroughly and carefully examined, in both plan and section, and due regard had been paid to the conditions under which they had been built. Butterfield, it was certain, did master his problems. Buildings nowadays were invariably illustrated by photographs, which told the enquiring architect nothing that he wanted to know. The diaper brickwork to which Mr. Harris had referred was never in accord with the gable simply because Butterfield desired it so.

The bricklayer set the pitch to which the carpenters worked, and he had known instances of this in Mansard roofs, which the bricklayers set by means of "headers." He believed that Butterfield's work would live, because it represented the spirit of the time, and was no mere copyism.

Mr. Arthur Keen, who also supported the vote, reminded the gathering that this essay on Butterfield was the outcome of a suggestion he had made some time ago. He then read a letter from Mr. Halsey Ricardo, regretting his inability to attend the meeting. Butterfeld's buildings, he continued, were invari-



CHELTENHAM COLLEGE, NEW JUNIOR DEPARTMENT. WALLER AND SON, ARCHITECTS.

The new building is treated, externally, very simply, relying on the outline of the mass, rather than elaboration and detail of effect. The facings are of red brick, with quoins of a darker red, stone dressings sparingly introduced, and green Delabole slate roofs.

ably beautifully judged, well composed, and, for the time they had been in existence, had stood remarkably well. Mr. Theodore Fife made a few remarks, paying a eulogistic tribute to All Saints', Margaret Street.

Mr. Henry Tanner observed that it was not often they managed to get one of the older members to read a paper. However, when they did, it was heartily appreciated. Although not an admirer of the Gothic revival, he could not help thinking that much was in the "grand manner" (a phrase, he knew, usually associated with classic), of its type.

Mr. Harris then replied.

THE LONDON MASTER BUILDERS' ASSOCIATION.

A special general meeting of the London Master Builders' Association was held on Monday, February 28th last, when the proposed code of new rules was submitted, pursuant to the old Rule XXII., and the following resolution was adopted:—"That the existing rules be and the same are hereby rescinded, and that the rules set forth in the printed document submitted to the meeting, and, for the purpose of identification, subscribed by the chairman, be and are hereby adopted as the rules of the association from this, the 28th day of February, 1910."

The 38th annual general meeting was held on the same day as above, when the minutes of the last annual general meeting, the audited accounts, and the report of the Council for the year were adopted.

Officers Elected for the Current Year.

President: Mr. Leonard Horner (Messrs. Ashby and Horner).

Senior Vice-President: Mr. G. Bird Godson (Messrs. G. Godson and Sons).

Junior Vice-President: Mr. Jas. S. Holliday (Messrs. Holliday and Greenwood, Ltd.).

Treasurer: Mr. Walter Lawrence, jun. (Messrs. Walter Lawrence and Son).

New members were elected to fill vacancies on the Council, which now consists of:—

Past Presidents: Messrs. F. J. Dove, H. H. Bartlett, J. Howard Colls, T. F. Rider, Frank May, J.P., Joseph Randall, T. Gregory, J.P., Charles Wall, Wm. F. King, Ernest J. Brown, J. Carmichael, J.P., Fredk. Higgs, Col. G. Howard Trollope, V.D., Henry Holloway, J.P., Wm. Shepherd, B. I. Greenwood, J. W. Lorden, F. L. Dove, L.C.C., Wm. Lawrance, and F. G. Rice.

Elected Members: Messrs. G. Appleton, H. Arthur Bartlett, S. B. Depree, A. B. Falkner, J. Garrett, B. J. Grover, W. Hammond, H. W. Horner, E. J. Hill, A. C. W. Johnson, C. F. Kearley, H. A. Knight, J.P., F. Lown, F. M. May, F. G. Minter, G. Neal, G. H. Parker, Jas. F. Parker, F. P. Rider, C. C. Trollope, A. W. Turnbull, Henry Wall, W. F. Wallis, J.P., Howell J. Williams, J.P.

Hon. Auditor: Mr. A. Killby (Messrs. Killby and Gayford, Ltd.).

A very hearty vote of thanks was given to the retiring President (Mr. F. G. Rice) for the ability, tact, and energy he had displayed during the year of his presidency.

An interesting address was given by Mr. W. Cohen, Divisional Officer of the Labour Exchanges, upon the scheme and working of Labour Exchanges, and he attached much importance to the sympathy and co-operation of employers in furtherance of the movement.

A special Council meeting was held on March 3rd, when the new rules were ordered to be printed together with the pamphlet and circulated among the members.

References to the proceedings of the annual general meetings were submitted.

A long discussion took place on the questions: (1) Tendering in competition where no quantities are supplied; (2) tendering where the conditions of contract imposed are of an unusual or extraordinary nature.

The Council then proceeded to make election of members on the various committees and Conciliation Boards, also representatives on the:

National Federation Executive Council: Messrs. S. Horner, S. B. Depree, F. L. Dove, G. B. Godson, T. Gregory, B. J. Grover, J. W. Lorden, F. M. May, F. G. Rice, and A. W. Turnbull.

National Federation Administrative Committee: Messrs. B. I. Greenwood and W. Shepherd.

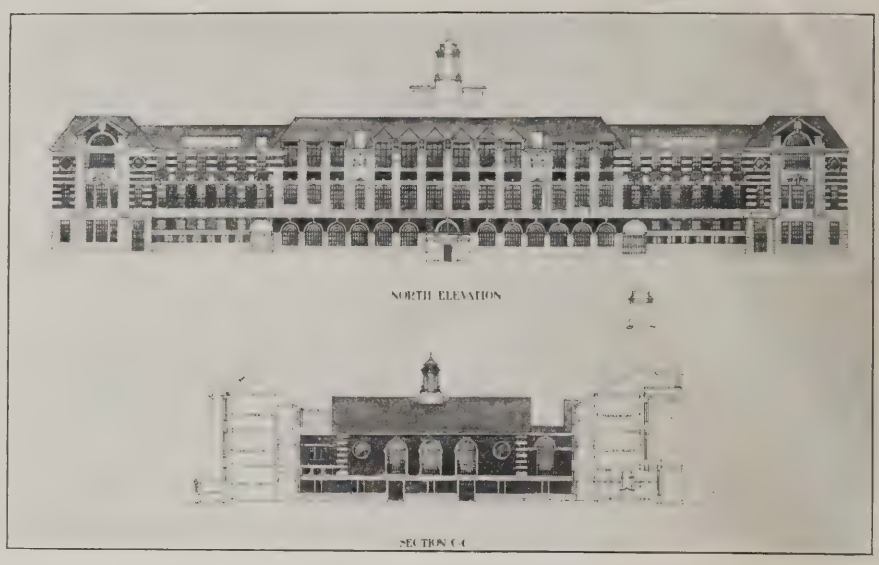
Employers' Parliamentary Council: Mr. B. I. Greenwood.

The question of members being allowed to start at an earlier hour than that set out in the Working Rule Agreements was considered.

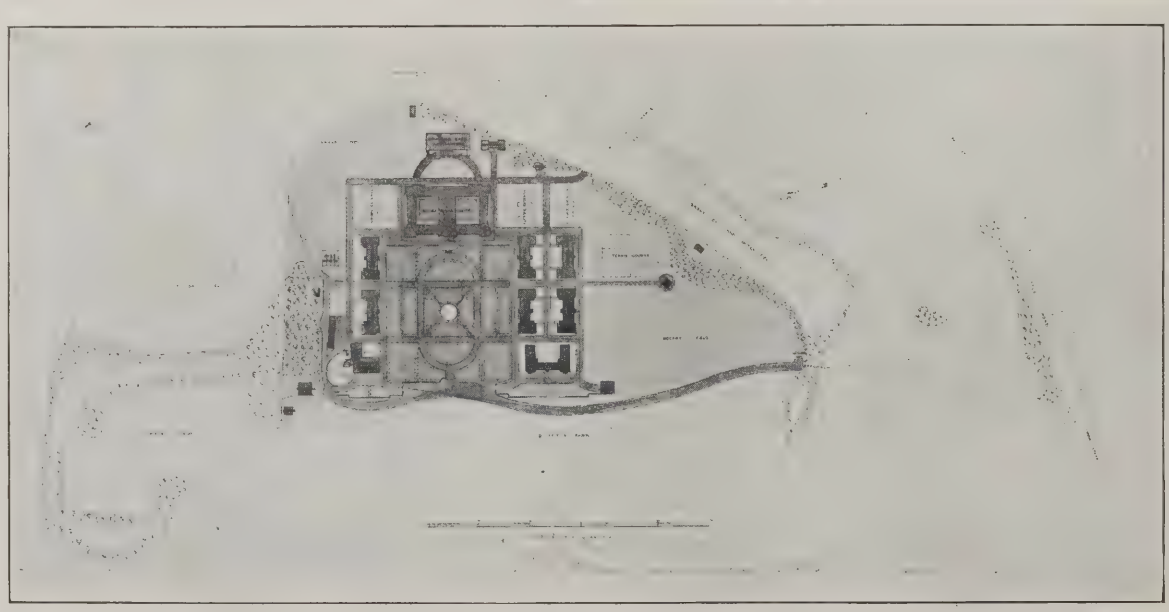
Copies of the hand-book were reported to have been sent to members of the R.I.B.A. and quantity surveyors practising in London.

Much correspondence on trade matters was read and discussed, and new members were elected.

Regulations with regard to applications under Part III. of the L.C.C. (General Powers) Act, 1908, recommended by the Building Act Committee of the L.C.C. together with the proposed charges to be made by the Port of London on lighterage were referred to the Emergency Committee for consideration and report.



CITY OF LEEDS TRAINING COLLEGE AT FAR HEADINGLEY. DESIGN SUBMITTED BY PERCY ROBINSON, F.R.I.B.A., AND E. ALBAN JONES.



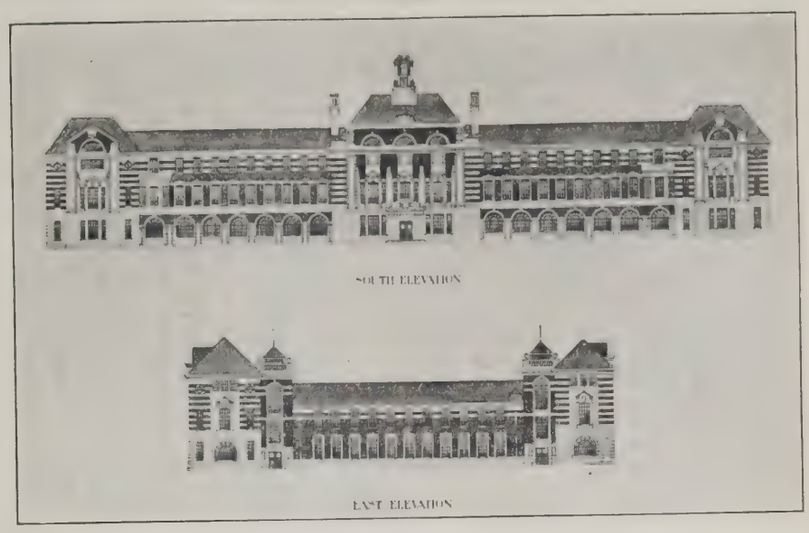
CITY OF LEEDS TRAINING COLLEGE AT FAR HEADINGLEY. BLOCK PLAN OF DESIGN SUBMITTED BY PERCY ROBINSON, F.R.I.B.A., AND E. ALBAN JONES.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Mar. 21.	PARISH COUNCIL OFFICES, BLAWARTHILL. Architects are invited to send in plans and estimates of the probable cost of Offices to be erected for the Renfrew Parish Council at Blawarthill, Roker Road, near Scotstoun West Station. A sketch of the Site and other particulars can be had from the Clerk to the Council at 1, Manse Street, Renfrew, on payment of a fee of ten shillings, which will be refunded on receipt of a bona-fide set of plans, on or before 21st March. *No Premium will be paid to Competitors, and the Council does not bind itself to accept any plan sent in.*
Mar. 31.	SHEFFIELD ENDCLIFFE PARK CHURCH. Plans desired for Church for 650, Institute for 150, Primary Department for 125, Junior Department for 95, and Caretaker's Apartments. Premium, not merged in commission, £35. Assessor, Chas. Hadfield, Esq., F.R.I.B.A., Delivery on March 31. On receipt of 5s. the Secretary, J. W. Nicholls, 64, Everton Road, Brocco Bank, Sheffield, will furnish conditions and instructions with plan of site, showing existing buildings, levels, and drainage—these not returnable. Deposit returned only to those who send plans.
Mar. 31	MUNICIPAL OFFICES, KARACHI. The Municipality offer a premium of 7,500 rupees (£500) for the best design, detailed plans and estimates for new Municipal Offices. Cost not to exceed 500,000 rupees, and the style of architecture is left open to the designers. Ferrotype plans of the site and a general arrangement of the floors of the building showing the accommodation to be provided, together with a copy of instructions to architects, will be supplied to intending competitors on application to the Chief Officer and Chief Engineer, Karachi Municipality. A charge of Rs. 5 will be made therefor, which will not be refunded. Each set of drawings must be sent in anonymously, but accompanied by a sealed envelope containing the author's name and address. Each set of drawings and all the documents required, including the sealed envelope, must be securely packed in a wooden box, addressed as follows:—The Chief Officer and Chief Engineer, Karachi Municipality, Karachi, India, and forwarded, at the competitor's own risk and charges, in time to reach the Chief Officer on or before the 31st day of May, 1910. It is proposed to apply to Government for permission for one of the chief architects to act as assessor to decide on the design to which the prize shall be awarded. The final decision of the assessor will be final and not open to dispute. The decision of the Municipality will be made within three months of the latest date for submission of designs, and payment of one-half of the premium will be made thereafter to the author of the selected design, the balance to be paid when the further details specified in the instructions to architects have been supplied. On payment of the premium the Municipality will have all rights in the design, with power to erect the building under its own agency, either according to the design selected or with such additions or alterations as it may deem necessary.
No Date.	COVENTRY NEW PUBLIC ELEMENTARY SCHOOL. ENLARGEMENT OF STOKE COUNCIL SCHOOL. The Education Committee invite competitive sketch plans for a proposed New Public Elementary School in Centaur Road, and a proposed enlargement of Stoke Council School. The competition in each case is strictly limited to architects practising in the City of Coventry. Particulars of the competition may be obtained by any architect wishing to compete, on application at the Education Offices, Priory Row.
No date.	ELEMENTARY SCHOOL, BLOXWICH, for the County Borough of Walsall Education Committee. Designs are invited for the erection of a Public Elementary School (mixed) to accommodate 500 children, at Bloxwich. Conditions of competition and plan of site from W. Dawson Sadler, M.A., Director of Education, Council House, Walsall.
No date.	*SECONDARY SCHOOL AT PETERBOROUGH, for Soke of Peterborough Education Authority, to accommodate 250 scholars, but allowing for enlargement so as to accommodate 300 scholars. Particulars of the general instructions and conditions, together with a plan of the site, may be obtained on application to Walter J. Deacon, Clerk to the Authority, Cross Street, Peterborough. **We have received a letter from a correspondent saying that having applied for the particulars, these have been refused on the ground that a sufficiently large number had already been issued.*



SOUTH ELEVATION

EAST ELEVATION

CITY OF LEEDS TRAINING COLLEGE, FARR HEADINGLEY.
DESIGN SUBMITTED BY PERCY ROBINSON, F.R.I.B.A., AND E. ALBAN JONES.

Macclesfield Elementary School.

The plans of Messrs. Whittaker and Bradburn, of Macclesfield, have been accepted by the Eduation Committee. These were submitted in competition with three other designs. The plans and reports were referred for consideration to the assessor, Mr. A. R. Wood, architect to the Tunstall and Burslem Education Authorities, whose report was unanimously adopted. The school will give accommodation for 760 in a mixed department, and 300 infants in a separate department.

The Blackley Estate, Manchester.

The Blackley Estate Special Committee of the Manchester Corporation has lately been considering the question of obtaining competitive designs for the laying out of the estate, and it has now been decided to invite architects and others to submit plans, specifications, and estimates. A premium of £150 will be paid by the Corporation for the best plan, £100 for the second, and £50 for the third. The selection will be made by an assessor appointed by the committee. Sketch plans of cottages suggested are to be sent with the general plan of the laying out of the estate. Cottages in the main are to be semi-detached, with a view to avoiding the formation of back streets, and there must not be more than 20 cottages per acre of land. Every cottage must have a bath, some two, and some three bedrooms. A recreation ground, bowling green, tennis courts, and children's playgrounds are to be provided, and the sites indicated for schools, library, reading-rooms, clubs, churches, and chapels.

Belfast University New Buildings.

The Senate has decided to organise a competition open to architects in the United Kingdom for the following new buildings:—(a) A new science block for the accommodation of the departments of physics, botany, zoology, and geology, £22,500; (b) an extension of the existing medical buildings, £8,500; (c) an extension of students' union buildings, £3,000. Sir Aston Webb, R.A., F.R.I.B.A., will act as assessor. The author of the design placed first will be appointed architect, and premiums of £150 and £100 will be awarded to the second and third designs.

Girls' High School, Saltburn.

Messrs. Russell and Cooper's design has been chosen for the girls' high school which the North Riding Education Committee are about to erect at Saltburn. Twenty guineas premium was given to Messrs. F. J. Erdle and Meyers, of London Bridge Railway Approach, and a premium of ten guineas to Messrs. R. Evans and Son, of Eldon Chambers, Nottingham.

SHEFFIELD MASTER BUILDERS' ASSOCIATION.

The monthly meeting followed immediately after the annual meeting, on February 10th, with Mr. W. Longden in the chair.

A report was given of the last meeting of the Conciliation Board which had again spent considerable time in trying to adjust with the operatives the question of walking time, which the association had given notice to abolish. A resolution was proposed by the operatives that the wages of all joiners and bricklayers be advanced ¼d. per hour, this to constitute a settlement of all questions, but this the employers' section of the Board could obviously not accept as it would increase the wages of all joiners, whereas the previous walking time was not applicable in 10 per cent. of jobs. As an amendment the employers' section moved that their previous resolutions in regard to jobs over 2½ miles from the Parish Church and also over 4 miles become the rule. The voting resulted in a tie, as it did also on a further resolution from the operatives to the effect that 1s. per week be allowed for car fares on all jobs beyond the 2½ miles' radius up to 4 miles, the rule to apply to all men whether set on on the job or sent from the contractors' yard, and the matter was then sent as an appeal from both sides to the Northern Centre Conciliation Board, which sat at Leeds on February 21st. The case for the employers was put by Mr. A. J. Forsdike and the secretary; Mr. T. Roper and Mr. Wm. Longden also being present as witnesses, while Mr. J. Biggin had a seat on the Board. For the operatives the case was stated by Messrs. W. Lane and J. T. Welburn on behalf of the joiners, and by Messrs. J. Emerson and F. Limage on behalf of the bricklayers. After considerable discussion, the following was given as the decision of the Board:—

(*a*) Boundary and Walking Time.—The boundary in Sheffield shall be taken at 2½ miles from the Parish Church in any direction, beyond which 1s. per week shall be paid up to and including 4 miles. This rule to apply to men sent from the shop and not to men engaged and paid on the job.

(*b*) Country Work.—All men sent out on country jobs shall have their travelling expenses and time paid going and returning if discharged or sent back to the shop, and three shillings per week for lodgings. Any allowance beyond this to be by special arrangement.

(*c*) Joiners' Overtime.—This rule shall be amended to read as follows: "The first two hours shall be computed at time and a quarter. If required to work beyond that time the men shall be paid time and a half, also time and a half from Saturday afternoon at 1 o'clock until 5 p.m., and from 5 o'clock on Saturday afternoon until 7 o'clock on Monday morning, double time: the same allowance for meals as in ordinary time. Christmas day to be paid for as Sunday.

(*d*) Bricklayers' Notice.—That one hour's notice shall be given to either employer or employee on leaving, the same to expire at 12 o'clock noon, or at the end of the day's work.

With the exception of the clause in regard to joiners' overtime, the decision is in exact agreement with the contention of the association, and it is satisfactory that after the matter has been discussed for 12 months, the Association has got all it asked for.—THOS. SMITH, secretary.

Coming Events.

Wednesday, March 9.

CARPENTERS' HALL LECTURES.—Mr. Halsey Ricardo on "The Use of Coloured Materials in Building," 7.30 p.m.

MANCHESTER SOCIETY OF ARCHITECTS.—Special General Meeting: 6.30 p.m., Exhibition of Students' Drawings and Distribution of Prizes.

NORTHERN ARCHITECTURAL ASSOCIATION.—Opening of the R.I.B.A. Exhibition of Prize Drawings. Business meeting, 7.30 p.m. Annual meeting of Students' Classes Club and Students' Sketching Club, 8 p.m.

ROYAL SANITARY INSTITUTE.—Mr. E. J. Steegmann on "Elementary Science," 7 p.m

EDINBURGH ARCHITECTURAL ASSOCIATION.—Professor W. E. F. Britten on "Decoration," 8 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Students' visit to the Mitchell Motor Company's Works, Wardour Street, Soho, W.

Thursday, March 10.

R.I.B.A.—Science Committee meets.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Students' evening.

SHEFFIELD MASTER BUILDERS' ASSOCIATION.—Monthly Meeting, Builders' Exchange, Sheffield, 8 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—Mr. Miles Walker, (a.) "Short Circuiting of Large Electric Generators and the Resulting Forces on Armature Windings." (b.) "The Design of Turbo Field Magnets for A.C. Generators, with Special Reference to Large Units at High Speeds," 8 p.m.

PAINT AND VARNISH SOCIETY, St. Bride's Institute, Bride Lane, Fleet Street, E.C., 8 p.m. Mr. J. C. McIntosh, "The Manufacture of Iron Pigments."

Friday, March 11.

ARCHITECTURAL ASSOCIATION DEBATING SOCIETY.—"The Story of the Crafts in Relation to the Practice of Architecture," Mr. A. R. Jemmett, F.R.I.B.A. (joint meeting with the Art Workers' Guild), 7 p.m.

ROYAL SANITARY INSTITUTE.—Mr. W. C. Tyndale on "Calculations, Measurements, and Plans, and Sections," 7 p.m.

Provincial Sessional Meeting, Newcastle-on-Tyne, Town Hall, Newcastle, Dr. H. Kerr, on "Sanitary Administration, with special reference to legislation, past and recent."

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS (Southampton Row).—Mr. Allan S. Cole, C.B., 1st Lecture on "Some Ancient Textile Patterns," 6 p.m.

Saturday, March 12.

R.I.B.A.—Last day for receiving applications for election at the meeting on June 6th.

ROYAL SANITARY INSTITUTE.—Provincial Sessional meeting, Newcastle-on-Tyne. Visits to Corporation tenements, Model Cottage Exhibition, Infectious Diseases Hospital, and to Sewage Works.

ST. BARTHOLOMEW-THE-GREAT, WEST SMITHFIELD, LONDON.—Lecture on History and Architecture of the Church, 2.30 p.m. Organ recital, 2 p.m. Collection for Restoration Debt Fund.

Monday, March 14.

THE SURVEYORS' INSTITUTION.—The Professional Associate examination commences.

ROYAL SANITARY INSTITUTE.—Professor Henry Adams on "Building Materials," 7 p.m.

R.I.B.A.—Mr. A. A. Hudson on "The Business side of Architecture," 8 p.m.

ROYAL SOCIETY OF ARTS (Cantor Lectures).—Mr. Lawrence Weaver's second lecture on "Lead Work," 8 p.m.

Tuesday, March 15.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCITECTURE. — Mr. Banister Fletcher on "Byzantine Architecture: the Architectural Character of the Early Churches." British Museum, 4.30 p.m.

R.I.B.A.—Practice Committee meets.

INSTITUTE OF SANITARY ENGINEERS.—Students' Lecture. Mr. Nandy Hoskins on "Materials," 7 p.m.

ILLUMINATING ENGINEERING SOCIETY.—Discussion on "The Measurement of Light and Illumination," 8 p.m.

Wednesday, March 16.

CARPENTERS' HALL LECTURES.—Professor G. E. Moira on "Mural Painting," 7.30 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Annual meeting. Exhibition of Students' work and Prize-distribution, 7.30 p.m.

ROYAL SANITARY INSTITUTE.—Professor Henry Adams on "Sanitary Building: Construction and Planning," 7 p.m.

ROYAL SOCIETY OF ARTS.—Mr. Noel Heaton on "The Foundations of Stained Glass Work," 8 p.m.

Thursday, March 17.

R.I.B.A.—Literature Committee meets.

THE CONCRETE INSTITUTE.—Mr. D. B. Butler on "Notes on the Chatelier Boiling Test," 8 p.m.

Friday, March 18.

ARCHITECTURAL ASSOCIATION.—Professor Beresford Pite on "Filippo Brunelleschi and the Renaissance." Nomination of officers, 7.30 p.m.

ROYAL SANITARY INSTITUTE.—Mr. W. C. Tyndale on "Sanitary Appliances," 7 p.m.

LEICESTER AND LEICESTERSHIRE SOCIETY OF ARCHITECTS.—Mr. A. Herbert on "The Influence of the Classical Revival in Leicester," 8 p.m.

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS (Southampton Row).—Mr. Allan S. Cole, C.B., 2nd Lecture on "Some Ancient Textile Patterns," 6 p.m

Saturday, March 19.

ABERDEEN ARCHITECTURAL ASSOCIATION.—Mr. Theodore Fyfe on "Architecture in Ancient Crete," 7.30 p.m.

MANCHESTER BUILDING AND SANITARY TRADES EXHIBITION, City Exhibition Hall, closes.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to the Royal College of Surgeons and to New Operating Theatre, Royal Infirmary, Edinburgh.

ST. BARTHOLOMEW-THE-GREAT, WEST SMITHFIELD, LONDON.—Lecture on the History and Architecture of the Church, 2.30 p.m. Organ Recital, 2 p.m. Collection for Restoration Debt Fund.

Monday, March 21.

INSTITUTE OF SANITARY ENGINEERS.—Mr. P. M. Fraser on "Contributions to the Study of Housing and Town-planning," 8 p.m.

Tuesday, March 22.

UNIVERSITY EXTENSION LECTURES ON ANCIENT ARCITECTURE. — Mr. Banister Fletcher on "Byzantine Architecture: the later Churches." British Museum, 4.30 p.m.

ROYAL SANITARY INSTITUTE.—Professor Henry Adams on "Ventilation, Warming, and Lighting," 7 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Students' lecture. Mr. Nandy Hoskins on "Materials," 7 p.m.

Wednesday, March 23.

CARPENTERS' HALL LECTURES. — Mr. R. Anning Bell, R.W.S., on "Coloured Reliefs and Mosaic," 7.30 p.m.

ROYAL SANITARY INSTITUTE. — Mr. J. Wright Clarke on "Details of Plumbers' Work," 7 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. Thomas Beattie on "Plaster Decoration, principally Handwork," 8 p.m.

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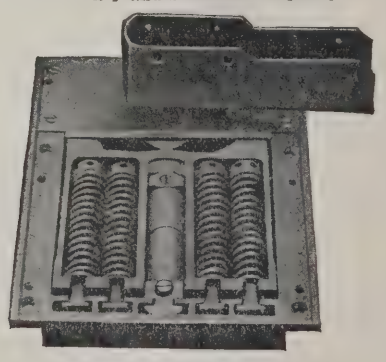
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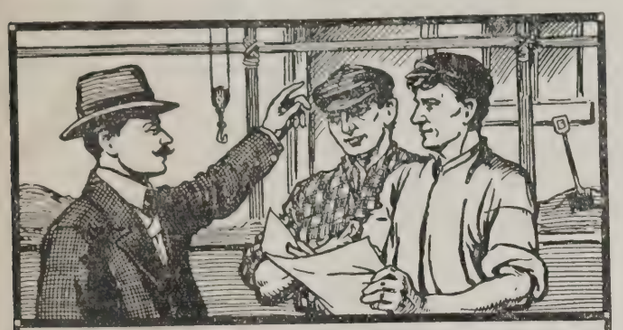
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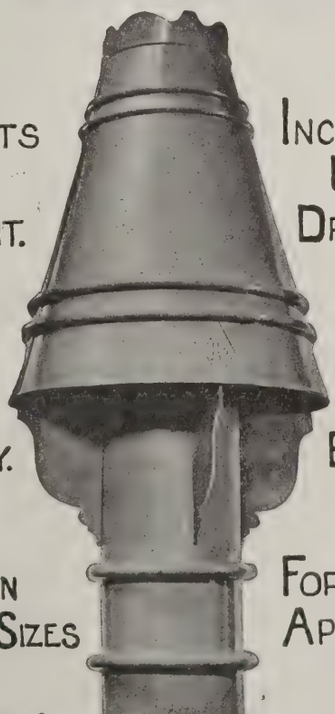
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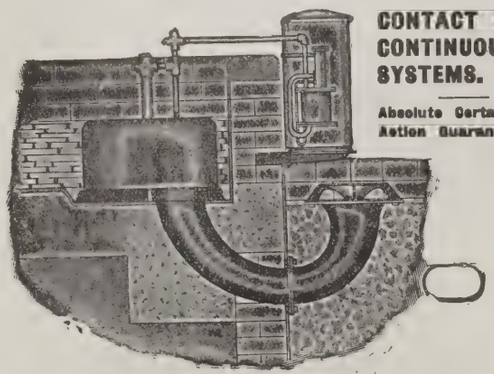
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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, *Caxton House, Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Broadstairs (Kent).—For erection of proposed Home of Rest, Stone Road, Broadstairs, for Miss Cobb. Mr. W. Leonard Dowton, architect, 1, Great James Street, Berford Row, W.C., and Broadstairs.

E. G. Holbourn	£1,250 0 0
G. Miriams	1,240 0 0
R. S. Goodburn	1,200 0 0
C. B. Philpott	1,197 10 0
J. T. May	1,182 0 0
G. H. Doene and Son	1,160 0 0
W. W. Martin	1,125 0 0
J. E. White,* Ramsgate	1,028 0 0

* Accepted.

Clifford, near Hay (Hereford).—For the carrying out of certain additions and alterations to the Council school at Clifford, near Hay, for the Herefordshire County Council Education Committee. Mr. G. H. Jack, county architect and surveyor.

W. Rowberry	£1,417 15 0
C. T. Evans, Hay	1,256 10 0
J. Watkins and Son, Leominster	1,238 0 0
E. W. Wilks and Son	1,179 0 0
Beavan and Hodges	1,158 10 0
W. James, Bromyard	1,145 10 0
C. Cooke	1,125 0 0
W. Bowers and Co.	1,060 0 0
W. Powell and Son,* Whitehorse Street	1,051 0 0

County Surveyor's estimate, £1,040.
Rest of Hereford.

* Accepted.

Dorset.—Accepted for the erection of a block of four houses at Fitehead, Magdalen, Dorset, for Col. Percy J. Browne, C.B. Mr. W. J. Morrish, architect, Gillingham, Dorset.
Samuel Curtis, Stalbridge, Dorset, £1,573 12s.

Dover.—For erection of new Salem Sunday schools, Edwards Road, Dover, for the trustees of the Baptist Church. Messrs. Worsfold and Hayward, architects, Market Square, Dover. Quantities by the architects.

C. I. Epps	£3,990 0 0
Austen and Lewis	3,563 6 0
T. T. Denne	3,487 0 0
J. J. Wise	3,429 0 0
G. Lewis and Sons	3,315 0 0
G. H. Denne and Son	3,277 0 0
Hayward and Paramor	3,233 0 0

Dover.—For erection of new club, Eythorne, near Dover, for Mr. A. Burr. Messrs. Worsfold and Hayward, architects, Market Square, Dover. Quantities by the architects.

C. I. Epps	£2,628 0 0
W. Bromley	2,336 0 0
Brisley Bros.	2,263 12 4
Austen and Lewis	2,176 0 0
T. T. Denne	2,137 0 0
G. H. Denne and Son	2,135 0 0
Hayward and Paramor	2,133 0 0
G. Lewis and Sons	2,091 0 0
J. Parsons	2,071 0 0
W. Judges*	1,994 0 0

*Accepted.

East Molesey.—For erection of an isolation hospital, for the Isolation Hospital Committee of the Urban District Council.
J. Appleby and Sons, Cornwall Works, Southwark Park, London, £3,336.

Eltham (Kent).—For erection of a parish hall, for the Building Committee. Messrs. Moscrop-Young and Glanfield, 20, Brook Street, W., and Mr. Percy J. Waldram, F.S.I., joint architects, 12, Buckingham Street, W.C. Quantities supplied.

Jones and Andrews	£2,382
W. Blay	2,375
Thomas and Edge	2,306
W. Smith and Sons	2,297
F. and H. F. Higgs	2,268
T. Knight	2,267
H. L. Holloway	2,243
J. Grover and Sons*	2,242

*Accepted.

Heathfield (Sussex).—For alterations and additions at The Glen, Heathfield, for the Rev. J. J. Coxhead. Mr. A. B. Jackson, F.R.I.B.A., architect, 3, New Square, Lincoln's Inn, W.C.
J. Longley and Co., Crawley, £1,285.

Leeds.—For the erection of a new warehouse in Sovereign Street, Leeds, for Messrs. Chas. Walker and Co., Ltd., Mill Furnishers. Messrs. W. Hill and Son, architects, Albion Street, Leeds.

J. Ledgard and Son, excavator, brick and mason, and carpenter and joiner, and iron-founder's work	£4,196 0 0
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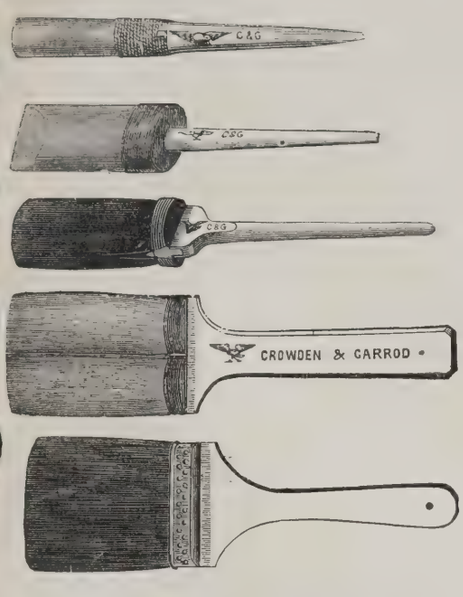


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Christchurch (N.Z.), 1882.

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Agents for Scotland: Frank G. Price & Co. 53, Waterloo St., Glasgow.

(Tenders continued from page vi.)

Leeds.—Accepted for new warehouse in Sovereign Street, Leeds, for Messrs. Boyle and Sons, Kings Mills, Swinegate. Messrs. W. Hill and Son, architects, Albion Street, Leeds.

J. Ledgard and Son, all trades, £3,285.

Lincoln.—For erection of a public elementary school on Spring Hill, Lincoln, for the Lincoln Education Committee. Mr. W. G. Watkins, architect, Bank Street, Lincoln.

Bosworth and Lowe, Nottingham	£5,157	0	0
W. Maule and Co., Nottingham	5,130	0	0
F. Messom, Nottingham ...	4,980	0	0
L. E. Close and Sons	4,859	0	0
J. C. Hedley, 66, Dixon Street	4,737	0	0
Hockley and Co., Grantham ...	4,002	10	0
H. Parker and Co., 46, Wormgate, Boston	4,570	0	0
W. Wright and Son, Park Street	4,545	0	0
F. Scarborough, Moor Street ...	4,497	14	0
W. Pattinson and Sons, Ltd., Ruskington, Lincolnshire ...	4,470	0	0
E. Brown and Son, Wellingborough	4,465	0	0
T. Harper,* Carlton, Notts ...	4,108	0	0

Rest of Lincoln.

*Accepted.

Lye (Worcs.).—Accepted for erection of a school for the Worcestershire Education Committee.

C. Griffiths, Lye, £4,934.

Maesteg (Wales).—For erection of a detached house in Salisbury Road, Maesteg, for Dr. W. Kirkby. Mr. E. Whitfield Burnett, M.S.A., architect, St. Michael's Road, Maesteg.

L. Williams, 12, Queen Street ...	£1,428
Price Bros., Pontcanna Street, Cardiff	1,290
W. Thomas and Co., Tresillian Terrace, Cardiff	1,288
J. Lewis, Neath Road	1,230
Bowens and Davies, Cemetery Road	1,008
W. T. Lewis,* 15, Castle Street ...	1,090

Rest of Maesteg.

*Accepted.

Newtown Sharpness.—For a new Council school for the Gloucestershire Education Committee. R. S. Phillips, architect, Midland Bank Chambers, Gloucester.

Stephens, Bastow and Co., Ltd., Bristol	£3,398	0	0
E. Love, Bristol	2,957	0	0
W. T. Nicholls, Gloster ...	2,929	0	0
William Jones, Gloster ...	2,924	0	0
J. H. Gurney, Gloster ...	2,910	0	0
Orchard and Peer, Stroud ...	2,897	10	0
Dimery and Sons, Berkeley ...	2,895	14	0
J. A. Meredith, Cradley ...	2,845	0	0
Espley and Co., Ltd., Evesham	2,780	0	0
Bowers and Co., Hereford ...	2,750	0	0
E. Walters and Son,* Bristol...	2,667	0	0

*Accepted.

Pinner, Middlesex.—Accepted for the erection of three pairs of semi-detached houses on the West End Park Estate. J. E. Henderson, architect, West End Avenue, Pinner.

Milsom and Booth, Hendon, £3,320.

Port Talbot.—For the erection of proposed Riding School, Drill Hall, and Headquarters, Port Talbot, for the Royal Horse Artillery. W. H. Dashwood Caple, F.R.I.B.A., architect, Cardiff.

D. Jenkins, Ltd., Swansea ...	£8,500
D. Davies and Sons, Cardiff	7,570
R. Rankin, Porthcawl	7,351
P. Gaylard, Bridgend	7,270
Waring, Cole, and Waring, Neath ...	7,135
Watkin Williams, Cardiff	6,999
Morgan and Cox, Port Talbot ...	6,925
Watt Bros., Cardiff	6,764
J. H. Maggs and Co., Cardiff ...	6,750
Stephens, Bastow and Co., Ltd., Bristol	6,594
D. Davies, Cardiff	6,435
H. Smith, Kidderminster	6,414
W. and J. R. Watson, Ltd.,* Edinburgh and Neath	6,193

*Accepted.

Tyler's Green (Bucks).—For enlargement of Tyler's Green Council school, for Bucks Education Committee. Mr. C. H. Riley, architect, Aylesbury. Quantities by Messrs. W. T. Farthing and Son, 46, Strand, W.C.

H. D. Bowyer	£2,494	0	0
G. Lane	2,410	0	0
G. Wheeler and Son	2,382	0	0
H. J. and A. Wright	2,283	5	0
T. Griffin and Son	2,166	0	0
C. H. Hunt and Son	2,154	0	0
J. Mead	2,097	0	0
J. T. Harris	2,029	0	0
F. Perfect	1,990	12	7
G. Darlington	1,947	0	0
H. Flint	1,917	0	0
G. H. Gibson and Son,* High Wycombe	1,887	0	0

*Accepted.

Wellington (Salop).—For erection of public baths, for the Wellington (Salop) Urban District Council: Contract No. 1, for erecting the baths; (2) heating and warming. Mr. Geo. Riley, surveyor.

Contract No. 1.

Woodcock and Riley, Birmingham	£2,498	12	0
A. Roper, Wellington	2,379	4	9
A. Pearce, Wellington ...	2,225	0	0
W. Hopkins, Birmingham ...	2,190	0	0
A. Holmes,* Wellington ...	1,909	2	3

Contract No. 2.

York and Co., Wellington ...	£395	15	9
Moorwood Sons and Co., Glasgow	382	16	0
J. Clay,* Wellington	340	0	0

Note:—7 other tenders in each case received.

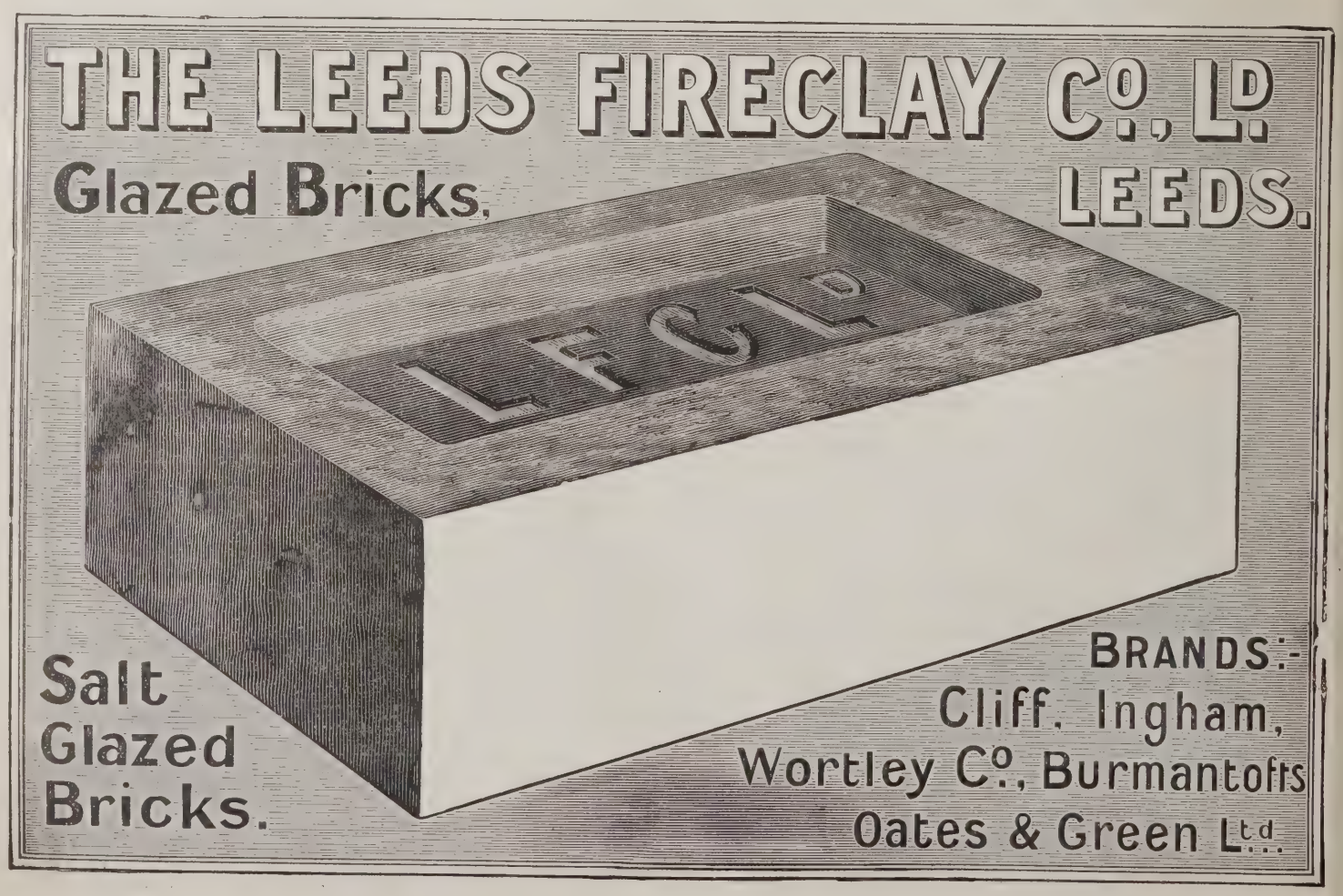
*Accepted.

Insurance.

Free £500 Accident Insurance Coupons have this week been sent to the following:—

D. A. L. (Aberdeen), A. A. G. (Harrogate), W. S. (Sunderland), T. E. C. (Farnworth), W. B. (Keighley), J. J. S. (Stockton), E. C. H. (Frinton), J. S. (Belfast), A. O. H. (Bromsgrove), E. G. (Leeds), J. B. O. (Brighton), G. M. (Manchester), B. S. (Oldham), A. S. T. (Frinton), N. F. (Leeds), G. H. L. (Beckenham), W. J. R. (Pimlico), R. F. G. (Market Rasen), J. C. (Preston), H. C. (Bridport), A. W. (Barnsley), G. M. (West Kensington), F. G. F. (Manchester), J. B. K. (Bridgend), R. M. McD. (Castleford), H. C. P. (Bournemouth), G. T. H. (Westminster), J. J. (Chelsea), A. L. T. T. (Dorchester), W. E. S. (Crediton), S. B. F. (Crediton), W. T. J. (Ogmore Vale), T. S. (Ashford), F. M. M. (Shrewsbury), W. A. W. (Liverpool), E. J. G. (Hinckley), W. G. P. (Birmingham).

G. H. Y. (Nottingham), D. W. (Pontypridd), G. O. (Manchester), C. E. T. (Liverpool), S. E. R. (Manchester), B. C. W. (Finsbury Park), A. H. (Nottingham), T. A. (Cockermouth), W. H. L. (Colne), T. Y. (Oswaldtwistle), D. D. (Rothesay), T. C. (Dublin), W. W. (Liscard), F. J. F. (Chellaston), T. A. B. (Morley), W. A. (Whitehaven), T. M. (Stalybridge), A. W. G. P. (Bedford), E. C. K. (Highgate), R. McA. (Helensburgh), J. M. C. K. (Londonderry), W. J. G. (Taunton), J. E. C. (Shepherd's Bush), F. W. P. (Armley), A. C. H. P. (Oakham), R. W. S. (Filey), T. H. T. (Derby), C. W. (Kendal), B. P. (Tynemouth), J. F. N. (North Shields), T. T. (Tailworth), D. W. I. (Crewe), J. A. H. (Aberdeen), F. V. L. (Wimbledon), J. H. (York), W. B. (West Hartlepool), J. M. (Chester), G. P. (Harpenden), J. H. H. (Norwich), G. R. (Northwich), P. S. (Dublin), G. A. M. (Belfast), B. M. (Tenby).



COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about **five days** or longer after the date of this issue.
Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders.
The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

March 2-15. **WHITLEY BAY.**—Erection of a new Council school, to accommodate 600 scholars, and a caretaker's dwelling-house, at Whitley Bay, for the Northumberland Education Committee. Contractors should forward particulars, name and address to the undersigned not later than March 2, together with a deposit of £2 2s. for specification and bills of quantities. Plans may be inspected at the office of Marshall and Tweedy, Architects, Eldon Square, Newcastle-on-Tyne. Tenders must be forwarded to C. Williams, Secretary to the Education Committee, The Moothall, Newcastle-on-Tyne.

March 14. **DRUMCREE.**—Erection of a residence at Drumcree, Portadown. Drawings and specification may be seen at the offices of J. W. Walby, Architect, to whom tenders must be sent

March 14. **BRYNMAWR.**—Pulling down and erecting new business premises, for P. James. Drawing, etc., may be seen at office of Hy. Waters, M.S.A., Architect, Market Chambers, Ebbw Vale.

March 14. **EXMOUTH.**—Erection of detached house near Woodbury Road Station, for J. L. Langworthy. Drawings and specifications may be obtained from Ernest E. Ellis, Architect, Exmouth, to whom tenders must be sent.

March 14. **BLAINA.**—Repairs, renovations, painting, and papering at the Castle Hotel, for D. F. Pritchard, Ltd., brewers, Crumlin. Further particulars are obtainable at the office of Mr. Hy. Waters, M.S.A., Architect, Market Chambers, Ebbw Vale.

March 14. **BILSTON.**—Alterations to the assembly room and approaches at the Town Hall, Bilston, for the U.D.C. Specification and form of tender may be obtained upon application to Vincent Turner, Engineer and Surveyor, Town Hall, Bilston.

March 14. **WINDYGATES.**—Erection of hall and houses at Windygates, for the L.O.A. Shepherds. Schedule of quantities may be obtained on application to G. Charles Campbell, Architect and Surveyor, Methil, near Edinburgh, and on the depositing of £1 1s.

March 14. **CHESTER.**—New female epileptic ward at the Upton Asylum, for the Visitors Committee. Plans and specifications can be seen at the office of H. Beswick, F.R.I.B.A., County Architect, Newgate Street, Chester, and quantities obtained on deposit of £1. Tenders are to be delivered to Alex. Hornby, Clerk to the Visitors, Upton Asylum, Chester.

March 14. **MEXBOROUGH.**—Erection of six almshouses, and other works incidental thereto, at Church Street, Mexborough, for the U.D.C. Plans may be seen and a copy of the particulars and bills of quantities obtained at the Council offices on deposit of £1. Tenders are to be sent to G. Fenwick Carter, C.E., Surveyor to the Council, Council Offices. Fair wages clause.

March 14. **HULL.**—Erection of a school in Southcoates Lane, for the Corporation. Drawings and specification may be seen, and quantities obtained upon deposit of £2 2s. with Joseph H. Hirst, City Architect, Town Hall, Hull. Remittances to be made payable to the City Treasurer. Tenders are to be addressed to the Secretary of Education, and delivered at the Education Offices, Hull.

March 14. **SHEFFIELD.**—Erection of new infant department for 468 places at Owler Lane Council school, for the Education Committee. Drawings and conditions of contract may be seen, and bills of quantities and forms of tender obtained, on application to the City Architect, at the Town Hall, Sheffield. Tenders to be delivered at the Education Offices, Leopold Street. Fair wages clause.

March 14. **CRUMLIN (Mon.).**—Erection of a new Council school, to accommodate 600 children, for the Monmouthshire Education Committee. Plans and specification may be seen and bills of quantities obtained at the office of John Bain, architect, County Council Offices, Newport, on payment of a deposit of £2 2s. Tenders to be sent to C. Dauncey, Secretary, County Council Offices, Newport, Mon.

March 14. **EDINBURGH.**—Execution of mason and brickwork, carpenter and joiner, glazier, slater, plasterer, plumber, smith, and painter's work for the erection of hall and houses at Windygates for the L.O.A. Shepherds. Schedule of quantities may be obtained on deposit of £1 1s., with G. Charles Campbell, Architect and Surveyor, Methil. Offers to be lodged with Alexr. Mackie, Sec., L.O.A.S., 1, India Buildings, Edinburgh.

March 14. **FRIZINGTON.**—Erection and completion of the following gasworks buildings, for the U.D.C., viz.:—Retort house, coal stores, manager's house, and other buildings. Plans and specification may be seen, and all particulars obtained from George Ashbridge, Engineer, at the Gasworks Site. Tenders will be received by John Bowly, Clerk to the Council, Council Offices, Frizington.

March 14. **ABERTILLERY.**—Erection of a new drill hall at Abertillery for the 3rd Battalion Monmouthshire Regiment. Plans and specifications may be seen, and copies of the quantities obtained on payment of £1 1s., at the offices of the architects, Habershon and Fawckner, 41, High Street, Newport, Mon. Tenders to be addressed to Major H. A. Moore, Secretary, Monmouthshire Territorial Force Association, 35, Stow Hill, Newport, Mon.

March 14. **SOWERBY BRIDGE.**—Mason and bricklayer, carpenter and joiner, slater and plasterer, plumber and glazier, cast-iron and steel, concretor, and painter's work, required in the erection of a 5-storey cotton mill, Walton Street, Sowerby Bridge, for Mitchell Bros., Cotton Co., Ltd. Plans may be seen and bills of quantities obtained upon application to Thos. Kershaw, A.R.I.B.A., architect, L. and Y. Bank Chambers, Halifax, to whom tenders must be sent.

March 14. **SHEFFIELD.**—Works required to be done in the erection of new infant department for 468 places at Owler Lane Council school, for the Education Committee. Drawings and conditions of contract may be seen, and bills of quantities and forms of tender obtained, on application to the City Architect, at the Town Hall, Sheffield. Tenders to be delivered at the Education Office, Leopold Street. Any person or firm tendering will be required to comply with the fair wages and conditions of labour clause, also the clause against assigning or sub-letting adopted by the Sheffield Corporation.

March 14. **KILMAINHAM.**—Erection of workmen's dwellings in Kilmainham, on a site known as the "Oblate," for the Dublin Corporation, in accordance with the plans, specifications, and conditions of contract prepared by the City Architect, which may be inspected daily (except on Saturdays) at his office, Municipal Buildings, Cork Hill, Dublin. Copies of bills of quantities and forms of tender may be obtained at the office of the City Treasurer, Municipal Buildings, Cork Hill, Dublin, on payment of £2. Tenders to be lodged at the Improvement Committee Office, City Hall, Dublin. Two securities required of £1,000 each, and fair wages clause.

March 14. **GLAMORGAN.**—1, new mixed school at Cwmlai (Ely Valley); 2, new intermediate school for girls at Barry; 3, new intermediate school for girls at Aberdare; for the County Council. After March 3 plans and specification may be seen and bills of quantities and form of tender obtained for work No. 1 at the Tonyrefail Police Station, for work No. 2 at the Barry Dock Police Station, and for work No. 3 at the Aberdare Police Station. The plans and specifications of all the works may be seen and quantities obtained at these offices. Tenders to be delivered to T. Mansel Franklen, Clerk of the County Council, Glamorgan County Council Offices, Cardiff. Two substantial sureties required and fair wages clause.

March 15. **LEPTON.**—Enlargement of boys' cloakroom, provided school. Specifications to be had on application by letter to William Wood, Divisional Clerk, Penistone.

March 15. **BANFF.**—Mason, carpenter, slater, plaster, painter, and plumber works, of a billiard-room to be erected at the Royal Oak Hotel in Reid Street, Banff. Plans and specifications may be seen in the hands of C. W. Cosser, Architect and Surveyor, Banff, with whom tenders must be lodged.

March 15. **RAGLAN (Mon.).**—Alterations and additions to the Raglan Police Station, for the Monmouth Standing Joint Committee. Plans and specifications may be seen at the office of William Tanner, F.S.I., County Surveyor, to whom tenders must be sent at Newport, Mon., and a copy of quantities obtained on payment of £1 1s.

March 15. **NEWBRIDGE (Mon.).**—Erection of a new church at Newbridge, Mon., for the trustees of the Zoar Welsh Congregational Church. Plans and specification may be seen with John W. Aldiss, M.S.A., Architect and Surveyor, Newbridge, Mon., and bills of quantities obtained by a deposit of £1 1s.. Tenders to be sent in to Philip Parry, 19, Panteg Terrace, Newbridge, Mon.

March 15. **HARRINGTON.**—Various works required in connection with the laying out of a cemetery ground, and erecting a boundary wall, cemetery chapel, and curator's house, at West Ghyll End, High Harrington, for the U.D.C. Plans and specifications can be seen at the office of Charles W. Eaglesfield, Gordon Street, Workington, by whom tenders will be received at the Council Offices, Harrington.

March 15. **SOUTHEND-ON-SEA.**—Extension of existing car-shed at the Corporation Depot, London road, for the Corporation. Plans, specifications and conditions may be seen and form of tender and bill of quantities obtained (on deposit of a cheque for £1 1s.) upon application to Ernest J. Elford, C.E., Borough Engineer and Surveyor. Tenders to be sent to H. J. Worwood, Town Clerk, Town Clerk's Office, Southend-on-Sea.

March 16. **FIFE ESTATES—ELGIN DISTRICT.**—(1) additions and alterations at steading, mains of Kellas; (2) new cottage and bothy at above; (3) additions and alterations at steading, Clash Connachie, Kellas; (4) new house, Craighead, Kellas; (5) repairs to steading, Lochinver; (6) additions and alterations at steading, Cairneyhillock; (7) new farmhouse at Wester Coxton; (8) alterations at house and steading, Coldhome. The plans, etc., may be seen with John Wittet, Architect, Elgin.

March 16. **WOOD GREEN.**—Erection of Public Baths at Western Road, for the U.D.C. Bills of quantities, prepared by Young and Brown, with form of tender may be obtained of the Clerk on deposit of £5. Drawings and specification may be seen, on production of the receipt for the deposit, at the offices of Architect, Harold Burgess, Capel House, 62, New Broad Street, E.C. Tenders must be delivered to W. P. Harding, Clerk of the Council, Town Hall, Wood Green. Fair wages clause. Local labour to be employed.

March 16. **NORTH SHIELDS.**—Erection of North Shields Telephone Exchange, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster, North Shields. Bills of quantities and forms of tender may be obtained at the under-mentioned address on deposit of £11. Tenders must be delivered to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

March 17. **CLYDACH VALE.**—Erection of two managers' houses at Clydach Vale, for the Cambrian Collieries, Ltd. Plans and specifications to be seen with R. S. Griffiths, M.S.A., Architect and Surveyor, Tonypandy. Tenders to be sent to Leonard W. Llewelyn, Glyncornel, Llwynypia.

March 17. **CWM (Mon.).**—Erection of about 70 houses at Cwm, Mon., for the Cwm Building Co., Ltd. Plans and specifications may be seen with the Architect, Edwin F. Jones, at the Central Offices, Ebbw Vale. Tenders to be delivered to the Cwm Building Co., Ltd., Maplewood, Park Road, Ebbw Vale, Mon.

March 17. **PORT TALBOT.**—Erection of billiard-room and offices to the Victoria Institute, Station Road, Port Talbot. Plans and specification may be seen and all particulars obtained on application to Thomas Gibb, M.S.A., Architect, Post Office Chambers, Port Talbot. Tenders to be sent to John Griffith, Secretary, Victoria Institute, Port Talbot.

March 17. **CRUMLIN.**—Erection of drill hall, for the Monmouthshire Territorial Association. Plans and specifications may be inspected at the office of the architect, A. J. Bowen, Crown Street, Crumlin. Copies of the bills of quantities may be obtained on deposit of £1 1s. Tenders to be delivered to Major H. A. Moore, Secretary, Monmouthshire Territorial Force Association, 35, Stow Hill, Newport, Mon.

March 17. **ALTRINCHAM.**—Erection of a new county secondary school for boys. Bills of quantities, specification, and form of tender, may be had on application to H. Beswick, F.R.I.B.A., County Architect, Newgate Street, Chester, and plans may be seen at his office. A deposit of £2 2s. will be required. Tenders to be delivered to Jos. Howarth, Clerk to the Committee, Education Department, Market Street, Altrincham.

March 17. **HARTLEPOOL.**—Erecting fish quay agents and dock dues offices, Victoria Dock, Hartlepool, for the North Eastern Railway. Plans and specification may be seen upon application to the Station Master at Hartlepool, and further information and quantities obtained from William Bell, the Company's Architect at York, on and after March 7. Quantities supplied on personal application to parties tendering for the whole of the works. Tenders to be sent to the Secretary at York.

March 18. **WORKINGTON.**—Extensions to the Drill Hall, Edkin Street. Plans, etc., can be seen, and bills of quantities obtained, on application to W. G. Scott and Co., Architects and Surveyors, 2, Park Lane, Workington.

March 18. **HORSFORTH.**—New mixed and infants' school and special subjects block, at Horsforth, near Leeds, for the West Riding Education Committee. Plans may be seen, and specifications, etc., obtained, on application to the Education Architect, County Hall, Wakefield. A sum of £1 must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield.

March 19. **HENSINGHAM.**—Alterations and additions to property adjoining "Old Mill," Hensingham, for Ben Wilkinson, butcher, etc. Plans and specifications may be seen at the offices of J. S. Moffat and Bentley, Architects, 53, Church Street, to whom tenders are to be sent.

March 19. **REDRUTH.**—Reseating the gallery, provision of new windows and painting, at the United Methodist Church, Treruffe Hill, according to plans and specifications which may be seen by appointment at the office of Sampson Hill, Architect, Green Lane, Redruth. Tenders to be sent to the Rev. J. T. Henwood, Clinton Road, Redruth.

March 19. **WEST RIDING.**—Erection of two rooms, county hall, for the West Riding General Purposes Committee. Plans may be seen and specifications with quantities obtained on application to the West Riding Architect, County Hall, Wakefield. Tenders must be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

March 19. **CHOPWELL.**—Erection and completion of the Chopwell branch of the Annfield Plain Co-operative Society, Ltd. (including butchers', greengrocers', hardware, drapery and millinery, and grocers' shops and warehouses, stables, manager's house, etc. Drawings, specifications, and conditions of contract may be seen and forms of tender obtained at the architect's office, 22, Durham Road, Blackhill, Co. Durham. Tenders to be sent to Wm. R. Pigg, Secretary, Co-operative Stores, Annfield Plain, R.S.O., Co. Durham. Quantities will be supplied on application, on a deposit of £2 2s.

March 21. **BUCKIE.**—Mason, carpenter, slater, plumber, plaster, painter and glazier works of proposed new Baptist Church for Buckie. Plans and specifications to be seen, and tenders to be lodged, with Geo. Macpherson, Architect, 29, East Church Street, Buckie.

March 21. **LONDONDERRY.**—Rebuilding the Guildhall, for the Corporation. Form of tender, etc., can be obtained at the office of the City Architect, Municipal Offices, Foyle Street, Londonderry. Bills of quantities, etc., can be obtained from W. H. Stephens and Sons, Surveyors, 13, Donegall Square North, Belfast, on deposit of £5 5s.

March 21. **WATERLOO-WITH-SEAFORTH.**—Erection of a secondary and technical school in Cambridge Road, Seaforth, for the U.D.C. Plans may be seen and bills of quantities obtained at the office of the County Architect, Henry Littler, No. 1, Ribblesdale Place, Preston, by deposit of £3. Tenders must be delivered to John I. Thompson, Clerk to the Council, Town Hall, Waterloo.

March 21. **ST. HELENS.**—Erection of a new school, in North Road, St. Helens, for the C.C. On deposit of £1 1s. plans and specifications may be inspected and bills of quantities and conditions obtained at the office of the Architect, Frank S. Biram, George Street, St. Helens. Tenders must be delivered to Percival Sharp, Secretary for Education, Education Office, St. Helens.

March 21. **LEICESTER.**—Erection of new buildings and alterations at the town museum, New Walk, for the Corporation. Bills of quantities may be obtained at the offices of the Architects, Tait and Herbert, M.R.I.B.A., 18, Friar Lane, Leicester, upon deposit of £1 1s. Tenders to be addressed, "The Chairman, Museum and Art Gallery Committee, Town Hall, Leicester," and delivered to H. A. Pritchard, Town Clerk, Town Hall. Local firms only invited.

March 21. **RAMSGATE.**—Erection of a caretaker's cottage on the premises of the Ramsgate Secondary School, for the Kent Education Committee. Plans and specification and form of contract may be inspected at the offices of the committee, until the time appointed for the delivery of the tenders. Any person desiring to tender and to receive a copy of bills of quantities must send in his name to Fras. W. Crook, Secretary, Caxton House, S.W., accompanied by a deposit of £1, not later than March 10, 1910. Tenders must be delivered at the offices of the committee, Caxton House, Westminster, S.W.

March 21. **GLASGOW.**—(1) Structural steel work; (2) builder's work; in connection with the provision of a new roof, Glasgow Cathedral, for the Commissioners of His Majesty's Works and Public Buildings. Tenders are requested for separate sections of the work under the above designations (1) and (2). Drawings, specifications, and a copy of the conditions and forms of contract may be seen on application to the Clerk of Works, H.M. office of Works, Head Post Office, Glasgow (Hanover Street entrance). Bills of quantities and forms of tender for the structural steel work and the builder's work respectively may be obtained at H.M. Office of Works, 3, Parliament Square, Edinburgh, on payment of £1 1s. Tenders must be addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

March 22. **FAREHAM.**—Erection of a hospital block at the Isolation Hospital, situate in Fareham, for the R.D.C. Builders and contractors desirous of tendering are requested to forward their names to Mr. Wilberforce Cobbett, Architect, Fareham, accompanied by a deposit of £3 3s., not later than March 12. Tenders to be delivered to Alfred Laker, Clerk to the Council, Union Offices, West Street, Fareham.

March 24. **GLOUCESTER.**—Erection of a new general bath-house on the female side of the second county asylum at Barnwood, near Gloucester, for the Committee of Visitors. Bills of quantities can be obtained from the Clerk of the Works, Wotton Asylum, Gloucester, on payment of £1 1s. Plans and specification can be seen at the office of the Clerk of the Works aforesaid, and also at the office of the Architects, Giles, Gough, and Trollope, 28, Craven Street, Charing Cross, London, W.C. Tenders to be delivered to James Thompson, Clerk to the Visitors, Wotton Asylum, Gloucester.

March 25. **TINSLEY.**—1, constructing a fence wall; 2, wrought-iron railings and gates; for the Parish Council. The above are required for enclosing the recreation ground at Tinsley. Forms of tender and specifications of quantities can be obtained from J. L. Winkley, Clerk to the Council, 15, Harrowden Road, Tinsley, Sheffield, on receipt of stamped addressed foolscap envelope. Plans of the ground and of the work to be done can be seen at the Free Library, Tinsley.

March 26. **STURMINSTER MARSHALL.**—Building a new elementary school at Sturminster Marshall, Dorset, for the C.C. of Dorset Education Committee. Plans and specifications may be seen at the office of the County Surveyor, Wimborne. Tenders to be sent in to the Secretary, County Education Committee, Dorchester.

March 31. **GATESHEAD.**—Erection of the Brighton Avenue new school, for the Education Committee. Send names to the Architect, F. W. Purser, West Street, Gateshead, who will supply quantities. Applicants must deposit a fee of £1 1s. Tenders should be sent to the Education Offices, Gateshead.

March 31. **YSTRADGYNLAIS.**—Alterations and additions to "Maesydderwen," to convert into County schools, for the Governors. Plans, specifications may be seen and bills of quantities obtained from the offices of J. Cook Rees, Architect, Neath. Tenders to be sent to B. L. Thomas, Clerk to the Governors, Tir Roger, Ystradgynlais.

March 31. **BERE ALSTON.**—New elementary school for 124 children at Bere Alston, for the Devon County Education Authority. Bills of quantities will be available in due course on payment of £1 1s. Contractors desiring to tender must apply to the County Architect (Education), 1, Richmond Road, Exeter, not later than the first post on Wednesday, March 9, 1910, enclosing a crossed cheque drawn in favour of the County Treasurer. Quantities will be issued about March 16, and tenders must be delivered at the Architect's office.

March 31. **BROMSGROVE.**—Erection of a Council secondary school, in Stourbridge Road, for the Worcestershire Education Committee. Applications for forms of tender and bills of quantities may be made by March 10, to the County Education Office, Worcester, accompanied by a deposit of £2 2s. The drawings may now be seen at the office of the architect, G. H. Gadd, Town Hall Chambers, Bromsgrove. Tenders must be addressed to the Director of Education, 37, Foregate Street, Worcester.

April 6. **BOVEY TRACEY.**—New elementary school for 200 children, and a cookery and manual training centre, etc., for the Devon County Education Authority. Bills of quantities will be available on payment of £1 1s. Contractors desiring to tender must apply to the County Architect (Education), 1, Richmond Road, Exeter, not later than Friday, March 11, 1910, enclosing a crossed cheque drawn in favour of the County Treasurer. Quantities will be issued about March 22, and tenders must be delivered at the architect's office.

April 6. **EDENBRIDGE.**—Erection of a new Council school to accommodate 200 children, for the Kent Education Committee. Plans and specification, and form of contract, may be inspected at the offices of the Committee, until the time appointed for the delivery of the tenders. Any person desiring to tender and to receive a copy of bills of quantities must send in his name to Fras. W. Crook, Secretary, Caxton House, Westminster, S.W., accompanied by a deposit of £1, not later than noon on March 10, 1910. Tenders must be delivered to the School Correspondent, Chas. Sheal, High Street, Edenbridge, Kent.

No date. **BUCKHAVEN.**—Mason and brickwork required in connection with the erection of a public slaughter house, etc., for the T.C. Forms of tender, schedules of measurement, and any other information required can be had from William D. Telfer, Burgh Surveyor, Municipal Buildings, Buckhaven, on payment of a fee of £1 1s.

(Continued on next page.)

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No date. **PETERSTONE.**—Erection of two houses for Mr. W. H. Smith and Mr. E. Dobbins respectively at Glyn-Cory Garden Village. Plans and specification may be seen and particulars obtained at the office of the Estate Agent, Wm. R. Jackson, 18, Queen Street, Cardiff.

No date. **CARDIGAN.**—Carrying out improvements and repairs to the following Council Schools, for the County Education Committee:—Painters' and carpenters work at Scyborycoed; builders' and carpenters' work at Llancynfelin; builders' and masons' work at Comminscoch. Plans and specifications can be seen and full particulars obtained from the respective head teachers, or from the office of Geo. Dickens-Lewis, County Architect, Aberystwyth, to whom tenders must be sent.

No date. **TORQUAY.**—Erection of new town hall and municipal buildings, for the T.C. Builders and contractors desirous of tendering are invited to forward their names, with a deposit of five guineas, to Fredk. S. Hex, Town Clerk, Torquay, Town Hall, Torquay, on or before March 19, 1910, after which, in due course, copies of the specification, bills of quantities, conditions of contract, and form of tender will be supplied by the architect, Thomas Davison, 28, Great Ormond Street, London, W.C.

No date. **LOUGHTON.**—Erection of a public elementary school with the accommodation for 316 girls in the Staples Road, for the Essex Education Committee. Plans and specifications can be inspected at the office of H. Tooley, F.R.I.B.A., Buckhurst Hill. Applications to tender must be made to Herbert J. Goodwin, Clerk of District Sub-Committee, High Road, Loughton, in writing, on or before March 16, 1910. A deposit of £4 4s. must be sent with the application, and bills of quantities will be provided. Surety of £500 required.

ENGINEERING.

March 14. **ASHBY-DE-LA-ZOUCH.**—New sewers, including manholes, lampholes, ventilators, and other works connected with same:—Approximately 1,224 lin. yards of 6in. stoneware pipe sewers; approximately 655 lin. yards of 9in. stoneware pipe sewers; approximately 1,710 lin. yards of 12in. stoneware pipe sewers; total length, 3,589 lin. yards, or 2 miles 69 yards. Also concrete tanks, carriers, filters, sludge pits, the preparation of about 4 acres of land, effluent drains, the connections of private drains, and other works connected therewith, for the R.D.C. The plans and details may be inspected at the offices of the Engineer, Mr. Thomas I. McCarthy, Central Chambers, Coalville, near Leicester, from whom conditions, specifications, bills of quantities, and form of tender may be obtained upon payment of £5 5s. Tenders must be delivered to George Farmer, Clerk to the Rural District Council, Ashby-de-la-Zouch. Sureties required.

March 15. **CREWE.**—Diversion of watercourse and construction of retaining walls, etc., for the Corporation, in connection with sewerage and sewage disposal works in the borough, in accordance with plans, sections and specifications which may be seen, and all information obtained, upon application to G. Eaton-Shore, Borough Surveyor, Earle Street, Crewe. A deposit of £2 will be required, and tenders must be delivered to H. S. K. Feltham, Town Clerk, Municipal Offices, Crewe.

March 19. **BIRMINGHAM.**—Providing and fixing laundry machinery at the new Laundry Block, Birmingham Workhouse, for the Guardians. Plans and specifications can be seen at the offices of the architects, W. H. Ward, Paradise Street, Birmingham. Copies of plans and specification will not be supplied. Tenders must be sent to Charles Fletcher, Clerk to the Guardians, Parish Offices, Edmund Street, Birmingham. Fair wages clause.

March 24. **VAYNOR AND PENDERYN.**—Construction of about 4½ miles of 12in., 9in., and 6in. stoneware and cast-iron pipe sewers, together with manholes, lampholes, tumbling bays, flushing chambers, and ventilating shafts, together with other appendages and works, for the R.D.C. Drawings and specification may be seen and bills of quantities and form of tender obtained of Frank T. James, Clerk to the Council, on payment of £1 1s., No. 134, High Street, Merthyr Tydfil, to whom tenders must be sent.

March 29. **MANCHESTER.**—Laying and jointing of the Southern Section of the third line of pipes from Thirlmere to Manchester, for the Corporation. Works will extend from about three-quarters of a mile north-west of Lostock Junction Station of the Lancashire and Yorkshire Railway to the Audenshaw Reservoirs of the Corporation, and consist of nearly twenty-three miles of cast-iron and steel pipes, 44in. and 40in. diameter, the construction of a tunnel 550 yards long, nine subways under railways and canals, nine bridges under and over railways, valve houses, discharge wells, and outlet works, the fixing of valves and ironwork, and other work connected with the third line of pipes. Plans and drawings may be seen, and printed specification, schedule of quantities, and form of tender obtained at the offices of G. H. Hill and Sons, Civil Engineers, Albert Chambers, Albert Square, Manchester, and 3, Victoria Street, Westminster, on receipt of cheque for £5 5s. A limited number of drawings (uncoloured), excluding ordnance maps, are available, and will be lent to persons tendering in priority of application on receipt of £5 5s. (not returnable). Tenders, addressed to the Chairman of the Waterworks Committee, must be forwarded to the Secretary, Waterworks Offices, Town Hall, Manchester.

No date. **ROTHERHAM.**—Contractors desirous of submitting schemes and tenders for (a) heating and (b) ventilating (either or both) of the South Grove Upper Standard School, for the Borough Education Committee, are requested to send their names to Spurley Hey, Director of Education, Education Offices, Rotherham, not later than Wednesday, March 16, 1910. From the list of names sent in the committee will select a certain number of firms who will be asked to submit schemes and tenders.

IRON AND STEEL.

March 14. **DURBAN (NATAL).**—Supply and delivery "free on board" of about 100 tons of steel girder rails, fish plates, bolts and nuts, for the Corporation. Specifications may be obtained from Webster, Steel and Co. (Agents to the Corporation), on deposit of £2 2s. Tenders to be delivered to Webster, Steel and Co., Agents to the Durban Corporation, 5, East India Avenue, Leadenhall Street, London, E.C.

March 15. **MANCHESTER.**—Supply of:—Manual valves, 40ins. and 36ins. diameter; automatic valves, 36ins. diameter; reflux valves, 40ins. diameter; sluice valves from 18ins. to 3ins. diameter; air valves; and miscellaneous ironwork, for the Corporation. Specification and form of tender may be obtained on application to G. H. Hill and Sons, Civil Engineers, Albert Chambers, Albert Square, Manchester, and 3, Victoria Street, Westminster, upon receipt of cheque deposit £2 2s. Tenders addressed to the Chairman of the Waterworks Committee, must be forwarded to the Secretary, Waterworks Offices, Town Hall, Manchester.

PAINTING.

March 14. **EAST PRESTON (Sussex).**—External painting and other works, at the workhouse, for the Guardians of East Preston Union. Specification can be seen at the Workhouse. Tenders to be addressed to the Chairman of the Board of Guardians, East Preston, near Worthing.

March 14. **SOUTHALL.**—Painting, whitewashing, repairs, etc., at the St. Marylebone School, Southall. Specifications and form of tender may be obtained any day from March 7 to March 9, upon application to the Guardians' Architect, Mr. A. Saxon Snell, of 22, Southampton Buildings, Chancery Lane, W.C., depositing with him a £5 Bank of England note. Tenders to be addressed to Henry T. Dudman, Clerk to the Board of Guardians, Guardians' Offices, Northumberland Street, Marylebone Road, W.

(*Continued on next page.*)

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March 14. **GOSFORTH (Newcastle-upon-Tyne).**—Painting work, for the Committee of Visitors of the Newcastle-upon-Tyne City Lunatic Asylum. Form of tender may be had on application to the Clerk of the Asylum, and must be addressed to the Chairman and Members of the Tenders Committee of Visitors.

March 16. **LONDON.**—Repairing, maintaining, and decorating police stations, police courts, houses, buildings, etc., situated within four miles of Charing Cross, for a period of three years, from April 1, 1910, for the receiver for the Metropolitan Police District. Printed forms of tender may be obtained on payment of the sum of £1 1s. (which will not be returnable) at the office of the Police Surveyor, New Scotland Yard, S.W.

March 22. **WEST STANLEY.**—Painting the following schools for the Durham County Education Committee:—South Moor Council, mixed and infants' schools; Greencroft Council, mixed; Annfield Plain Council, infants; Hare Law, mixed and infants; Causey Row, mixed and infants; East Stanley infants, West Stanley senior, and West Stanley infants. Specifications, etc., may be obtained from E. G. Chatt, Station Road, West Stanley.

PLUMBING AND SANITARY

March 14. **HORNCASTLE.**—Supplying and fixing new bath in the males' receiving ward at the Workhouse at Horncastle, for the Board of Guardians. Specifications can be seen at the Union Offices, Church Lane. Tenders to be delivered to J. E. Chatterton, Clerk to the Guardians, Union Offices, Horncastle.

March 14. **STANHOPE.**—Laying 3,160 yards or thereabouts of main sewer and the construction of tanks, filters, and irrigation area for sewage disposal purposes at Stanhope, for the U.D.C. Plans and specifications may be seen and quantities and forms of tenders and other information obtained on application to the Council's Engineer, J. S. Parker, A.M.I.C.E., Post Office Chambers, St. Nicholas Square, Newcastle-on-Tyne, or the Council's Surveyor, J. R .Ridley, Town Hall, Stanhope. Deposit of £1 required. Tenders should be sent to F. H. Thompson, Clerk to the Council, Stanhope.

March 20. **GRESSENHALL.**—Alterations to the Workhouse drainage, for the Mitford and Launditch Union, in accordance with the plans and specifications, which may be seen at the office of W. John Barton, Clerk to the Guardians, The Guildhall, East Dereham, to whom tenders must be sent.

No date. **BURNLEY.**—Labour in overhauling the land drains on The Lodge Farm, Brunshaw, Burnley. Apply by letter, or personally, between the hours of 11 a.m. and 1 p.m., to Mr. A. Stewart, 5, Yorke Street, Burnley, from whom particulars may be obtained.

ROADS AND CARTAGE.

March 14. **BILSTON.**—Supply and delivery of Rowley rag macadam, setts, and kerbs, for twelve months, commencing April 1, 1910, for the U.D.C. Specifications and form of tender may be obtained upon application to Vincent Turner, Assoc.M.I.C.E., Engineer and Surveyor, Town Hall, Bilston.

March 14. **STREATHAM.**—Making-up and paving Penwortham Road, Streatham, for the Corporation of Wandsworth. Specifications and drawings may be seen, and forms of tender obtained, at 56, East Hill, Wandsworth, S.W., upon deposit of £5 5s. Tenders must be delivered at the Council House, East Hill, Wandsworth, S.W. Fair wages clause.

March 14. **LEEDS.**—Paving and flagging the following private streets, for the Corporation:—Burton Avenue (part), Fairford Avenue, Fairford Terrace, Primrose Lane, Longroyd Street, Longroyd Place, Longroyd Grove, Back Longroyd Terrace, Roseville Street, and Ivy Grove; also paving and flagging improvement in Low Road. Drawings may be seen at the City Engineer's Office, Municipal Buildings. Forms of tender and bills of quantities may be obtained and copies of documents inspected on application at the Highways Office, 155, Kirkstall Road, Leeds. Tenders must be delivered at the Town Clerk's Office, Town Hall, Leeds.

March 15. **THURNSCOE.**—Supply of materials for the year ending March 31, 1911: Broken granite, granite chippings, handbroken slag, slag screenings, flags, kerbs, setts, asphalte, pipes, etc., for the U.D.C. Forms of tender may be obtained from J. Ledger Hawksworth, Clerk, Bolton-upon-Dearne, Rotherham, to whom tenders must be sent. Samples to be forwarded to R. Higginbottom, Surveyor, Thurnscoe.

March 15. **BRISTOL.**—Construction of a new road, about 800 yards in length, in the parishes of Nempnett and Winford, for the Clutton R.D.C. Specification on application to the Council's Surveyor (T. Orchard, The Grange, Haliatrow, near Bristol), by deposit of £1 1s. Tenders must be sent to J. Sumner Dury, the Clerk to the Council, Temple Cloud, near Bristol. For further information apply to the Surveyor.

March 16. **CHISWICK.**—Making-up of parts of Park Road (from Burlington Lane to Hardwick Road). Forms of tender can be obtained on application to E. Willis, A.M.I.C.E., Surveyor, Town Hall, Chiswick, where the plans, specification, form of contract and bond, may be inspected. Tenders to be sent to Ernest F. Collins, Clerk of the Council.

March 16. **EASINGWOLD.**—Supplying whinstone, slag, etc., according to order, stating price per ton for unbroken, machine broken, and hand broken (the broken to be supplied in cubes small enough to pass through a 2½in. ring) for which the same will be delivered free at the various railway stations, for the R.D.C. Tenders must be sent to F. J. H. Robinson, Clerk, Easingwold.

March 16. **MIDDLESEX.**—Supply of about 12,000 tons (more or less) of 2in. and 1½in. basalt or granite; 2,000 tons (more or less) of ½in. chippings, to be delivered free to various stations in Middlesex, for the C.C. Particulars, with specification and form of tender, may be obtained of H. T. Wakeham, M.Inst.C.E., County Engineer and Surveyor, Middlesex Guildhall, Westminster, S.W. Tenders must be sent to the Clerk of the County Council, Middlesex Guildhall, Westminster, S.W.

March 16. **MIDDLESEX.**—Cartage of about 12,000 tons (more or less) of broken stone, 2,000 tons of chippings, and about 4,000 tons (more or less) of gravel, from various railway stations and local pits in the districts of Barnet, Bedfont, Cowley, Cranford, Edgware, Enfield, Hampton, Harlington, Harmondsworth, Harrow, Hayes, Hillingdon, Potter's Bar, Southall, Stanmore, Wembley, and Wood Green, for the C.C. Particulars and forms of tender may be otained of H. T. Wakeham, M.I.C.E., County Engineer and Surveyor, Middlesex Guildhall, Westminster, S.W. Tenders must be sent to the Clerk of the County Council, Middlesex Guildhall, Westminster.

March 16. **ELHAM.**—Supply and delivery of road materials, for the R.D.C., in the undermentioned parishes. Particulars and forms of tender may be obtained from the Surveyor, Lyminge, Kent. Acrise, 100 yards of flint; Elham, 320 yards of flint; do., 100 yards (broken) rock; Hawkinge, 200 yards of flint; Lyminge, 420 yards of flint; do., 40 yards (broken) rock; Lympne, 240 yards of flint; do., 80 yards of beach; Monks Horton, 220 yards of flint; Newington, 100 yards of flint; Paddlesworth, 80 yards of flint; Postling, 120 yards of flint; Saltwood, 60 yards of flint; Sellinge, 200 yards of flint; Stanford, 140 yards of flint; Stowting, 200 yards of flint; Swingfield, 40 yards of flint. All tenders are to be sent to the Clerk's Office, 29, Bouverie Square, Folkestone.

March 17. **THANET.**—Supply of:—2,394 yards broken flints, 1,364 tons broken granite, for the R.D.C. Forms of tender may be obtained by writing for them (enclosing stamped addressed foolscap envelope) to Mr. G. L. Butterworth, Surveyor, Birchington. Tenders to be sent to Chas. Taylor, Clerk, Board Room, Minster, near Ramsgate.

March 17. **LANCHESTER.**—Supply of about 12,500 tons of limestone, 4,100 tons of whinstone, and 1,190 tons of slag, during the year ending March 31, 1911. Tenders are also invited for cartage of the above. Forms of tender may be obtained from W. Cumming, Highway Surveyor, Surveyor's Office, Lanchester, Durham, to whom tenders must be sent.

March 18. **HONITON.**—Maintenance and repair of the district roads within the parish of Southleigh, for the R.D.C., for one year from March 31, 1910. Specifications, schedules of quantities, and forms of tender can be obtained on application to E. W. Hellier, Clerk to the Council. The surveyor (Mr. W. North, Alfington, near Ottery St. Mary), will give any further information.

March 18. **EASTRY.**—Supply and delivery of surface and approved dry flints on the various roads in the district and recarting stones from depots. Also for steam rolling with ten ton rollers, for the R.D.C. Forms and tenders and schedules of quantities may be obtained of the District Surveyor, D. E. Foster, Hazel Bank, Eastry, Dover, or the Assistant Surveyor, W. Goodsell, Durlock Road, Ash, Dover. Tenders must be delivered to F. S. Cloke, Clerk to the Council.

March 18. **TADCASTER.**—Carting stone, and other material from the various railway stations and wharfs to and in the various parishes throughout the district; also supply of broken granite or whinstone, slag, tar, macadam, and stores, for the year ending March 31, 1911, for the R.D.C. Forms may be obtained from Thomas Scott, Council's Surveyor, Aberford, Leeds. Samples of materials and stores to be forward to the Union Workhouse, Tadcaster. Tenders to be sent to Geo. A. Bromet, Solicitor, Clerk to the Council, Tadcaster.

March 19. **WHITBY.**—Quarrying or breaking all or any quantity of stones, carting on to the highways, and laying during the year ending March 31, 1911, in several townships, for the R.D.C. Forms of tender and further particulars may be obtained of John Lyth, District Surveyor, Whitby, to whom tenders must be sent.

March 23. **GATESHEAD.**—Tenders are invited for the supply of materials for the term of one year, for the Corporation:—Rough whinstone, whin chippings, limestone chippings, whin setts, freestone setts, granite setts, whin curb, whin channel, freestone curb and flags, metal, gullies, manholes covers, etc., shovels, picks, scavenging booms, lime and cement. Specification and form of tender can be obtained at the office of N. P. Pattinson, Borough Surveyor, Town Hall.

March 26. **POCKLINGTON.**—Supply of best blue stone and slag for repairing the roads throughout the whole of their district, for the current year, for the R.D.C. The materials to be delivered in such quantities and at such times as the Council may order. Forms of tender with particulars can be obtained from, and all tenders must be sent to, Thomas Robson, Clerk, Pocklington.

(*Continued on next page.*)

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MISCELLANEOUS.

March 14. **EASTRY.**—Execution of the following works:—Carpenters, glaziers, tin-plate workers, etc., for the Union, for one year, from March 29, 1910. Offers to tender should be sent through the Post-Office, at the Union Workhouse, Eastry, where forms of tender may be obtained. Tenders must be forwarded to Fred. S. Cloke, Clerk, Sandwich.

March 14. **GUILDFORD.**—Supply of the following materials (among others), for a period of 12 months ending March 31, 1911, for the Corporation: 1, broken granite, chippings and burax cubes; 3, cast-iron pipes; 4, flints; 5, galvanised steam tubes; 8, iron castings; 9, ironmongery; 10, oils; 11, pitch and tar; 12, Portland cement; 14, stoneware pipes, etc. All particulars, specifications, schedules, and forms may be obtained on application to the Borough Engineer, C. G. Mason, Assoc.M.Inst.C.E. Tenders must be delivered to F. S. Miller, Town Clerk, Town Clerk's Office, Bridge Street, Guildford.

March 14. **MIDDLESBOROUGH.**—Supply of sanitary pipes, timber, bricks, concrete flags, and kerbs, Portland cement, annealed scorlae blocks, paving setts, broken macadam and slag, tar macadam, manhole covers and frames, gulley grates, flushing boxes, etc., required from April 1, 1910, to March 31, 1911, for the Corporation. Specifications and schedules may be obtained on application to S. E. Burgess, M.Inst.C.E., Borough Engineer, Borough Engineer's Office, Municipal Buildings, Middlesbrough. Tenders are to be sent to Alfred Sockett, Town Clerk, Municipal Buildings, Middlesbrough.

March 15. **LONDON, W.**—Supply of:—110,000 creosoted Baltic sleepers, 70,000 clean Baltic sleepers, 1,250 loads creosoted Baltic crossing timbers, 750 loads of clean Baltic crossing timbers, for the Great Western Railway. Specifications, with form of tender, may be obtained upon application to G. K. Mills, Secretary, Paddington Station, London, to whom tenders are to be sent.

March 15. **LONDON, S.W.**—Supply of china and earthenware (leadless glaze only), for the period from April 1, 1910, to March 31, 1911, for the Commissioners of His Majesty's Works and Public Buildings. Particulars of the samples and estimated quantities, and a copy of the conditions and form of contract, may be had on application to the Storekeeper, His Majesty's Office of Works' Stores, 12, Lambeth Palace Road, London, S.E. Tenders must be delivered to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

March 15. **STOCKPORT.**—Tenders for Stores.—Supply of general stores for one year from April 1, 1910, to March 31, 1911, for the Gas Committee. —1, bolts and nuts; 2, brushes; 3, brass and meter fittings; 4, cartage; 5, iron castings; 6, drysaltery; 7, retorts and fire goods; 8, glass and putty; 9, iron and steel; 10, ironmongery; 11, mill furnishing; 12, oils and grease; 13, tarred and spun yarn; 14, shovels, pick heads, etc.; 15, timber, English and foreign; 16, tubing; 17, wet and dry ordinary meters; 18, lime. Forms of tender and all further information may be obtained on application to the Engineer, Gas Works, Portwood. Tenders must be addressed to the Chairman of the Gas Committee, and delivered at the Town Clerk's Office.

March 16. **NEWCASTLE-UPON-TYNE.**—Supply of the undermentioned materials during 12 months ending March 31, 1911, for the Corporation:—1, bricks; 2, carbolic acid; 3, cement; 4, clot lime; 5, flags, (artificial), 6, flags (Caithness); 7, flags (freestone); 8, gulley grates, ventilator covers, etc.; 9, hosepipes; 10, iron, steel, and horse shoe nails; 11, kerbstones; 12, leather; 13, lead washings; 14, oils and paints; 15, pitch tar and creosote oil; 16, privy pans and ashbins; 17, road stones; 18, sanitary pipes; 19, scavenging brooms, etc.; 20, shovels; 21, timber. Forms of tender may be obtained on application at the City Engineer's Office, Town Hall. Tenders must be left at the Committee Clerk's Office, Town Hall.

March 16. **MARGATE.**—Supply of all or any of the following articles for the year ending March 31, 1911:—Ironwork, gunmetal, and other castings; paints, oils, colours, etc.; saddlery repairs; ironmongery, tools, brushes, cup leathers, etc.; stoneware sanitary pipes; timber; cement and bricks; flags, kerbs, channelling, patent paving, etc.; tarred Kent rag paving material; cast-iron pipes and special castings; yellow metal fittings; lead, spunyarn, and rubber insertion; valves, hydrants, fittings, and surface boxes; wrought iron and steel tubing and fittings; water meters. Forms of tender and particulars as to samples, etc., can be obtained on application to Ernest A. Borg, Borough Engineer and Surveyor, 13, Grosvenor Place, Margate. Tenders must be delivered to Edward Brooke, Town Clerk, Town Clerk's Office, Margate.

March 17. **FELIXSTOWE.**—Supply and delivery of the following materials during year ending March 31, 1911, for the Felixstowe and Walton U.D.C.:—Asphalte, castings, Fletton bricks, forage, Portland cement, steam coal, stoneware pipes, timber, blue Staffordshire kerbs and channels and paving bricks. Specifications and forms of tender may be obtained on application to H. Clegg, A.M.I.C.E., Surveyor, Town Hall, Felixstowe. Tenders to be delivered at the office of F. B. Jennings, Clerk, Town Hall, Felixstowe.

March 19. **HALIFAX.**—Construction of fourteen percolating filters (8 90ft. and 6 85ft. diameter), at the sewage disposal works, for the Corporation:—22, excavators', masons', and bricklayers' work; 23, cast-iron pipes and sluice valves; 24, distributors (revolving); 25, filtering medium; 26, unloading and filling filtering medium. Plans and specifications may be seen and forms of tender obtained on application to James Lord, M.I.C.E., Borough Engineer, Town Hall, Halifax, upon deposit of £10 for each set of quantities. Tenders must be sent to Herbert Ashling, Town Clerk. Fair wages clause.

March 23. **YNYSCYNHAIARN.**—Supply of:—3, fire-bricks and retorts; 5, pipes and connections; 6, structural ironwork for reconstruction of retort house, etc.; 10, new purifier; for the U.D.C. Specification and schedules of quantities can be obtained from the undersigned, and drawings can be seen at the Council Chambers, or at the office of the Council's Engineer, R. Bruce Anderson, 5, Victoria Street, Westminster. Tenders to be sent to Jno. Jones. Clerk to the Council, Town Hall, Portmadoc.

March 23. **WOOD GREEN.**—Supply of the following materials (among others) and execution of works during the year ending March 31, 1911, as follows, for the U.D.C.:—(1) broken Guernsey granite; (2) flints, hoggin, sand, etc.; (3) stoneware pipes; (4) Portland cement; (7) masons' and paviors' works; (8) asphalte works; (9) tarpaving works; (10) carting of materials, and supply of horses, carts, etc. Forms of tender, with general conditions, may be obtained of Wm. P. Harding, Clerk of the Council, Town Hall, Wood Green, on payment of a deposit of £1, to whom tenders must be sent. Fair wages clause.

March 26. **WORSLEY.**—Supply of the following materials during the twelve months ending March 31, 1911, for the U.D.C.:—Macadam, granite setts, grit setts, granite chippings (cubes), granite kerbs, sandstone kerbs, pitch and creosote oil, stoneware pipes. Forms of tender may be obtained on application to James Howard, Surveyor to the Council, Council Offices, Walkden. Tenders, together with samples of materials, must be delivered to J. Phethean Monks, Clerk to the Council, Council Offices, Walkden.

March 30. **HOO (Kent).**—Supply of the following materials to be delivered on the roads, for the R.D.C.:—Broken granite, unbroken Kentish ragstone, unbroken surface picked flints, unbroken pit flints and hoggin, also carting (day work), and steam road rolling and scarifying. Forms of tender may be obtained of Richard Phillott Smyth, Clerk, Strood, Kent.

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The Acton Competition.

The Acton U.D. Council Education Committee are inviting architects to submit designs for a school to accommodate 850 children. An assessor is to be appointed, but the advertised conditions calmly announce that the premiums *will be awarded to the designs selected by the Committee after their consideration of the Assessor's award.* Moreover, they do not bind themselves to appoint an architect to whom a premium is awarded, even though the selection is reserved to themselves. *Further, the successful architect will be paid a commission of 3½ per cent. and any premium awarded shall merge in that commission.* Surely impertinence could go no further! No doubt the R.I.B.A. Competitions Committee will take the competition up; but in view of the former difficulties between this Council and the R.I.B.A., and their sequel, we have small hope that any satisfactory conclusion will be reached. In this connection we would draw attention to the action of the Warrington Master Builders' Association, which has supported the protest of architects against unfair conditions in the Warrington Elementary School conditions, by intimating to the Town Clerk that the members of the Association will be recommended not to tender for the work unless the unfair conditions are removed. If architects and builders extended support to each other more often, many of the difficulties which continually confront both bodies would speedily disappear. The proposals of the Acton Council are no whit worse than those of many other Councils in the past, more especially in the North; but now that matters are coming so near home it is to be hoped that the R.I.B.A. will be moved to stronger action to ensure proper respect for the architectural profession. The Acton Council would appear to regard architects as slight and inconsiderable hirelings, accustomed to kiss the rod.

Mr. Belloc on Bridges.

London has the most beautiful as well as the ugliest bridge in the world. So says, in effect, Mr. Hilaire Belloc, who has compassed many waters and hath an artistically discriminating eye. "The ugliest bridge in the world," he declares, "runs from Lambeth to Horseferry Road," and he agrees with many other men of taste that Waterloo Bridge is at least the most beautiful in London. Other of his obiter dicta on bridges are that the most historic bridge over the Thames is London Bridge; while Westminster Bridge is "by far the most useful." The most famous bridge for tourists in Italy is the old bridge at Florence; the best known from pictures, the Bridge of Sighs in Venice. The bridge that trembles most is the Bridge of Piacenza; the bridge that frightens most, the Brooklyn Bridge. The most entertaining bridge for him is the Tower Bridge, "which lifts up and splits into two just as you are beginning to cross it." These rather practical excerpts hardly do justice to Mr. Belloc's whimsically philosophical, and at times almost airily poetical essay "On Bridges," in last Saturday's "Morning Post." "Man also," he says, "builds bridges which unite him with Beauty all about. Thus he paints and draws and makes statues, and builds for beauty as well as for shelter from the weather. And man builds bridges between knowledge and knowledge, co-ordinating one thing that he knows with another thing that he knows, and building a bridge from each to each." By-and-bye, perhaps, this habit of co-ordination may lead him to a just combination of architectural with engineering skill, and then we may get the perfect bridge.

Japanese Decorative Art.

Japanese decorative art, long despised by Western races, who would not take the trouble to study and understand it, but now almost universally regarded with admiration, undoubtedly possesses many qualities that Western art cannot rival. It has, for instance, a large measure of that "spirituality" which appears to be peculiar to Oriental art. As Mr. W. Harding Smith said in his lecture at Carpenters' Hall last Thursday, the chief characteristic of the Japanese decorators is that they ignore realistic detail in order to impart life to their work, and for this effect they depend largely on the expressiveness of line. No doubt, as the lecturer remarked, the suppleness of hand acquired through many generations in writing the picturesque script of Japan has been a great factor in promoting the decorative art of the country; the written characters being essentially pictorial. We are here tempted to ask why it is that much, if not most, of the lettering on "strainers" is so deplorably slovenly and inartistic. Ungraceful lettering, especially when it tends, as so much of it does, to illegibility, has a ruinous effect on the appearance of architectural drawings; and if practice on pictographs has given the Japanese so much skill of hand, like results, in minor degree, should make careful attention to lettering well worth the pains.

"That Iniquitous Measure."

At the eighth annual meeting of the Incorporated Association of Property Owners, a speaker called attention to "that iniquitous measure known as the Housing and Town Planning Act." He said that people were not conversant yet "with the full depth to which that measure would descend. They were in for a substantial drainage of their incomes because of this Act. The Association would do good in letting it be known that determined opposition was to be presented to the Act on every possible occasion, and ultimately they would get some redress." It is well that the existence of these views should be made known; and the somewhat uncompromising language in which they are expressed is also a useful indication, although it perhaps rather tends to defeat the speaker's object. The same miscalculated effect would certainly attend "determined opposition to the Act on every possible occasion." Property has its duties, as well as its rights; and a frank recognition and an ungrudging performance of the duties is the surest way of securing due regard for the rights. These rights, however, no longer include absolute power to oppose public improvements on private grounds. The Act, whether regarded in its moral or in its purely physical aspect, makes for greater breadth of view, and against this principle the property-owner will find that "determined opposition on every possible occasion" will be vain and futile. The aim of the Act is certainly not to assail the property owner's rights, but only to take care that his privileges are not exercised to the detriment of the community. To the extent to which it either exceeds or falls short of that aim, it will need amendment. Searching criticism of its details is no doubt extremely valuable, and will in time result in very necessary revision; but "determined opposition" to the Act as a whole is too late to be effectual, although it may easily become obstructive and annoying. Purely sectional interests, such as those represented by the Incorporated Association of Property Owners, would receive more earnest attention if they were more modestly advanced

Works Losses.

We quote the following from a "Progressive" London daily newspaper: "Works Losses. Not only have workmen lost work by the closing of the Works Department, the ratepayers have also lost money. Mr. Edward White, vice-chairman of the Council, was forced to confess that since his party's decision to wreck the department was arrived at, fifty-four contractors have withdrawn their lowest tenders in connection with various contracts. The difference between the lowest tenders in these cases and the prices the Council was ultimately forced to pay for the work it wanted done was £58,127. This is another aspect of the loss sustained by the ratepayers as the result of shutting up that valuable institution." This is the sort of tale to tell to the Marines, who may be supposed not to perceive the falsity of the inference that contractors withdrew tenders for the fun of the thing, or with the either less innocent or more fatuous object of obliging their business rivals. It disregards the plain and true explanation that, in lucid moments, contractors may and do sometimes realise that they have made a mistake in their pricing, and must retire their tenders, and see the job they have tried so hard to get go to a competitor who has been more careful or more lucky. It is absurd, however, to infer that the existence of a Works Department would have prevented withdrawals on the part of contractors who have made mistakes in their tenders, or that the Works Department would have been able to carry out the works at the figures withdrawn. The withdrawal of tenders is such a commonplace incident of business experience that the attempt to attach any sort of significance to these particular instances need not be taken seriously. It was a transparent electioneering device. It is equally misleading to assume that because the Works Department is shut down "workmen have lost work"; unless, indeed, we are to infer that the department made work for its employees, which is a conclusion that would hardly commend itself to the rate-ridden electorate. Here, therefore, our contemporary is on the horns of a dilemma. It must admit either (1) that the department was wasteful, or (2) that the volume of work being the same, workmen have *not* lost work, although the same individuals may no longer have the monopoly of it.

"Disputes and Differences."

We regret to have again to call attention to the question of the engineer for a work being also made sole contractual referee under the contract. This time it is a question of the erection of a suspension bridge at Shrewsbury, and a contractor has sent us the following extract from the conditions of contract. It is to be noted that the Mr. X referred to in the extract (we substitute this symbol for the gentleman's name, because we wish it to be quite clear that we are here concerned with principles, and not with persons) is also engineer for the works to which the contract relates.

"*Disputes and Differences.*"

"Generally as respects every matter, valuation, difference, or question, which is by this Contract or Specification referred to or required or authorised to be determined or decided or settled by Mr. X, whether as Arbitrator, Valuer, Engineer, or otherwise, and as respects every matter, valuation, difference, or question arising under or out of or on reference to this Contract or Specification, whether as to meaning, construction, or effect of any provision thereof (including this present article) or as to whether any matter or thing is or is not provided for or included therein, or as to anything done or omitted under or with reference to this Contract or Specification the following provisions shall have effect, namely:—

"(1) Every such matter, valuation, difference, question or thing shall be determined, decided, and settled by Mr. X alone, and his determination, decision, or settlement shall be final and conclusive and without appeal, and no claim or action shall be made or brought or maintained except upon and for the purpose of enforcing his determination, decision, or settlement. (2) For the purpose of making any such determination, decision, or settlement, Mr. X may proceed without any formal submission, and in such manner as he thinks fit, and with or without hearing Witnesses, Solicitors, or Counsel, and may receive or inform himself of the case or statement of any party orally, or in writing, or partly in one way and partly in the other, as he thinks fit, and may decide any matter on his own knowledge, inspection, or calculation, and may state his determination or settlement in the form of a certificate in lieu of an award, which certificate shall have the same form and effect as an award in writing, and need not recite or set out any authority, submission, proceedings, or other formal matters.

"The generality of this article shall not be construed to be restrained by any particular provision of the Contract or Specification, and in case of any inconsistency between any such particular provision and this article, the provisions of this article shall prevail and have effect."

It would be superfluous to dwell upon the manifest unfairness of such a method of dealing with "disputes and differences." We simply protest against the continuance of a method that has been condemned by eminent judges of Appeal, and we earnestly hope that in the present instance a clause providing for the settlement of "Disputes and Differences" by an independent arbitrator will be substituted for the one quoted above. It is surely a case in which a word to the wise should be sufficient.

Notes and News.

Usher Hall Competition.

The Edinburgh Town Council is at last moving in the matter of the building of the Usher Hall, to be erected out of funds, amounting to over £100,000, bequeathed by the late Mr. Usher. The Council proposes to spend not more than £40,000 on the site and £70,000 on the building. Sir Aston Webb, R.A., is to adjudicate on plans for the latter to be obtained in open competition; and Mr. James A. Williamson, City Superintendent of Works, will be associated with him. The hall is to contain seating accommodation for 3,500 people.

* * *

The Education of Surveyors.

Mr. Julian C. Rogers in the course of his "Forty Years' Retrospect" at the Surveyors' Institution, made some trenchant remarks about public school education. It appears that there is an increasing number of sons of well to do and aristocratic people pressing into the ranks of surveyors, and Mr. Rogers, apparently, does not think much of them. "There were good candidates among them," he said, "but as a class they were markedly inferior in point of general knowledge and intelligence to the candidates who had had what were regarded as fewer educational advantages. They offered few or no signs that their powers of observation had been awakened or their interest aroused in things pertaining to the world of thought and action. As a rule they knew nothing about public affairs, about the institutions of their country or the practical machinery of life—knowledge that a young man of nineteen or twenty might be expected to possess. Their education, in short, seemed in far too large a number of cases to be lacking in precisely those features which were an important part of the equipment of a young surveyor. The reason for it was not far to seek. The public schools—especially the great day schools—inflicted on their pupils an immoderate amount of preparation for the next day's work, practically cutting them off in this way from the society of their elders, and, except in holiday times, from the life of the home. It was an evil system which eliminated a valuable element from the boy's life, and tended little or nothing to the education of his understanding."

Mr. Lever's Gifts.

At the meeting of the Liverpool Architectural Society on Monday week, the President (Mr. T. E. Eccles, F.R.I.B.A.) on taking his seat, moved the following resolution: "The Liverpool Architectural Society desire to express their appreciation of the help that Mr. W. H. Lever has again given to the art of architecture by his recent and noble gifts to the University of Liverpool, in providing the School of architecture with a home in the old Blue Coat Hospital, thus preserving a most interesting building to the city, and founding the Chair of Civic Design." He said the resolution needed neither a speech nor a seconder, and he would take it that the large number of members present gave it their unanimous approval. A copy of the resolution was ordered to be sent to Mr. Lever.

* * *

Builders support the Architects.

The architects of Warrington were asked to tender for proposed new elementary schools at Warrington under conditions which were very objectionable to them. The matter was considered by the R.I.B.A., whose members were recommended not to enter the competition. The Warrington Master Builders' Association considered the matter, decided to support the architects, and sent the following letter to the Town Clerk:—

20th January, 1910.

Proposed New Elementary Schools, Warrington.

Dear Sir,—It has been brought to the notice of this association that your Council have invited competitive plans from architects for the above schools, under conditions which are entirely new and detrimental to all those entering the competition, and which conditions have already been condemned by the Royal Institute of British Architects.

My association is satisfied that the conditions are of a very unfair and arbitrary nature, and under the circumstances request me to inform you that the members of this association will be recommended not to tender for the work, unless the unfair conditions are removed.—Yours faithfully,

BERTRAM B. MOSS,
Secretary.

The Town Clerk, Warrington.

The association have since heard that the letter has been ordered to lie on the table, and probably the job will be advertised. The Warrington Association will appreciate it very much if the builders throughout the country will support their action, and also the action of the Royal Institute of British Architects.

* * *

The Churchyard at St. James's, Piccadilly.

Very strong opposition has arisen to the bill promoted by the Westminster City Council to enable them to acquire the present Vestry Hall, and to build for the Rector and Churchwardens a new mission hall in place of it on a part of the churchward. Mr. J. F. L. Brunner, M.P., will move a resolution in the Commons this week, as follows:—"Having regard to the policy of Parliament as declared by the Disused Burial Grounds Act, 1884, and the Open Spaces Act, 1906, this House is not prepared to entertain a bill authorising the erection of buildings upon a disused burial-ground in contravention of such Acts." The Town Clerk has explained that the Council sought to erect a modern and sanitary mission-hall in place of the existing small and incommodious mission-room, and to compensate the rector and churchwardens to the extent of £2,000 for extinguishing their rights to make use of the Vestry Hall. The building, which it was proposed to erect would be about 73ft. by 43ft., and not more than 50ft. high, and would include, besides a mission-hall, classrooms and residential accommodation for the curate.

Army Buildings in 1910.

Mr. Haldane, in his speech on the Army Estimates last week, gave some particulars in Vote 10 of the building works to be undertaken during the current year. Some £94,000, out of a total of £270,000 will be spent on the improvement of married quarters in barracks. This work involves the abolition of single-room quarters, the enlargement of quarters generally and the addition of sanitary annexes; but the change must be done gradually owing to the rehousing of those whose quarters are absorbed. New barracks are to be built at Edinburgh and Redford on the cubicle system, and with various other modern improvements. The huts at Lichfield are to be replaced, and accommodation for a battalion is to be provided at Fort Burgoyne, Dover. The electric lighting installation at Aldershot is being extended; and an installation is to be provided at the Curragh. The Arbor Hill Hospital is being enlarged and improved; Chatham and York Hospitals are to be similarly dealt with next year. A new hospital will be begun at Tidworth, and officers' wards are being constructed at Millbank.

* * *

Architects' Benevolent Society.

The annual general meeting of the above society was held at 9, Conduit Street, on the 8th inst. In the annual report it was stated that two new members had enrolled—Mr. H. C. Corlette and Mr. Percy W. Lovell. £1,136 18s. 6d. had been disbursed in the relief of cases, including £270 paid to pensioners. The capital account had been increased by bequests amounting to £175. Donations totalling to £201 13s. had been made, and also some smaller sums. The society had thus been enabled to increase its investments by the purchase of £200 Queensland 3 per cent. inscribed stock at £171 16s., and £200 New Zealand 3 per cent. inscribed stock at £175 16s. The Council had decided to meet on the second Tuesdays in February, May, July, October, and December. An appeal was made for more practical support from the profession in order that the really necessitous cases might be adequately dealt with. Mr. Lacy W. Ridge, Mr. J. T. Christopher, Mr. J. Douglas Matthews, Mr. Wm. Dunn and Mr. Henry T. Hare were the retiring members of the Council, in whose places Sir Brumwell Thomas, Mr. Walter Cave, Mr. F. W. Hunt, Mr. Reginald St. A. Roumieu and Mr. Lewis Solomon were nominated for election. The President is Mr. Ernest George, A.R.A. (President R.I.B.A.); vice-presidents: Messrs. William Glover and Thomas M. Rickman. The Council for the ensuing year is as follows: Messrs. Benjamin Ingelow, Henry Lovegrove, Rowland Plumbe, William Woodward, the President of the Society of Architects, G. E. Bond, Arthur Ashbridge, Charles J. Blomfield, John Borrowman, C. R. Baker King, Sir Charles A. Nicholson, Bart., Sir Brumwell Thomas, Walter Cave, F. W. Hunt, Reginald St. A. Roumieu and Lewis Solomon. Mr. Nash was then re-elected hon. treasurer; Mr. Currey as hon. secretary, and Mr. Saxon Snell and Mr. C. H. Brodie as auditors, for the ensuing year. The meeting then terminated.

* * *

The Rome Boulevard.

The latest opponent of the Appian Boulevard is Signor Ugo Ojetti, a distinguished literary crtic, who contributes a fiery article on the *passeggiata archeologica*, which is being hurriedly carried out in defiance of expert opinion. Signor Ojetta declares that much of the picturesque region of the Via Appia within the city has been converted into a Saharan desert in order that Professor Baccelli may make his 200ft. wide road by next year, 1911, which is the year of the Italian Jubilee. The preparations for this celebration are in arrear, and it is for this reason that this part of the programme is being so hurriedly pushed forward. Commendatore Boni, the only archæologist on Commission of layman responsible for the project has resigned in protest; and Professor Lanciani has been appointed to the vacant seat. He is a sound archæologist, but, it is thought, will be powerless to influence the other members. In the Chamber of Deputies to-morrow, Thursday, a motion will be brought forward requesting the Government to remove the Zona Monumentale from the authority of the Commission to that of the Ministry of Education. It has the support of 25 deputies, but it is doubtful whether it can prevail against the bureaucracy.



THE NEW TOWN HALL, LANCASTER: THE COMMITTEE ROOMS. THE LATE E. W. MOUNTFORD, F.R.I.B.A., AND F. DARE CLAPHAM, F.R.I.B.A., ARCHITECTS.

These rooms, three in number, are placed on the east side of the building, overlooking the garden, and are divided by sliding doors. If necessary they may be used as one room, 80 ft. long by 20 ft. wide.

Patent Office Extension. Mr. Howard Chatfeild Clarke, F.R.I.B.A., concluded on the 9th inst. the arbitration case of Cohen's Trustees v. H.M. Commissioners of Works, which concerned a claim for compensation in respect of Nos. 13, 14, 15, 16, and 17, Furnival Street, and four houses in Tooks Court, Furnival Street, acquired for the extension of the Patent Office. The property has an agreed area of 7,797 square feet. Valuations were advanced on behalf of the claimants amounting to £29,160 on present buildings, and to £34,680 on new buildings for which plans had been prepared by Mr. L. Solomon. On behalf of H.M. Commissioners a valuation of £19,919 was put forward. The award was reserved.

* * *

Richmond Castle. Mr. Lewis Harcourt's statement in introducing the Ancient Monuments Protection Bill to the Commons has raised considerable speculation as to the identity of the monument which he stated had been presented to the Nation. The general belief is that Richmond Castle is the building referred to; but as announcement of the arrangement between the Duke of Richmond and Gordon and the Office of Works had been announced prior to Mr. Harcourt's statement the matter is not quite clear. Richmond Castle stands on the summit of a rock, overlooking the town of Richmond and the River Swale. A kinsman of William I. is supposed to have founded the town and the Castle, and the latter was probably, for a long time after erection, unrivalled in extent and strength. The principal portion of the building now remaining is an immense square tower on the north side, said to have been built about the middle of the twelfth century. At the south-east corner of the castle is the ruin of a smaller tower, in the bottom of which is a dungeon about 14ft. deep; there is also another tower at the south-west corner, round and narrow, and of considerable height, to which there is no entrance except from the top. A part of the ruins passes as the banqueting hall of the castle, and, though roofless, affords a very good idea of what such an apartment was. It measures 72ft. by 27ft., and its most striking feature is the corbelling, which is almost intact.

* * *

The New Mall. The utilitarian reasons which have contributed to spoil Sir Aston Webb's design for the new entrance from Charing Cross to the Mall are the subject of an illustrated note by Mr. P. G. Konody in the "Daily Mail" of the 10th inst. Mr. Konody declares that the whole scheme breathes the spirit of compromise. But special emphasis is drawn to the fact that unless the approach is opened up from the Charing Cross side the whole thing will be ruined. "Unless Drummond's Bank and the houses opposite are pulled down the whole site, on which so much money has already been expended, will remain an eyesore and an anomaly, and will have to be added to the long list of lost opportunities which unfortunately form so extensive a chapter in the architectural development of modern London."

* * *

The A.A. Play. On this page we give a reproduction of the poster advertising the A.A. play. It was designed by Mr. Harold J. Simkin, of Liverpool, and gained the prize offered by the committee. The A.A. players after a series of productions in the "fit-ups" and halls have at last arrived at the legitimate stage, to wit, the Court Theatre, Sloane Square. This will, we doubt not, save them much trouble with their staging; but the "smoker" cannot obviously take place in a theatre under the Lord Chamberlain's licence. We hope to see the house crowded at both performances, and we trust that the leaders of the profession, to a man, will be found among the audiences. Those who have been in former years (by their own confession) enjoyed themselves immensely. Very complete arrangements have been made for the sale of tickets. As to the play we believe it is not altogether new; but the title, "Arctia," suggests something to do with polar exploration, which is very much in the air just now. We have, however, no inside information on the subject. The man who asked who was "ap—peary—ing" in the play is not very well just now.

* * *

The Late Sir Thomas Drew. We regret to announce that Sir Thomas Drew, R.H.A., F.R.I.B.A., died in Dublin on Sunday last. Sir Thomas who was the leader of the Architectural profession in Ireland, was born in Belfast in 1838, and was articled to the late Sir Charles Lanyon. He was consulting architect to Christ Church, and St. Patrick's Cathedral, Dublin, and to Armagh Cathedral. He was a past-president of the Royal Institute of Architects of Ireland, and also of the Society of Antiquaries (Ireland).

THE NEW LANCASTER TOWN HALL.

The new Town Hall, Lancaster, which occupies the south side of Dalton Square, is rectangular on plan, and was designed by the late E. W. Mountford, F.R.I.B.A., and his partner, F. Dare Clapham, F.R.I.B.A. This building forms with the Ashton Memorial, which was designed by John Belcher, A.R.A., a munificent gift from Lord Ashton to the county town. The main façade to Dalton Square is 132ft. long, with a pediment in the centre supported on six Ionic columns 32ft. high. The pediment contains sculpture by F. W. Pomeroy, A.R.A., representing His Majesty King Edward VII. in coronation robes holding the orb and sceptre, with female figures on either side, representing Truth and Justice and Freedom and Loyalty respectively. The height of the building from the pavement to the top of the balustrade is 55ft., and the clock tower, which is placed over the main staircase, is 146ft. high and 31ft. square at its base. The clock has four dials 10ft. in diameter. The hours are struck on a three-ton bell, and four smaller bells strike the "Westminster" quarters. The elevations throughout have been executed in Darley Dale stone. The hall, which is 38ft. high, is surmounted by a domed ceiling. The council chamber is 40ft. long by 30ft wide, with semi-circular recesses at each end. It is panelled in oak to the height of 12ft. 6ins., from which spring four arches carrying a vaulted ceiling with a domed light in the centre. The whole of the fittings are in oak upholstered in Morocco leather. The reception rooms, consisting of banqueting hall, reception room, and Mayor's parlour, occupy the entire front of the building on the first floor. The committee rooms, which are three in number, are placed on the east side of the building overlooking the garden. It is possible to convert them into one large room measuring 80ft. by 20ft. The public hall, which is situated on the first floor, is 100ft. long by 61ft. wide, with a platform 45ft. wide by 20ft. deep, and contains at the back a large concert organ. The police court is 30ft. by 30ft. and is placed in the centre of the building on the ground floor. The consulting engineers for the buildings were Reade, Jackson and Parry; the surveyor was E. C. Pinks; and the clerk of the works was Michael Hague. Waring and Gillow of Lancaster were the general contractors, and the following were some of the sub-contractors:—Gilbert Seale and Son, London, external stone carving; Waring and Gillow, Lancaster, woodcarving and furniture; Rosser and Russell, London, and Seward and Co., Lancaster, heating and ventilating; Verity and Co., Manchester, electroliers; Bromsgrove Guild, Worcestershire, fibrous plasterwork; Crittall Manufacturing Co., London, casements; Waygood and Co., London, lifts; Doulton and Co., London, sanitary fittings.







Elevation from the North-East.

THE NEW TOWN HALL, LANCASTER. THE LATE E. W. MOUNTFORD, F.R.I.B.A., AND F. DARE CLAPHAM, F.R.I.B.A., ARCHITECTS.

ELEMENTARY SCHOOL DESIGN.

SOME EXPERIENCES WITH DERBYSHIRE ELEMENTARY SCHOOLS.

By G. H. WIDDOWS, A.R.I.B.A.

(*Architect to the Derbyshire Education Committee.*)

[*These notes have been abstracted from a paper read by Mr. Widdows at a Provincial meeting, held at Derby recently, of the Royal Sanitary Institute. The main points for which Mr. Widdows contends are cross-lighting and cross-ventilation, and to these he reverts again and again in the course of his paper. Other important points are the sizes and number of the class-rooms; the delinquencies of the Board of Education; and the relations between Architects and Doctors as regards opinions on hygiene.*]

Size of Schools and Classrooms.

In a measure, guided by Mr. Grindrod, H.M.I., the Derbyshire Committee adopts the principle of six classrooms in a school with from 250 to 350 children, each under a head teacher.

It has been found that of infants below seven the boys and girls are nearly equal in number. In large areas, therefore, three blocks of schools have been erected for the three divisions.

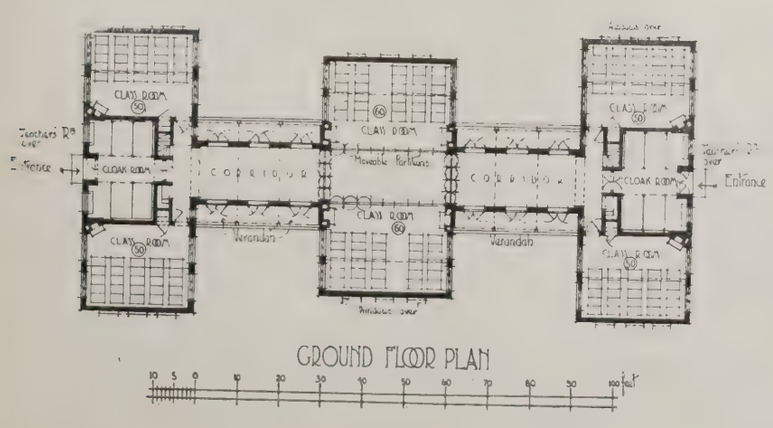
Sizes of classrooms are as follows:—two for 60 each and four for 50 in each block. This is on the large size. If the present allowance of 10 square feet per child is increased to the higher elementary basis of 12 square feet, as it may be, or when the number in the classes is reduced, these rooms will accommodate 50 and 40 respectively. A six-room school allows the three infant classes to be duplicated; in the case of older children each standard has a room to itself, standards VI. and VII., owing to the smallness of their numbers, being almost always taken together.

Two other points: the tendency is to exclude children under five, and to encourage children to stay until they reach the age of sixteen. If the school age be raised, and if Standard I. be taught in the infant school, the six-room arrangement still holds good, for there will be sufficient students for Standards VI. and VII. to be taught separately. If a 60-room be made sufficiently large, and assuming that uncertificated teachers will, in the future, count for not more than 30, in lieu of 35 at present, two classes or two divisions of a class can be taught in one room: the head teacher will be better able to rearrange his staff to meet a temporary difficulty of illness.

Plans.

No. 1 is my first attempt at cross-lighting and cross-ventilation, and I like this plan as well as any. It will be seen that the central part of the building can, by the use of screens, be turned into what is practically a central hall. In the case of infants the central part and two corridors form playing places in wet weather; it is a help to teachers to be able to have children divided into three groups at such time instead of all together in a central hall. Corridors are 13ft. wide; enable two boys side by side to perform extended drill without touching each other or the walls. Corridors provided on each side with double doors opening into verandahs, no rain enters, and drill takes place practically in open air. Verandahs avoid expense of covered shelters.

No. 2 shows that cross-lighting and cross-ventilation do not involve one type of plan. This gives a central corridor on the small side. In another school of this type I am doubling the corridor length and making it 20ft. wide. The whole school can be assembled in it for prayers.



Plan No. 1.

Nos. 3 and 4 were prepared to enable three rooms to be built at first, with extension later when required. No. 4 is not so good for cross ventilation, taking each room by itself; but if the screens are thrown back the building is easily air flushed. Provides a good area for village meetings.

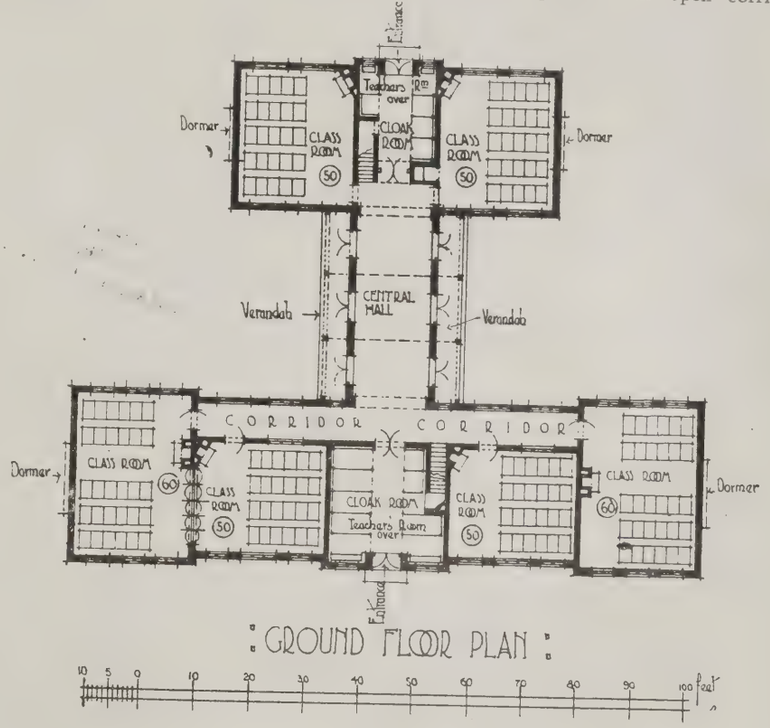
Classrooms.

These are 11ft. in height to wall-plate and 14ft. to the ceiling. Strain on teacher's voice if of greater height. Height has direct bearing on ventilation (q.v.). Sunshine in each room desirable; in a cross-lighted building the placing on the site is less material, as sun is sure to reach each room some time during the day. The walls and ceilings are plastered. In infant school a height of 4ft. from the floor, and for older children, 5ft. 6ins., is made of hard plaster coated with green composition, for free arm drawing. This is cheaper than glazed bricks, and serves double purpose.

Teachers' Rooms, Etc.

Two in each school; one for the head and the other for assistants. Also a large store for school goods.

We are far from claiming that finality has been reached. In summer the air below the window-sill level, in which children sit and breathe, gets heavy. Plans 5 and 6 show a further development with open corridors,

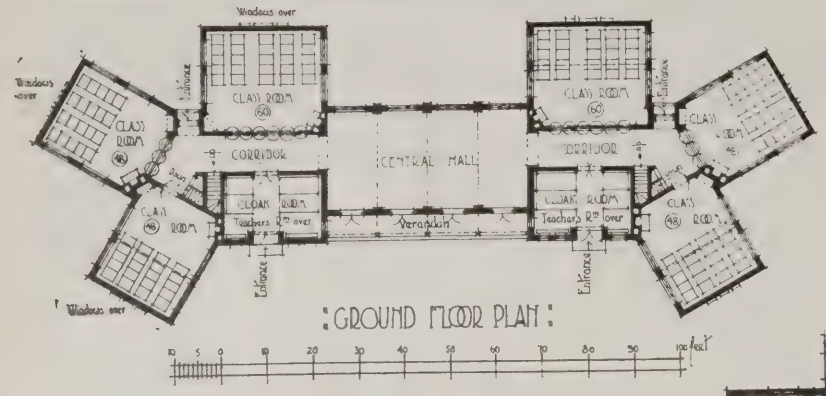


Plan No. 2.

each room opening direct into the fresh air. Cross-ventilation to the cloak-rooms—a desirable matter—is also provided. The open corridors are 8ft. high, with concrete and asphalt roofs; classrooms have windows below the flat and dormers above, so that cross-ventilation will be fully maintained. There is a step down from corridor to classrooms, and to prevent draught coming under door in winter, doors close against step and not on top of it.

Windows, Ventilation, and Heating.

Swing lights in end gables of classrooms, 9ft. 6ins. from the floor, so that light does not fall direct into the teacher's eyes. Side windows are provided with hoppers at the bottom and swing lights above, the hoppers being air inlets, and the swing lights outlets. Hoppers open not more than four inches, formed with a deep rebate at the top, compelling the incoming air to travel upwards. If hoppers open more than four inches the air



Plan No. 3.

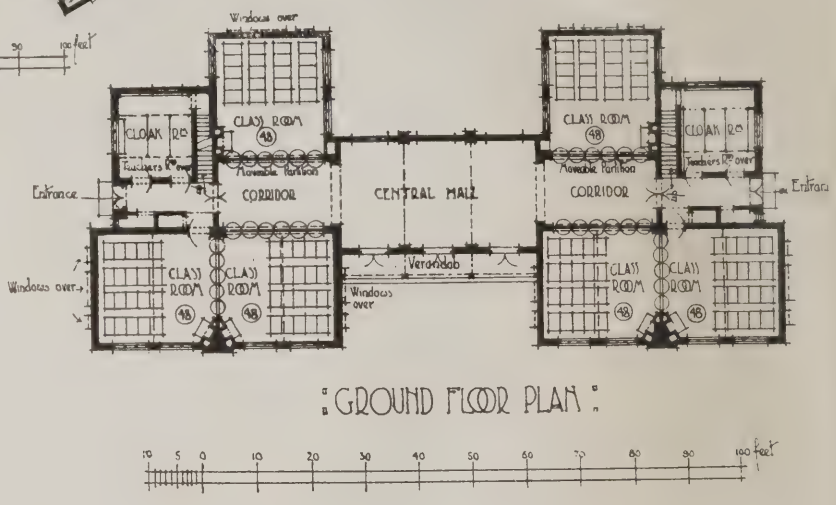
comes in horizontally, catching the teacher's head. It is surprising how little this point is understood. See No. 7, section of hopper in use in Derbyshire schools, also iron "Derby" hopper for use between stone mullions. To this latter a wind shield is attached to compel air to travel upward. The net glass area is one-fifth of floor area in each room.

Ventilation is further assisted (particularly in inclement weather) by the fireplaces in each room, provided with two 14 by 9-in. air-flues, one on each side of the fireplace. These air-flues are continued down to floor level, as there is more vitiated air below the level of window sill than above; the flues have regulating grates at floor and ceiling level.

Heating is by low-pressure hot water, with ventilating radiators in each room. No room has less than 14 sq. ft. of heating surface per 1,000 cub. ft. of contents, and if rooms are at the end of a circuit they have 18 sq. ft. Ventilating radiators are reckoned at half catalogue efficiency to compensate for extra quick circulation of air brought in and warmed by them. What is aimed at is not a large body of dead air, but a smaller body changed frequently. As *each* child should have 1,500 cub. ft. of air per hour, it will be seen how necessary it is to change the air frequently; and how little help is an extra 2 or 3ft. in the height.

Floors.

Usually of maple nailed to coke-breeze concrete, or are of wood blocks on concrete.



Plan No. 4.

I have tried two small jointless mastic floors; neither has proved a success. I have also tried asphalt, but it is cold to the feet. A suitable jointless floor, both warm and durable, would bring a fortune to its inventor.

Painting.

Rely on green and white externally. Internally the woodwork is usually a light green, and walls, above dark green dado, are tinted a light warm buff. Picture rails are kept 2ft. or more below the wall-plate, and the white of the ceiling is brought down to them. Colours should be light and bright, but not glaring or gaudy. At an old school, where I changed a dismal terra cotta, that had for eight years held sway, the headmaster volunteered the information that both teachers and pupils had benefited by the change and did their work better.

Artificial Lighting.

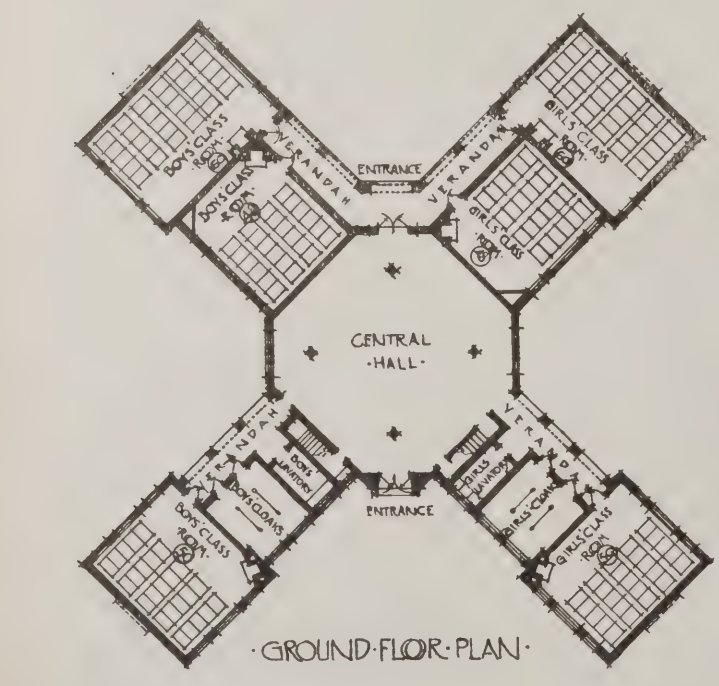
Electric light is used wherever available, but in most cases only gas is obtainable. With gas we used single inverted incandescent lights arranged to spread the light equally, the bottom of the globes being 8ft. 3ins. from the floor. To obtain satisfactory lighting the ratio of candle-power to square feet of floor area should not be less than 3 to 5.

Fixtures.

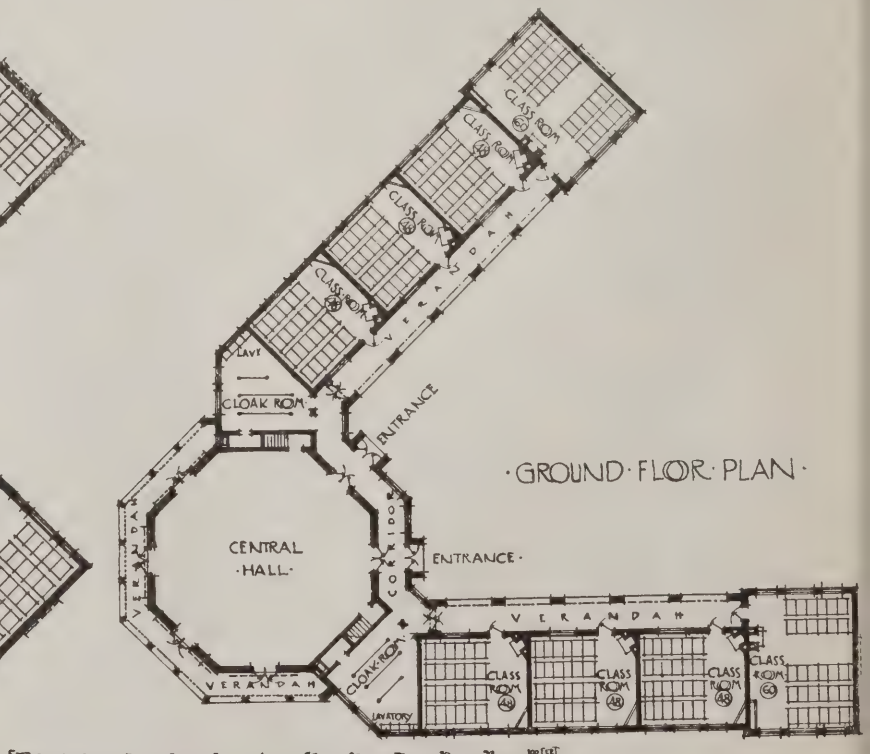
Cupboards are worked, where possible, as part of the structure, cumbersome pieces of furniture being thereby avoided.

Sanitary Work.

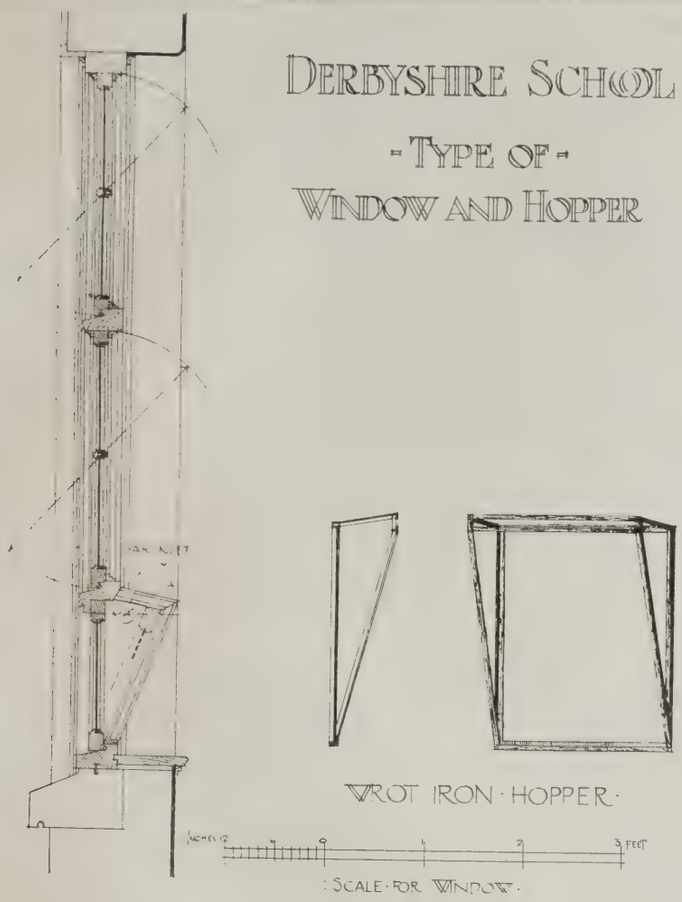
The out-offices are one of the school architect's greatest difficulties. We are abolishing the privy midden, providing pail closets in country districts. The difficulty with the girls' accommodation is got over by fitting as urinals a certain number (according to the size of the schools) of closets. These are fitted with hopper pans and connected with the other drains. The doors of these closets have a large "1" painted on them; the pail



Plan No. 5.



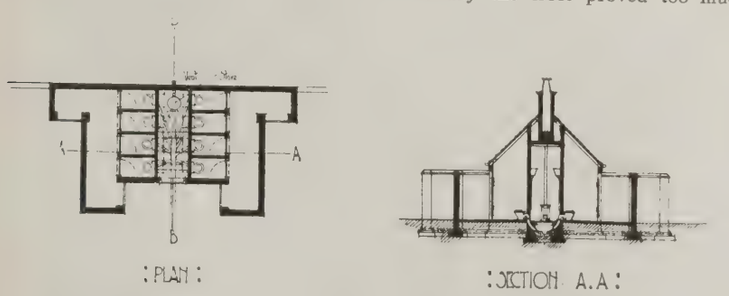
Plan No. 6.



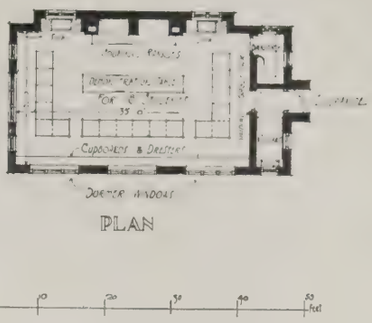
Plan No. 7.

closets have "2" marked on the doors. I was sceptical about this experiment, but it has been successful. The children seldom or ever misuse the closets, and so one difficulty in country districts is obviated. Where a water-carriage sewerage system exists, we invariably use it, but have had considerable trouble and expense in winter, through careless or ignorant caretakers, frozen pipes and cisterns, etc. Where closets exist, matters are improving owing to better attention on the part of both teachers and children.

We have adopted the gravitation system of feeding for closets. This means that all the water enters through one cistern, and all the other cisterns are fed through the bottom from it. There is thus only one ball-cock in lieu of several, and the gravitation feed-pipe being provided with a further length of pipe and draw-off cock, every cistern and pipe can be emptied in frosty weather. Even then we found that when the water was turned on for a few hours in the middle of the day the frost proved too much. We



Plan No. 8.



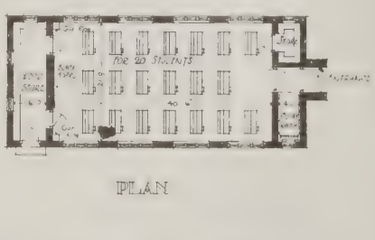
Plan No. 9.

now arrange the closets as shown on the drawing No. 8. A four-feet gangway is placed between the closets; the cisterns are placed therein, and the traps of the pans are made to extend quite through the wall. The gangway is kept heated by means of a slow combustion stove or hot water-pipes, and we hope now we have arrived at something that will defy frost.

For boys' urinals a plain wall, covered with cement, and coated with a mixture of pitch and tar, appears to be as cheap as anything and as efficient. Perhaps ere long we shall be able to teach children to use closet pans as urinals. The water bill would be increased, but the gain would be great, and it would teach children still more to use closets aright in their own homes.

Cookery Rooms.

Plan No. 9 shows the kind of cookery rooms we are erecting. Instead of placing the ranges at the end of the room, we place them upon one of the long side walls. The students can see better what is going on, and the same ranges answer for demonstration and practical work. Two sinks with hot water are provided in full view of the scholars, so that washing up may also be made a matter of instruction. At one end a



Plan No. 10.

larder is provided, and a small cloakroom for classes coming from a distance. The only furniture other than tables and desks are two shelves for saucepans, a rack for pastry boards (with complete circulation of air), and dresser. The tables are of the ordinary kitchen type. By providing four sinks instead of two and by providing two coppers, laundry work can also be taught.

Manual Instruction Rooms.

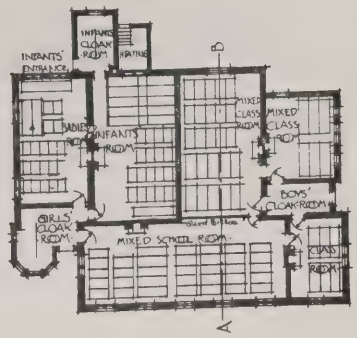
Plan No. 10 shows a manual instruction room for 20 students. At one end benches are set apart for metal work.

Cost.

Cross-lighting and cross-ventilation add little if anything to the cost. Our schools have varied from £9 9s. to £13 13s., and one may say that under ordinary conditions a six-room school costs £11 11s. per head. This includes boundary walls, playgrounds, out-offices, and main building, but does not include site and furniture, nor does it include special buildings, such as cookery and manual centres.

Alterations to Existing Schools.

These are our most troublesome problems. The oldest schools, L or T shaped, are easily ventilated, but one becomes nearly desperate

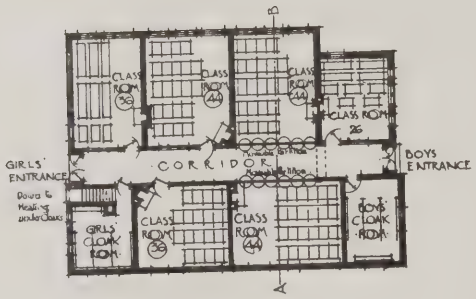


:GROUND·FLOOR·PLAN:



:SECTION A·B:

:EXISTING SCHOOL:



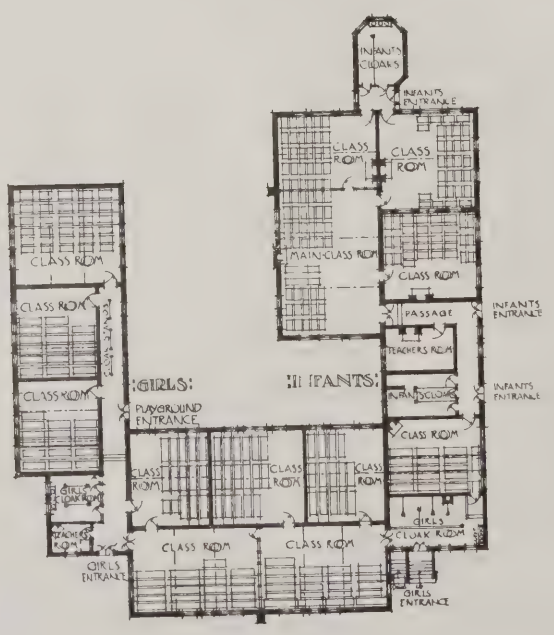
·GROUND·FLOOR·PLAN·



·SECTION·A·B·

:PROPOSED ALTERATIONS:

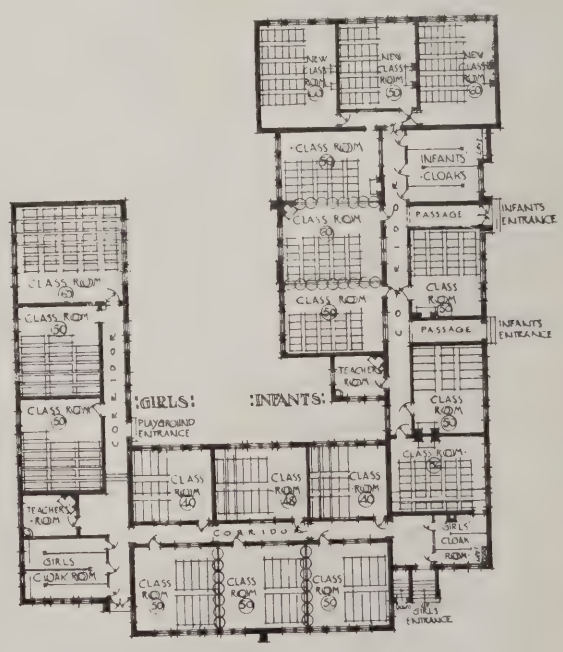
Plan No. 11, Alterations.



GROUND·FLOOR·PLAN·

:EXISTING SCHOOL:





GROUND·FLOOR·PLAN·

:PROPOSED ALTERATIONS:

Plan No. 12, Alterations.

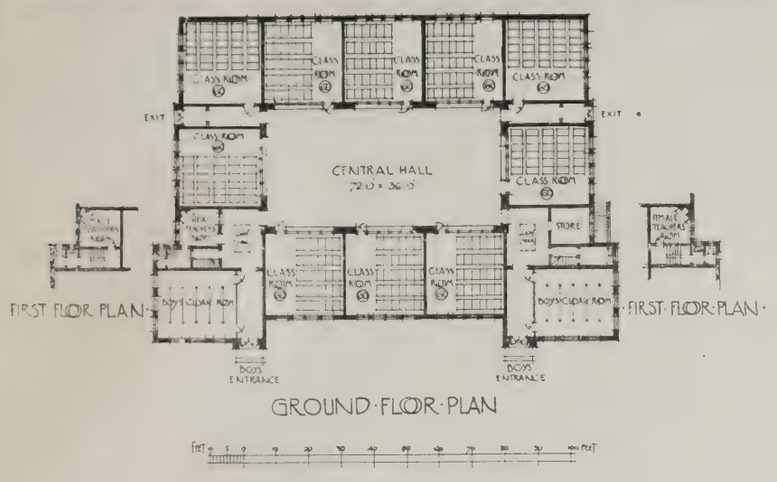
when confronted with plans supervised by the Board of Education after the Act of 1870. Look at plan No. 11. We have had to cut the roofs away, drive a low corridor through the building, with a door at each end, and obtain cross-ventilation to the classrooms by means of windows above the corridor. Now look at the next plan, No. 12, as it exists to-day. Could anything be worse? It is next to impossible to make a really successful alteration, but you will see we are doing our best to get a conduit to carry fresh air into the middle of the building, and are also providing thereby that each class can pass out without disturbing half the school.

One could forgive the Board their past delinquencies if there were signs of repentance in the present. But how can one respect a public authority which still continues to pass plans such as plan No. 13, a plan that is being used wholesale in the West Riding? Here we have the central hall surrounded on all four sides. How is it possible to ventilate satisfactorily a building of this kind? Think, too, of the depressing effect of these halls with no window for anyone to look out. Then, again, look at the accommodation—ten rooms of sixty each. Six hundred children under one head teacher, and all classes the same size!

Before leaving the question of alterations, let me draw attention to an interesting scheme at West Hallam. Here was a voluntary school with a substantial endowment. The governors of the trust allowed me to act as their architect in what we all hope will be the beginning of better education in rural districts. The old school was remodelled, the master's house was converted into a science laboratory, and a stable near was converted into a manual centre. At the girls' school the mistress's house was converted into a cookery centre. The school is now no longer of the ordinary village type. It serves several villages adjoining, and to it promising scholars are admitted free. A plan is given, No. 14, showing the school as it now exists.

Some Observations.

"For my part, I would rather see the Board (of Education) leading the way and providing us provincial architects with good ideas; instead, we have a Board which not only does not lead the way, but hinders those who are trying to get out of the rut. Some say the Board will find out that light and air are two of Heaven's greatest blessings."



Plan No. 13.

"It is a disgrace to our civilisation that such rooms (bath-rooms for cleaning dirty children, under the Medical Inspection Act) should even be thought necessary. I am reluctantly driven to the opinion that the only thing at the present time to improve the general cleanliness of the people is compulsory military training. Men trained and accustomed to military cleanliness would cease to tolerate the filth and squalor of slums."

"As a finish to a girl's school career the provision of 'home-making' centres is under consideration. In this case I shall probably not be called upon to design anything, as it is more than probable that existing artisan dwellings will be hired. This will give a thoroughly practical turn to their education, and must prove of greater service to the girls than being taught in a special building unlike the homes they inhabit."

"I am hopeful that metal-work (in manual instruction) will form a greater part of our rural education as time goes on. Why should not our village smiths turn their attention to other things besides horseshoes and cart wheels? Why should the squire, when he wants a lamp, write to a London store? Why should not the smith, as of old, be able to design and execute? The smith would take a pride in it, and the squire would get more enjoyment, knowing he had encouraged local talent."

"As the Medical Inspection Act refers to elementary schools only, it is to be feared that secondary schools are not receiving the attention that is their due. Secondary buildings require just as much revolutionising as elementary. All one can say is there are not so many children in each class, and their clothes do not stink. The fact remains, however, that they require the same amount of air as other children, and they have the same difficulty in obtaining it. In the secondary schools of Derbyshire (aided or maintained by the county committee) 70 per cent. of the children come from elementary schools, and more than 25 per cent. of the total are free places. Why should inspection be necessary for these children while they are in elementary schools but no longer necessary when they get to a secondary establishment? It is difficult to get an Englishman to be logical."

"The tendency among architects is to regard doctors as cranks and faddists. Unfortunately, some are, but certainly not all. Architects will do themselves no good by ignoring the doctors. There are very few architects who understand ventilation, or who take the trouble to try to understand it. They swallow some firm's patent nostrums, and that is as far as they go. The doctors have come to stay, and architects must rise to the occasion so as to be able to debate the questions with the doctors. For my part, I hope the Royal Institute of British Architects will go more into it, and make their examinations more drastic in the matter of ventilation, lighting, and heating."

Discussion.

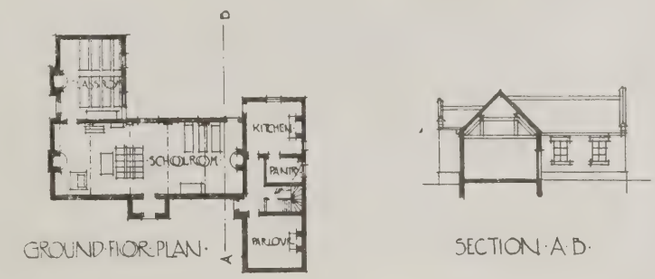
The Bradford City Architect. Mr. R. G. Kirby, A.R.I.B.A., having congratulated the Derbyshire County Council upon having such an architect as Mr. Widdows, said there was no doubt newer and better types of schools were being evolved to suit particular districts, but it was much to be regretted that perhaps 70 or 80 per cent. of the schools being erected in the country to-day were totally unsuitable for present educational requirements. He had lately seen many schools in Birmingham, Staffordshire, and Derbyshire, and there could be no doubt that Mr. Widdows had been successful in obtaining good light and efficient ventilation in every class room. A recent visit to Germany had impressed on his mind the importance of the great marching halls they had in the schools there, and especially in view of the inevitable adoption of some form of conscription. Whilst so favourably impressed with Mr. Widdows's schools, he yet thought that the Bradford schools being erected now were more suitable for that town, because the conditions were different from Staffordshire and Derbyshire, where they had flat sites and unexposed positions. In Bradford they had a detached hall with classrooms in one row, all facing south, with a fresh air corridor opening into the class-rooms. As a further development of the open air schools, he was trying a school with verandahs facing south, so that in summer time the side of the class-rooms might be thrown open, and the children would be practically in the open air. He was greatly pleased with the adaptability of Mr. Widdows's schools, their artistic appearance, and the absence of barrack-like appearance.

* * *

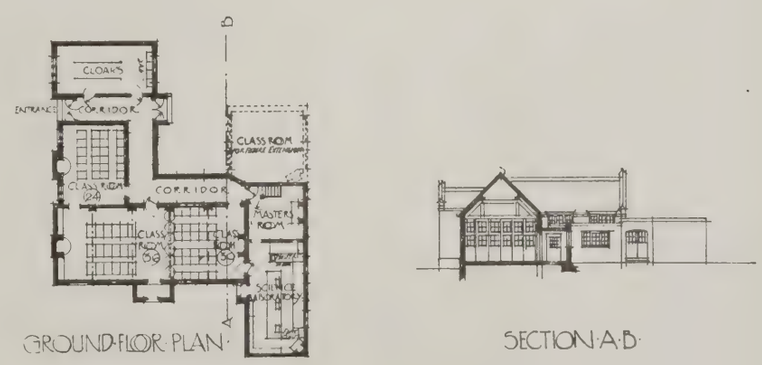
The Derbyshire M.O.H. Dr. Barwise urged that they had not yet gone far enough with regard to school planning, and he could not allow deep breathing to take place in any school where the air came in contact with the class-rooms.

* * *

The Staffordshire M.O.H. Dr. Reid described what are now known as the Staffordshire type of pavilion schools, and urged that the only way to plan a school was to treat it practically as a hospital. He would like to have it established as a principle that they must have cross ventilation, and he would like to go further and pass no class-room which opened into a corridor. It was often said that pavilion schools occupied a good deal of space,



EXISTING SCHOOL.



PROPOSED ALTERATIONS.



Plan No. 14.

and were costly to build, but this was not so, and there was no reason why such a school with two or three storeys should not be erected, each storey having a verandah. In fact, the University at Bangor was being erected on this plan. They had no open fireplaces in the Staffordshire schools; they gave 40 inches of ventilation per child, and allowed 26 to 28 feet of heating space per 1,000 cubic feet.

* * *

A Schoolmaster. Mr. Clegg, of Long Eaton, as a schoolmaster who had worked in the older type of school, and the new type designed by Mr. Widdows, said that his staff had had no trouble with teachers' sore throat since working in Mr. Widdows's schools, and he thought that was perhaps one of the greatest tributes which could be paid to a school architect.

* * *

The Mayor of Derby. The Mayor of Derby thought it was a case of the survival of the fittest type of schools, but in the meantime the ratepayers had to pay for the cost of the struggle.

* * *

One of H.M.I. Mr. Owen thought the complaints against the Board of Education had been exaggerated. He admired Mr. Widdows's schools, but there were other schools which no one could say should be abolished. It had to be remembered that architects had been erecting schools for many years, and apparently the only two people who had solved the problem were Dr. Reid and the author.

* * *

The Sheffield City Architect. Mr. Edwards remarked that in the past the planning of schools had been looked upon primarily from the point of view of teaching, and now there was a tendency to go to the other extreme, and possibly they might be making a mistake in treating schools too much like sanatoria. A great many mistakes in school planning were also due to the competition system, because an architect knew he would have no chance of winning a competition unless he followed on the lines of the usual plans.

* * *

The Chairman. Mr. H. D. Searles-Wood, F.R.I.B.A., said that he was old enough to recollect the introduction of the central hall by Mr. Robson, of the London School Board, and it was adopted entirely from the supervision point of view. He hoped there would not be another society of architects, and would suggest that the Royal Sanitary Institute could always afford facilities for official architects to confer together.

* * *

The Lecturer Replies. Mr. Widdows said he could not agree with Dr. Reid that it was necessary to have so large a heating area. In the Staffordshire schools, if the teacher closed the windows there was no ventilation at all, whereas with the open fireplaces the foul air always had a chance to escape.

The City Iron Co. announce that in consequence of Messrs. W. Graham and Sons, of 35, Upper Thames Street, having decided to retire from business, convenient showrooms and stores have been secured at 47, Upper Thames Street, where the first-named firm will trade as the City Iron Company. They have Messrs. W. Graham and Sons' permission to continue the sale of their patterns, and are therefore in a position to supply any goods shown in their catalogues and price lists, including renewal parts for ranges, etc. Their showrooms will also contain a number of entirely new designs in wood mantels, stoves, ranges, baths, etc., including the "Presto" automatic flushing closet, for which they have the sole agency.

THE FIRE PROTECTION OF FACTORIES.

The enormous aggregate of fire waste in the United States, which so greatly exceeds that of other civilised countries, is becoming a serious tax on the commercial resources of that country, and it is gradually coming home to the American public that fire insurance companies are not fairy godmothers, evolving means for compensation by some subtle magic, but that they are merely collectors and distributors of a fire tax wrung from the public itself. Out of this tax they pay losses, the cost of conducting their business, and a reasonable interest on the capital laid down. Part of this tax is levied directly on the average man, in the shape of his fire insurance premium; but he is also taxed indirectly inasmuch as everything he eats, wears, or uses, is affected in cost by the amount of fire tax which the various manufacturers or retailers of these commodities have to disburse. Consequently if the aggregate amount of fire waste in any country is great, it is mathematically certain that the community in general is paying much more for its fire protection than it ought to do.

The Protection of Fire-waste.

Few manufacturers are now under any delusion in the matter of fire protection. They realise that the amount of the premium or fire tax they pay bears a direct relation to the character and fire hazard of the buildings they occupy; and that they also pay for the carelessness or negligence of their neighbours. Moreover a destructive fire, even if, in the popular phrase, "covered by insurance," may cause a serious dislocation of business, and probably the loss of many customers; and this unwelcome denouement cannot be estimated for insurance premises.

The question of fire-protection is first and foremost concerned with the construction of buildings, i.e., with the character of the materials used, and the manner in which they are put together. There is another side to the construction of buildings which has called into being the fire protection expert; and that relates particularly to the design and arrangement of the structures, and to special risks involved in particular industries. It is not sufficient that a structure should be built of incombustible material, for a fire may yet spread from floor to floor, and department to department until the entire contents are burnt out. Further, if a certain part of any manufacturing process involves greater fire hazard than the rest, obviously it will be wisdom to consider carefully the particular location of that process in the building; and possibly to relegate it to a separate structure altogether. Failure to consider these and similar points may involve the owner in heavy premiums to cover risks that could easily have been avoided.

The Principles of Fire Prevention.

Three main points in the fire protection of a factory have been put forward recently by Mr. F. H. Wentworth, secretary to the National (American) Fire Protection Association. These are given as follows:—

(1) There should be as little combustible material as possible used in its construction and equipment.

(2) Each floor should be absolutely cut off from every other floor, and each section from every other section, so that fire may not communicate.

(3) Every part of a factory should be equipped with extinguishing apparatus.

The first point is one to which particular attention has been paid in Great Britain. In fact, fire protection here has been mainly confined to the application and testing of fire-resisting materials, to the exclusion of the important questions involved in the second item, and, in a lesser degree, that in the third one.

The second point is of considerable importance when one remembers how many mills and factories in this country are let out in separate floors, with consequent risks inseparable from divided control and varying processes in the same building. But both the first and second points interact upon one another, as will be explained.

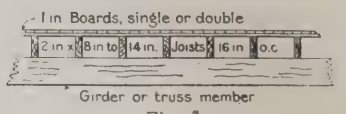
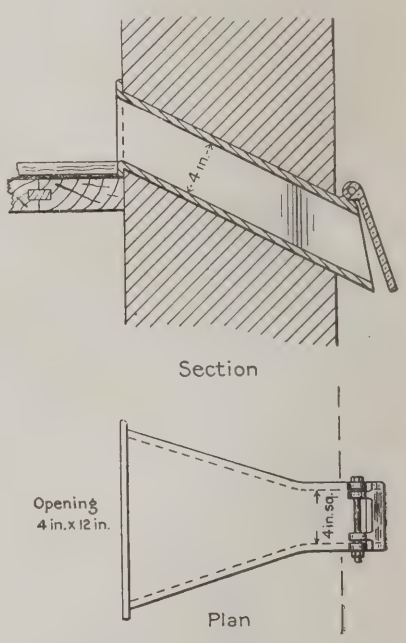


Fig. 1.

UNDESIRABLE CONSTRUCTION.

Fig. 1. Note the large expanse of wooden surfaces exposed to fire and the fact that a slight fire which may burn no more than half an inch from each side of the joists practically destroys their strength, whereas a similar fire burning under purlins or timbers illustrated in Figs. 2 and 3 may do but little injury to them.

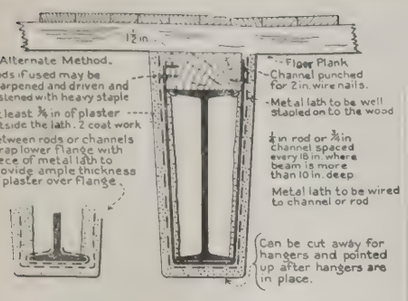
An incombustible building is not an impossible thing, in the sense that materials may be employed which will not ignite; though the destruction or disintegration of any building material is merely a question of degrees of heat. But if the building is sub-divided by fire-resisting walls and partitions, and the openings between them closed by fire-resisting doors an outbreak of fire can be so limited in extent that the degree of heat engendered will rarely be great enough to seriously endanger the structure. Still, the mere confinement of the outbreak to the section in which it commenced does not complete the work, for means of extinguishing the fire in the isolated section should be provided. It is thus evident that all three points put forward by Mr. Wentworth are independent and complementary for the purpose of modern fire protection.



DETAIL OF SCUPPERS.

Non-Combustible Construction.

This brings us to the question of non-combustible construction. Here reinforced concrete presents obvious advantages, and with such construction every floor may, by avoidance of vertical openings through it, be made practically a fire wall. It is, of course, essential that in all factories of whatever type of construction stairs, elevators and belts be placed on fireproof enclosures with openings to each floor; protected by fire doors or shutters. If in addition to the omission of all vertical openings, provision be made to drain the floors through scuppers set into the outside walls, the possibility of water damage to goods or materials on floors below is much lessened.



SUGGESTION FOR FIREPROOFING STEEL BEAMS.

Slow Burning Mill Construction.

An objection to reinforced concrete factory construction comes from some manufacturers, because it does not present convenient surfaces for the attachment of pulleys, shafting, and machinery. They prefer "slow-burning" mill construction, which has its own inherent problems. Here we have wooden floors, enough wood must be used to insure strength and stability, but superfluous wood should be avoided. It matters very much just how the quantity of timber is disposed, and the guiding principal should be to present the least possible amount of wood surface to the fire attack.

For example, a mill planned with heavy beams, eight to eleven feet on centres of continuous spans from wall to post, or post to post, is infinitely more desirable than one of miscalled mill-construction having longitudinal girders resting upon posts on which the girders are placed four feet or less on centres. The latter construction not only adds to the exposed wood surfaces which may be attacked by fire, but the disposal of the timbers obstructs the action of the sprinklers, and prevents the sweeping of hose streams from one side of the mill to the other.

Those undesirable fire-boxes known as light-joisted buildings should never be permitted for factory use; they should be forbidden by the by-laws. Light joists or rafters two or three inches in width, spaced from ten to sixteen inches on centres, ignite and burn like kindling. Their numerous corners furnish projections for easy ignition. The menace of such construction is generally aggravated by sheathing under the joists. This provides a series of wooden cells and concealed spaces in which fire may riot and lodge, and dodge extinguishment until the floor or roof is burned through. By the same token partitions of light wood should be avoided.

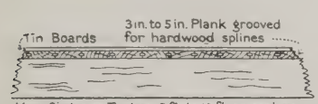


Fig. 2.

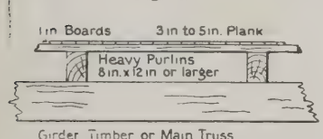


Fig. 3.

GOOD TYPES OF CONSTRUCTION.

Fig. 2 illustrates plank directly on timbers or girders not usually over 10 feet on centre.

Fig. 3 is a type where trusses, posts, or girders are widely spaced, necessitating use of purlins to support planks.

Note that an 8 × 12-inch purlin has an equivalent amount of wood to six 2 × 8-inch joists spaced as Fig. 1, and that the latter expose 108 square ches of surface to a fire as compared with 32 uare inches in the former.

Fire Protection of Steel.

Timber posts offer greater resistance to fire than wrought iron, steel, or cast iron pillars if the latter are unprotected. As steel or wrought iron, when heated, will fail by buckling or bending before an equivalent beam or post of wood will be dangerously affected, it is of importance that steel members essential to the stability of the structure be fireproofed; otherwise a fire in a lower storey may bring down in wreck everything above it. Where steel beams support wooden floors they must be fireproofed if they are to resist fire as well as the floors. The accompanying cut gives in detail an inexpensive method of protecting steel beams, and this is also applicable to wrought iron or steel stanchions. A more substantial method is usually advisable for the latter, however, and protection against mechanical injury near the floor should be provided. Concrete casing is frequently employed for the purpose.



Photo: Topical.

CONCRETE HOUSE AT WINTHROP, MASS., U.S.A., BURNT OUT DURING CONSTRUCTION.

The débris of houses of ordinary construction also burnt can be seen in the foreground.

In machine shops and other plants requiring exceptionally heavy floor construction above the ground level, steel beams are frequently called into service. With these, if wide spacings of from seven to twelve and one-half feet are maintained, the advantages of standard mill construction are not forfeited if the steel members are suitably fireproofed. Desired floor stiffness between beams may be secured by making floors of two-inch joists on edge spiked together, the thickness of the floors varying with the loads and span from five to eight inches or more. This floor being practically a single unit, provision must be made for longitudinal contraction by making a continuous joist in the under flooring at intervals, with, of course, arrangement for tying the building together.

There is another matter which should never escape consideration in building a factory. This is the special fire hazard incident to the character of the factory product. Sufficient statistics are now available on almost every well-known manufacturing process to indicate just what elements in such process are especially susceptible to fire. Bulwarked by this knowledge, it is prudent to segregate from the principal values of the factory all special processes demonstrated by experience to be especially hazardous. This does not mean that such processes must be carried on in separate buildings at the cost of travelling time and inconvenience. The problem of segregation can now be met without shifting the process out of its logical place in the routine of manufacture. In a fireproofed factory only a separate room, or, at best, a separate floor, is needed.

Windows, whether in close proximity to other buildings or not, should not have wooden frames or any woodwork round about them. Iron or steel frames, filled with wired glass, are the most suitable form for efficient fire protection.

Fire Extinguishing.

On the question of fire extinguishing, the installation of an efficient automatic sprinkler system is of very great importance. It is highly desirable that fire, which may break out at night, or when buildings are locked up at the week end, should be extinguished at the earliest possible moment before the heat has attained a degree that will be destructive to the structure. It is also important that the hydrants should be fixed so that the delivery pipe is carried through the wall inside by the fire door of each section or department that can be isolated, and not merely in corridors or staircases outside them. In many cases, as at the Clapham Junction fire, the fire-doors could not be closed because of the hose passing through them, with the result that when employees have had to beat a hasty retreat the doors have been left open. An ample water supply is of course a necessity, and it is desirable to have a gravity system of sufficient volume and pressure to afford a good supply until the secondary pressure supply can be drawn upon. Where buildings are near enough to each other to make their roofs a point of vantage for the use of the hose, the standpipe should be extended to the roof.

We are informed that Messrs. E. H. Shorland and Brother, of Failsworth, Manchester, have recently supplied their patent Manchester stoves with descending smoke flues and ventilators to the workhouse infirmary extensions, Sheffield.

Fire Prevention Notes.

Electric Light and Fire Risks.

The Phœnix Fire Office Rules for Electric Light and Electric Power Installations, etc. have been translated into various foreign languages, and the pamphlet containing them is now in its thirty-eighth edition. The rules were compiled by Mr. Musgrave Heaphy, M.I.E.E., and were first issued in February, 1882, and each subsequent edition, up to 1908, was periodically revised by him; and the current edition has been brought up to date by Mr. S. G. Castle Russell, M.I.E.E.

* * *

Cheap Work that is Dear.

The general value of these rules may therefore be taken for granted; and if it be thought that in some particulars they are unnecessarily strict, that is only what must be expected in this or any other counsel of perfection. Adopting a popular paradox, it may be said that "the fault is a good one." The first word of the prefatory note is a piece of excellent advice: "If you put up electrical work to tender, remember this: that any firm by arranging to place inferior quality of work in your premises can easily underprice other firms that are more conscientious." Cheap and inferior work is likely to prove very dear in the long run, by causing, sooner or later, a fire, which may break out between floors and ceilings, behind wainscoting, or inside roofs.

* * *

Special Risks.

The special risks of various classes of buildings — theatres, drapers' premises, churches, factories and workshops, various kinds of mills, chemical works, breweries, central stations, engine rooms, motor garages, etc.—are very carefully considered. With respect to drapers' shops, the observations have particular interest and significance in view of recent disastrous fires "In these risks," it is advised, "the greatest care must be exercised, not only to keep the lamps, but all switchboards, switches, and cut-outs, at a safe distance from all combustible materials and goods. Care should be taken to render it impossible for goods to come into contact with incandescent lamps, fittings, or conductors. All arc lamps should be doubly enclosed. No portable incandescent lamps or flexible conductors should be placed in the shop windows or shops, or where there are inflammable goods. Switch and fuse boards should be placed on a brick or stone wall. They must not be on wood fittings, etc., containing goods, unless in substantial metal cases." Other risks, special and ordinary, are dealt with in the same practical fashion; and altogether the rules seem to be not only useful, but indispensable to the safe installation of electric light or power

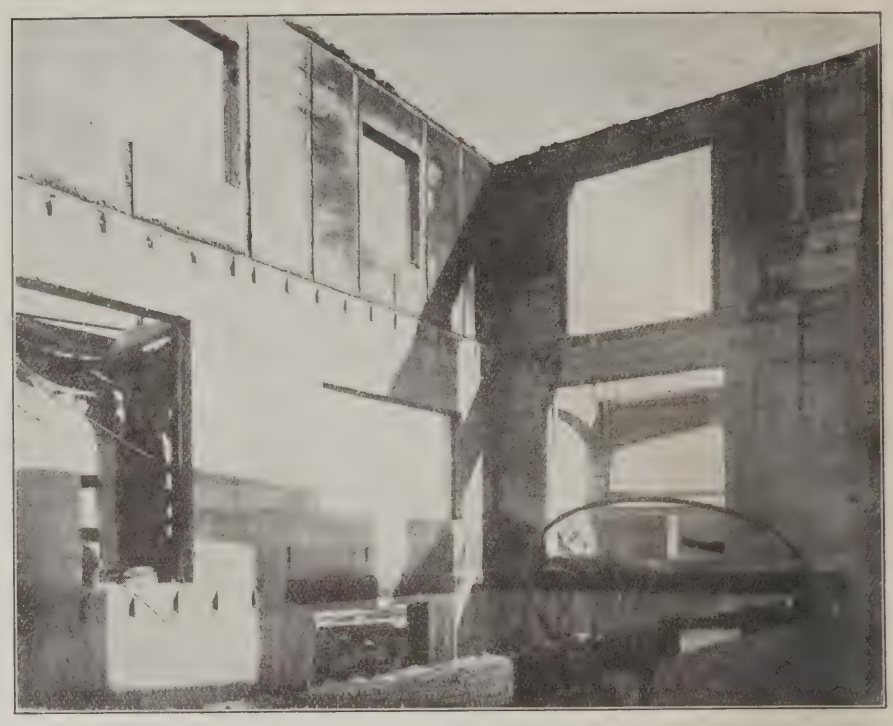


Photo: Topical.

INTERIOR OF A CONCRETE HOUSE AT WINTHPOP, MASS., U.S.A., BURNT OUT DURING CONSTRUCTION.

* * *

Fire Precautions at Hampton Court.

As we announced some time ago, the chief officer of the London Fire Brigade was invited to make a careful investigation of the arrangements for protecting Hampton Court Palace from fire risks. The chief officer has now presented his report, from which it appears that the first-aid brigade which is already in existence at the palace consists of about a score of firemen, who have a stationary steam fire-engine. There is, however, a local fire brigade of exceptional strength, the Hampton and Metropolitan Water Board brigades, which work together, comprising nearly forty trained men with four steam fire-engines. A wire between these and the palace, however, was said to be out of order when tried by the chief officer. Of course everything relating to fire prevention should be tested constantly—preferably every day—so as to ascertain that it is constantly kept in perfect efficiency and working order. It is to be hoped that these investigations into the means of preserving important buildings from fire may be extended in other directions. It is work that is well worth doing, and that has a threefold value—educational, practical, and stimulative of the public interest.

* * *

A Point of Etiquette.

An official at the palace has pointed out—and we quite agree with him—that "because the chief officer of the London Fire Brigade makes suggestions concerning the improvement of the fire precautions at Hampton Court Palace, it is not fair to assume that the present arrangements are unsatisfactory or inadequate." Such an imputation would be entirely unnecessary. At the same time, there can be no question as to the utility of such investigations; and the reports upon them should not be construed as reflecting in the slightest degree upon those who are responsible for the arrangements upon which such reports are made. It is surely no reflection upon a local brigade if the chief officer is able, from his wider experience, to point out possibilities of improvement in certain details.

* * *

Protecting Pictures.

An interesting point in the arrangements at Hampton Court Palace is that the Mantegna cartoons, "the chief glory and pride of the Palace," are mounted on wheels, and supported by hydraulic pistons, so that the turning of a tap brings each heavy cartoon to the floor, when it can be wheeled to a trap-door through which it can be lowered to the open courtyard. Some of the large pictures are hung by a chain, and can be quickly lowered by means of a pulley and crank; while small pictures of special value bear distinguishing marks which would secure for them prefer-

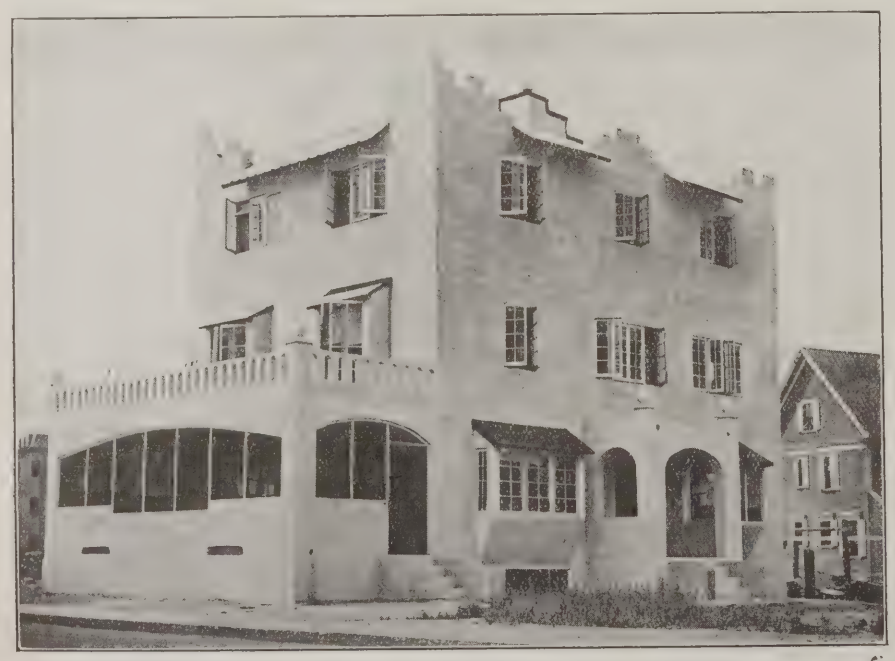


Photo: Topical.

EXTERIOR OF A CONCRETE HOUSE AT WINTHROP, MASS., U.S.A., AS COMPLETED AFTER BEING BURNT OUT.

Note.—The design of this house will hardly appeal to English readers.

ential attention in case of fire. There are, elsewhere, still some galleries in which priceless pictures are stuck fast to the walls, whence it would be difficult or impossible to remove them promptly in case of fire. The attention drawn to the case of Hampton Court Palace has been at least useful in revealing the better way.

* * *

Motor Fire Engines. Motor fire-engines seem to be everywhere superseding those in which horse traction was depended upon. The chief officer of Sheffield has signified his desire to "clear out the horses as soon as possible"; Clevedon U.D.C. contemplates the purchase of a motor engine; Belfast is about to spend £2,000 on motor fire-appliances; Leeds is applying for a loan to be similarly applied; Lincoln thinks of purchasing two motor engines; Cambridge is having a motor escape wagon built; and Manchester Watch Committee, favourably impressed by reports from Glasgow, Edinburgh, Liverpool, Portsmouth, Brighton, and elsewhere, is about to spend £2,200 on two motor fire-engines.

Notes on Competitions.

Wigan Elementary Schools.

Mr. J. W. Simpson, F.R.I.B.A., has recommended to the Education Committee that the awards in the plan competition for the new Council Schools at Beech Hill, Wigan, and Scot Lane, Newtown, be made as follows:—Beech Hill Council School, 1st, Messrs. J. B. and W. Thornley, architects, Wigan; 2nd, Messrs. Heaton, Ralph, and Heaton, architects, Wigan. Scot Lane Council School, 1st, Mr. J. B. Holland, architect, Pemberton; 2nd, Messrs. Prescott and Bold, architects. The recommendations have to be confirmed by the Education Authority.

Waterloo (Liverpool) Baptist Church and Schools.

The designs submitted in competition with twelve others by Messrs. George Baines and Son, 5, Clements Inn, Strand, W.C., have been adopted, and the scheme is to be at once proceeded with. The estimated cost, exclusive of Tower, is about £4,500.



Photo: Topical.

FIRE AT THE PAR HILL FEVER HOSPITAL, LIVERFOOL.

The officers' quarters were completely gutted by a fire commencing through the flame of a gas bracket catching a curtain.

Oldham Town Hall Extension.

The report of the assessor, Mr. G. H. Willoughby, F.R.I.B.A., in the above competition, which was limited to local architects, has now been published. The assessor selected the designs marked "O" for the first premium of £50, the design marked "D" for the second premium of £30, and the design marked "H" for the third premium. The authors were found to be as follows:—

Design "O," Messrs. Taylor and Simister, Queen Street.

Design "D," Messrs. Winder and Taylor, Union Street.

Design "H," Messrs. Jenkins, Matley and Mills. Queen Street.



Photo: Topical.

FIRE AT THE PAR HILL FEVER HOSPITAL, LIVERPOOL.

This fire shows the danger to which helpless invalids may be exposed in buildings not of fire-resisting construction. It will be noted that only the brick chimney breasts have survived. The danger of fixing gas jets in close proximity to curtains may also be noted.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

MAR. 21. PARISH COUNCIL OFFICES, BLAWARTHILL. Architects are invited to send in plans and estimates of the probable cost of Offices to be erected for the Renfrew Parish Council at Blawarthill, Roker Road, near Scotstoun West Station. A sketch of the site and other particulars can be had from the Clerk to the Council at 1, Manse Street, Renfrew, on payment of a fee of ten shillings, which will be refunded on receipt of a bona-fide set of plans, on or before March 21st. *No premium will be paid to Competitors, and the Council does not bind itself to accept any plan sent in.*

MAR. 31. SHEFFIELD ENDCLIFFE PARK CHURCH. Plans desired for Church for 650, Institute for 150, Primary Deartment for 125, Junior Department for 95, and Caretaker's Apartments. Premium, not merged in commission, £35. Assessor, Chas. Hadfield, Esq., F.R.I.B.A. Delivery on March 31st. On receipt of 5s. the Secretary, J. W. Nicholls, 64, Everton Road, Brocco Bank, Sheffield, will furnish conditions and instructions with plan of site, showing existing buildings, levels, and drainage—these not returnable. Deposit returned only to those who send plans.

MAR. 31. MUNICIPAL OFFICES, KARACHI. The Municipality offer a premium of 7,500 rupees (£500) for the best design, detailed plans and estimates for new Municipal Offices. Cost not to exceed 500,000 rupees, and the style of architecture is left open to the designers. Ferrotype plans of the site and a general arrangement of the floors of the building showing the accommodation to be provided, together with a copy of instructions to architects, will be supplied to intending competitors on application to the Chief Officer and Chief Engineer, Karachi Municipality. A charge of Rs. 5 will be made therefor, which will not be refunded. Each set of drawings must be sent in anonymously, but accompanied by a sealed envelope containing the author's name and address. Each set of drawings and all the documents required, including the sealed envelope, must be securely packed in a wooden box, addressed as follows:—The Chief Officer and Chief Engineer, Karachi Municipality, Karachi, India, and forwarded at the competitor's own risk and charges, in time to reach the Chief Officer or or before the 31st

day of May, 1910. It is proposed to apply to Government for permission for one of the chief architects to act as assessor to decide on the design to which the prize shall be awarded. The final decision of the assessor will be final and not open to dispute. The decision of the Municipality will be made within three months of the latest date for submission of designs, and payment of one-half of the premium will be made thereafter to the author of the selected design, the balance to be paid when the further details specified in the instructions to architects have been supplied. On payment of the premium the Municipality will have all rights in the design, with power to erect the building under its own agency, either according to the design selected or with such additions or alterations as it may deem necessary.

APRIL 23. COUNTY OFFICES, NAVAN, FOR MEATH COUNTY COUNCIL. The Meath County Council invite *architects in Ireland* to submit Plans and Specifications for the building of new County Offices at Navan. The Plans and Specifications to be submitted must be strictly in accordance with Report of Sites Committee as adopted by the County Council at quarterly meeting held on February 28th, 1910. The County Council will, at their adjourned quarterly meeting, to be held at the Council Chamber, Navan, on Monday, 25th day of April, 1910, at 11 o'clock a.m., consider, and, if they think fit, select and decide plans and specifications for new County Offices. Copies of Sites Committee Report can be had on application from the Secretary, Meath County Council, Navan. Plans and Specifications to be addressed to "The Presiding Chairman, Meath County Council, County Offices, Navan," and to be delivered at same not later than one o'clock p.m., on the date given. Hugh J. Cullen, Secretary, Meath County Council Offices, Navan.

JUNE 15. ELEMENTARY SCHOOLS, ACTON. Architects who have been in practice for at least seven years are invited to send in to the undersigned designs for the erection of new Schools at Rothscild Road for the Urban District Council of Aston Education Committee to provide accommodation for 850 scholars, at a cost not exceeding 10,000. An assessor will be appointed to assist the Committee in the Competition, and premiums of £100, £50, £25 will be awarded for *the Designs selected by the Committee after their consideration of the assessor's award, but the Committee do not bind themselves to appoint an architect to whom a premium is awarded. The successful architect will be paid a commission of 3½ per cent., and any premium awarded shall merge in that commission.* Particulars, showing the accommodation required and a plan of the site, can be obtained after April 5th, upon application and the payment of a sum of 10s. 6d., which sum will be returned after the premiums have been awarded, to each architect who submits a scheme for the proposed school. Canvassing the members of the Committee will be strictly regarded as a disqualification. F. A. Everitt, Secretary to the Education Committee, Council Offices, Acton, W.

NO DATE. COVENTRY NEW PUBLIC ELEMENTARY SCHOOL ENLARGEMENT OF STOKE COUNCIL SCHOOL. The Education Committee invite competitive sketch plans for a proposed New Public Elementary School in Centaur Road, and a proposed enlargement of Stoke Council School. The competition in each case is strictly limited to architects practising in the City of Coventry. Particulars of the competition may be obtained by any architect wishing to compete, on application at the Education Offices, Priory Row.

NO DATE. ELEMENTARY SCHOOL, BLOXWICH, for the County Borough of Walsall Education Committee. Designs are invited for the erection of a Public Elementary School (mixed) to accommodate 500 children, at Bloxwich. Conditions of competition and plan of site from W. Dawson Sadler, M.A., Director of Education, Council House, Walsall.

In Parliament.

(By our Press Gallery Representative.)

The Discovery at Hampton Court.

An interesting statement was made in the House of Commons last week by Mr. Harcourt with regard to the old moat and bridge which have been unearthed in the grounds of Hampton Court Palace. In explaining the supplementary estimate of £3,500 he said it had been suggested to him that it was possible that the old moat had been filled up, and that the bridge known to have been in existence and shown on old prints had been buried and not pulled down. This appealed to him as an interesting antiquarian possibility justifying a slight expenditure, and he had sinkings made where he conjectured the bridge might be. The whole of the ancient Wolsey bridge with the exception of a portion of the parapet was disclosed on further excavation, the arches being in a state of wonderful preservation. The walls of the moat also were in a good state of preservation. It had been filled in with rubbish, and many objects



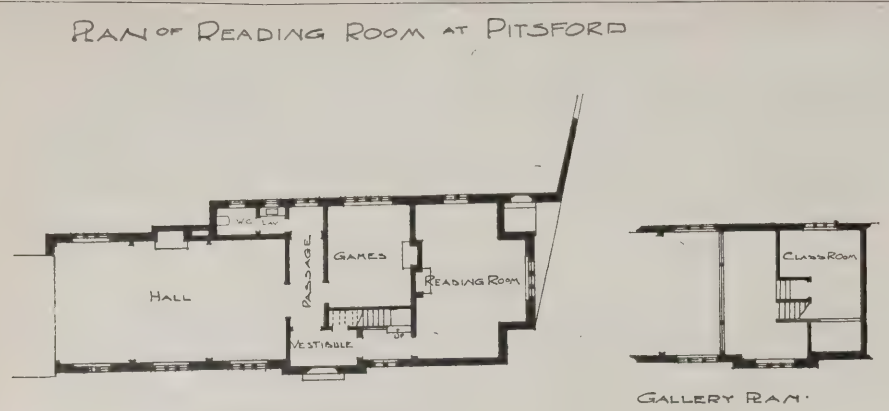
VILLAGE HALL AT PITSFORD, NORTHANTS. P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.

This hall is built of the local yellow Duston stone walling, with stone mullioned windows and lead lights in the local manner, and the roof is covered with Colley Weston slates. There is a small assembly hall with band gallery over entry passage and a roomy reading room and games room. A staircase leads to gallery and additional room at the back. A stage has been formed at end of hall and connected with an old house adjoining, one room of which can be used as a retiring room. The builder was Mr. H. Green, Ashburnham Road, Northampton.



READING ROOM, VILLAGE HALL, PITSFORD, NORTHANTS. P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.

There is a small assembly hall with band gallery over entry passage. A stage has been formed at one end of hall and connected with an old house adjoining, one room of which can be used as a retiring room.



P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.

of interest had been found and deposited in a temporary museum. A contemporary print showed Charles I. bringing his consort into Hampton Court over this bridge. It having been found impracticable to restore the water to the moat, he proposed to fill it up to the water level with soil and sow grass.

The Amenity of Hampton Court.

On the same occasion Mr. Harcourt mentioned that last year he purchased for £3,000 a meadow of seven acres in full view of Hampton Court, and on the opposite side of the river, which, it was likely, would have been utilised for a pumping or generating stations with tall chimneys, and unsightly buildings. This possibility it seemed to him would be such a disfigurement of the surroundings of a beautiful national possession that he decided to purchase the land. It was now let on lease for 21 years to a boat builder, the design of whose boat house would be subject to approval.

Ancient Monuments and an Anonymous Bequest.

The Ancient Monuments Protection Bill was explained by Mr. Harcourt in moving its second reading last Friday. He said the subject of ancient monuments was dealt with already by two Acts. The first related only to pre-historic remains. The second enabled the Commissioner of Works to accept other buildings by gift, but not by bequest. He had been offered by a bequest from a gentleman who would be nameless what might be regarded as the finest historical monument in this country. He was unable to accept the bequest without the authorisation of a bill such as he was moving. The bill was read a second time.

The Queen Victoria Memorial.

Mr. Douglas Hall asked the First Commissioner of Works, whether he could say when the Queen Victoria Memorial, facing Buckingham Palace, would be completed; whether any time for the completion was stated in the original contract or commission; and, if so, would he state the time; and was he aware that the present condition of the Memorial was an eyesore to everyone using the Mall.

Mr. Harcourt, in reply, said: I anticipate that the work will be finished in the course of the next twelve months. No actual date for completion was fixed in the original contract: the progress of sculpture is always doubtful, and it is not usual to name a date. Mr. Brock, the sculptor, asked for ten years, and the Memorial will probably be completed within seven years from the date of contract. This is probably an unexampled rate of progress for a work of this magnitude. In reply to the last paragraph, I have never yet seen any scaffolding that was not displeasing, and this one is no exception to the rule.

Mr. Bowles asked whether it was proposed to defer the opening of the Mall to Charing Cross until the completion of the Memorial.

Mr. Harcourt: No. I hope to open it as soon as possible, but I am rather depending on the work of the London County Council outside the confines of the Royal Park. It will certainly be this year.

MESSRS. H. C. CLEAVER'S NEW FACTORY FOR ARCHITECTURAL WOODWORK.

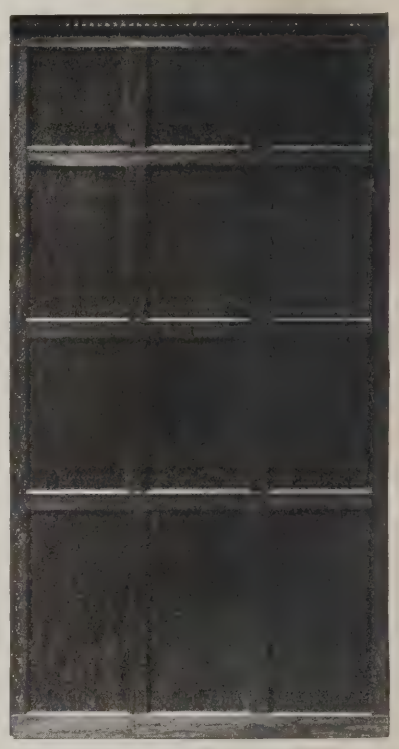
A factory that has been planned from the start for the particular purpose for which it is intended can hardly fail to present several points of interest. An example of this kind is provided by the Tudor Works, Park Royal, Willesden, N.W., which have been built for Messrs. H. C. Cleaver, Ltd. Situated on the Grand Junction Canal, the building is cruciform in plan, containing some 15,000 square feet on one floor, the offices overlooking all. British machinery of the latest type is installed throughout the works, and is so placed that the work moves steadily forward from the raw material at one end of the building to the finished article at the other. Electricity is used both for lighting and driving, the machinery being divided into groups connected to four separate motors by the British Thomson-Houston Co., Rugby. The whole of the shafting, motors, and electrical equipment are housed in a central subway, and two transepts below the floor. Here also are the desiccating chambers, where timber is dried before passing into the shops.

Waste is a word unknown at Tudor Works. Even the chips and shavings are pressed into service in specially constructed furnaces, to raise steam for the water-tube glue heaters and hot plates throughout the factory. Timber is barged from the London Docks, thus realising to the full the advantages of cheap water transport.

The products of the works embrace all forms of architectural and decorative woodwork, such as staircases, doors, chimneypieces in reproduction of Elizabethan, Adam, Louis XV., and Georgian work; panelling in all woods, including the well-known patent Tudoresk, in oak, wax polished and fixed complete, from 1s. 6d. per square foot; and lastly, a novel and interesting type of revolving door, the invention of Mr. Howard C. Cleaver. This door can be made single or double, is extraordinarily compact, being only 4ft. deep, is self-acting, noiseless, smooth running, draught-proof, and exceedingly decorative; it can be fixed wide open during summer months, and has admirable provision for prompt exit in case of panic.

Woodwork has been described as the noblest means of decoration; and the demand for it has advanced with almost startling rapidity during the past few years—especially for those forms of it in which artistry plays a conspicuous part, whether in the tasteful arrangement of simple panels or in the more elaborate effects of carving in the characteristic styles of various well-marked periods, or in the manner of distinguished carvers who have left enduring proofs of their extraordinary skill. Fortunately there is no lack of excellent examples. Artistic woodwork of exquisite beauty exists in abundance in our old cathedrals and in town and country houses, furnishing models that have a threefold value—they are a joy in themselves, they may be (and are) extensively copied and imitated or adapted, and they are a source of education and of inspiration to the modern woodworker.

What is more, these fascinating examples of early or later woodwork create in the public mind a strong desire for similar products. It is in order to keep pace with the demand thus stimulated that Messrs. H. C. Cleaver, Ltd., have specially planned and built their extensive new factory. The work there pro-



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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, Caxton House, Westminster.

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Ashby (Lincs). — For erecting an elementary school at Ashby, near Scunthorpe, for Lindsey County Council Education Committee. Messrs. Scorer and Gamble, architects, Bank Street Chambers, Lincoln.

Hollingsworth	£3,793	6	4
Barker and Sons	3,350	0	0
A. J. Elmes	3,350	0	0
Wright and Son	3,287	0	0
F. Scarborough	3,276	16	0
Mawer Bros.	3,274	0	0
H. J. Thompson	3,224	0	0
B. Pumfrey	3,128	0	0
T. Hickman,* Market Harborough	3,064	0	0

*Accepted

Ashford (Kent).—For erection of drill hall. Messrs. Worsfold and Hayward, architects and surveyors, Market Square, Dover.

W. H. Bourne	£5,650		
C. I. Epps	5,596		
West Bros.	5,449		
S. W. Stiff	5,349		
T. T. Denne	5,293		
R. W. Paramor	5,274		
H. Knock	5,239		
G. H. Denne	5,185		
C. E. Skinner	5,140		
G. Browning	5,119		
G. E. Wallis and Sons, Ltd.,* Maidstone	5,070		

Architect's Estimate, £5,200.
*Accepted

Bishop's Castle (Salop).—For work, etc., in connection with the Bishop's Castle sewerage and sewage disposal works, for the Corporation. Messrs. Willcox and Raikes, engineers, 63, Temple Row, Birmingham.

Bennie and Thompson, Warrington	£5,281	0	0
A. Braithwaite and Co., Leeds	5,151	14	5
G. Bell and Sons, Corporation Street, Manchester	4,920	0	0
Oxley and Son, Helsby, Cheshire	4,788	16	0
C. Castle and Co., Llandrindod Wells	4,697	7	0
H. H. Barry, Radcliffe-on-Trent	4,550	0	0
G. Welsby Deakin, Edenfield, Manchester	4,547	0	0
Jowett Bros., Burscough, Lancs.	4,443	4	6
J. B. Wickstead and Co., 10, Adam Street, Adelphi, W.C.	4,352	10	4
G. Henson and Son, Wellingborough	4,314	0	0
T. Vale and Sons, Ltd., Stourport	4,252	0	0
W. Morley and Sons, Devonshire Street, Keighley	4,244	14	5
T. J. Mason, 27, New Road, Stourbridge	4,181	3	0
T. Godwin, Hanley, Staffs.	4,170	0	0
R. C. Brebner and Co., St. Andrew's Square, Edinburgh	4,134	15	0
W. H. Thomas, Oswestry	4,123	0	0
A. J. Cottle, Sheffield	4,077	11	11
A. Hill and Co.,* Kidderminster	4,006	6	0

Engineer's estimate, £4,060.
*Accepted.

Beaconsfield.—For the reconstruction of the public highway known as the Station and Penn-road, Beaconsfield, for the Urban District Council. Mr. H. Sargeant, surveyor.

H. D. Bowyer, Slough	£10,110	17	10
Kavanagh and Co., Surbiton	9,990	16	0
Davies, Ball and Co., Westminster, S.W.	9,632	3	10
Hamilton's, Golder's Green, N.	8,817	4	10
Lee and Son, High Wycombe	8,353	6	1
Langley and Johnson,* Slough	8,463	0	9

Engineer's estimate, £8,680 1s. 3d.
*Accepted.

Ibstock.—For enlargement of Council school, for the Leicestershire County Education Committee. Mr W. M. Cowdell, architect, Greyfriars, Leicester. Quantities by Mr. E. G. Fowler, County Education Office, Leicester.

I. Cole and Sons, Leicester	£889	0	0
W. F. Harding, Loughborough	884	0	0
Bowles and Son, Leicester	881	0	0
F. J. Bradford, Leicester	837	0	0
W. Moss and Son, Leicester	827	18	0
J. Chapman, Leicester	819	0	0
E. Haycock, Leicester	812	0	0
Haycock Bros., Leicester	800	3	0
Wileman and Gange, Leicester	793	0	0
T. Barker and Sons, Swan Street, Loughborough	749	0	0

*Accepted.

(*Tenders continued on page viii.*)

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who will gladly put expert advice as to the apparatus best suited to local conditions at the service of any architect who will communicate with them.

B

(Tenders continued from page vi.)

Great Crosby (Lancs.).—For the making of Myers Road East, under the Private Street Works Act, for the Urban District Council. Mr. Watkin Hall, A.M.I.C.E., surveyor.

F. Ireland, Litherland	£3,336 3 8
T. C. Starkey, Hull	3,149 4 7
W. H. Worthington, Ltd., Manchester	3,074 12 0
R. Costain and Son, Great Crosby	3,073 0 0
Tarmac, Ltd., Wolverhampton	3,004 14 3
G. Johnson, Bootle	3,052 0 0
L. Marr and Son, Liverpool	3,050 0 0
J. Smart and Son, Matlock Bridge	2,934 17 7
W. F. Chadwick, Ltd., Liverpool	2,915 12 3
W. Arsen, Seaforth	2,906 12 0
North Wales Asphalte Co., Chester	2,754 0 0
Stansbury and Banks, Liverpool	2,746 00
P. Balmer, Aintree	2,745 0 0
J. and J. Gilbertson,* Great Crosby	2,700 0 0

*Accepted.

Keadby (Doncaster).—For six dwelling houses at Keadby. Mr. George Sinclair, architect, Church Lane, Crowle.

Stacey Bros., Fishlake, Doncaster	£900
R. Loughton, Scunthorpe, Lincs.	945
W. Thompson, Howden	949
W. Teanby,* Ealand, Crowle, Lincs.	835

*Accepted.

London, N.W.—Accepted for alterations and additions at 2, Hill View, Primrose Hill, N.W., for Dr. J. F. Woods. Mr. C. Cecil Taylor, architect, Sherfield:—

W. Houghton, 7, Finsbury Square, E.C., £572 10s.

London.—Accepted for rebuilding No. 19, Berkeley Street, Piccadilly, W. Messrs. Richardson and Gill, A.R.I.B.A., architects, 46, Great Russell Street, W.C. Quantities by Mr. L. H. G. Stanbrough, 26, Bedford Row, W.C.

Charles Gray, £18,500.

Mansfield.—For construction of a new branch railway from the Midland Railway into the sand pit of the Mansfield Sand Co., Ltd., at Mansfield. Messrs. G. and F. W. Hodson, M.I.C.E., engineers, Loughborough.

B. L. Bradley, Grindleford	£6,076
J. Dickson, St. Albans	4,412
J. Mackay, Mansfield	3,881
G. P. Trentham, Handsworth	3,750
O. Wright and Co., Wigston	3,701
Holme and King, Ltd., Liverpool	3,514
J. Wilson and Sons, Handsworth	3,443
A. J. Cottle, Sheffield	3,383
J. Strachan, Cardiff	3,166
G. Bell and Sons, Ltd., Manchester	3,163
Darlington Railway Plant Co., Darlington	3,074
W. Pattinson and Sons, Ltd., London	3,068
W. Moss and Sons, Ltd., Loughborough	2,940
C. Baker and Sons, Chesterfield	2,877
G. F. Tomlinson, Derby	2,555
H. Ashley,* Mansfield	2,476

*Accepted.

Norwich.—For addition to Wincarnis Works, Norwich. Messrs. Morgan and Buckingham, architects, 1, Upper King Street, Norwich.

Hawes and Son	£2,296
Gill and Son	2,215
J. S. Smith	2,200
Youngs and Son	2,145
W. J. Hannant	2,067
Anderson and Son	1,925

All of Norwich.

Shepshed.—For the erection of a handicraft centre, together with out offices, drainage, etc., for Leicestershire County Education Committee. Mr. E. G. Fowler, architect to the Committee. Quantities by the Architect.

H. Hammond, Loughborough	£1,420 0 0
Griffin Bros., Leicester	1,415 0 0
Haycock Bros., Leicester	1,410 10 0
G. Bramley, Derby	1,405 0 0
Atkin Bros., Loughborough	1,380 0 0
W. Moss and Sons, Ltd., Loughborough	1,380 0 0
J. Cole and Son, Leicester	1,359 0 0
W. F. Harding, Loughborough	1,329 0 0
T. Barker and Sons, Leicester	1,298 0 0
E. Fox, Leicester	1,295 10 0
A. J. Wileman, Loughborough	1,289 0 0
J. Chapman, Leicester	1,289 0 0
W. Potter, Blaby, Leicester	1,273 0 0
A. Faulks,* 4, Sparrow Hill, Loughborough	1,238 0 0
W. Moss and Son,† Coalville, Leicester	1,225 0 0

†Withdrawn.

*Accepted.

Weybridge.—For house in Oatlands Drive, Oatlands Park, Weybridge, for Mr. F. W. Smith. Messrs. Crickmay and Sons, architects, 13, Victoria Street, Westminster, S.W., and Weymouth.

H. P. Hill and Sons	£2,497 0 0
G. Wallis	2,400 0 0
W. Greenfield	2,218 18 0
T. C. Ranger	2,085 0 0
W. H. Gaze and Sons	2,023 0 0
W. A. Annett	1,994 0 0
Drowley and Co.	1,938 0 0
G. Jarvis	1,929 14 0
C. Trask and Sons	1,921 0 0
H. J. Nicholson,* Weybridge	1,765 0 0

*Accepted.

Walton-on-Thames.—For house on the Adelaide Road Estate, for Mr. E. A. Lundy. Messrs. Crickmay and Sons, architects, 13, Victoria Street, Westminster, S.W., and Weymouth.

Hill and Sons	£1,270 0 0
W. Greenfield	1,218 0 0
G. Willis	1,108 15 0
H. J. Nicholson	1,093 0 0
Gaze and Sons	1,051 0 0
C. Trask and Sons	1,048 0 0
T. C. Ranger	1,020 0 0
Drowley and Co.,	1,014 0 0
W. A. Annett,* Walton-on-Thames	995 0 0

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COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about five days or longer after the date of this issue.
Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders.
The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

March 18. **BRADFORD.**—Bricklayer's and mason's (labour only), carpenter's and joiner's, plumber's and glazier's, plasterer's, and slater's work required in the erection of a detached villa residence in Holme Lane, Bradford. Persons desirous of tendering will please send in their names to Wm. Rhodes Nunns, Architect and Surveyor, Bingley, on or before March 18.

March 18. **PURFLEET.**—Repairs, etc., to buildings in the barracks, army ordnance buildings, and magazines, and war department property adjacent (exclusive of rifle ranges) and works connected therewith, at Purfleet, Essex, for the War Office. Persons desiring to tender must leave their names at the Royal Engineer Office, Shoeburyness, on or before March 18, 1910, and pay the sum of 15s. for the schedule of prices which, with the form of tender, will be issued to each person applying.

March 21. **NAVAN.**—Residence at Abbeylands, Navan, for Jas. Finucane. Plans, etc., may be seen, and copy of bills of quantities obtained, on a payment of a fee of £1 1s., of R. Barnes, Tatestown, Navan.

March 21. **BUCKIE.**—Mason, carpenter, slater, plumber, plaster, painter and glazier works of proposed new Baptist Church for Buckie. Plans and specifications to be seen, and tenders to be lodged, with Geo. Macpherson, Architect, 29, East Church Street, Buckie.

March 21. **SHELFORD.**—Erection of a detached residence on the main road to Shelford, for the Rev. G. R. Frampton. Plans and specifications may be seen and full particulars obtained at the office of Frank Waters, Architect, 56, Hills Road (corner of Russell Street), Cambridge, to whom tenders must be sent.

March 21. **PYLE (Bridgend).**—Erection of 20 houses on the Kenfig Hill Road, near Pisgah Chapel, Pyle, for the Pyle Building Club. Tenders to be delivered to Aneurin T. James, Architect and Surveyor, Bisley House, Pyle, near Bridgend, at whose offices plans and specifications may be seen, and special forms of tender obtained.

March 21. **MARYPORT.**—Various artificers' work required in connection with the Central Hall. Contractors desiring to tender may inspect plans and specification, deposited at Maryport, on application to the architect, from whom quantities may be obtained. Tenders are to be delivered to J. N. Singleton, Architect, 61, Lowther Street, Whitehaven.

March 21. **LONDONDERRY.**—Rebuilding the Guildhall, for the Corporation. Form of tender, etc., can be obtained at the office of the City Architect, Municipal Offices, Foyle Street, Londonderry. Bills of quantities, etc., can be obtained from W. H. Stephens and Sons, Surveyors, 13, Donegall Square North, Belfast, on deposit of £5 5s.

March 21. **WATERLOO-WITH-SEAFORTH.**—Erection of a secondary and technical school in Cambridge Road, Seaforth, for the U.D.C. Plans may be seen and bills of quantities obtained at the office of the County Architect, Henry Littler, No. 16, Ribblesdale Place, Preston, by deposit of £3. Tenders must be delivered to John I. Thompson, Clerk to the Council, Town Hall, Waterloo.

March 21. **ST. HELENS.**—Erection of a new school, in North Road, St. Helens, for the C.C. On deposit of £1 1s. plans and specifications may be inspected and bills of quantities and conditions obtained at the office of the Architect, Frank S. Biram, George Street, St. Helens. Tenders must be delivered to Percival Sharp, Secretary for Education, Education Office, St. Helens.

March 21. **FERRYHILL (Durham).**—Erection of an inspector's house near Ferryhill Station, with outbuildings and storehouse, for the Weardale and Consett Water Company. Plans and specifications can be seen on application to the engineer, Mr. Askwith, M.I.C.E., at South Road, Bishop Auckland, and at the Company's Office, North Road, Durham. Tenders to be sent to Wm. Harding, Secretary, Crown Street Chambers, Darlington.

March 21. **WILLOWFIELD (Belfast).**—Erection and completion of St. Anthony's male and female schools, Willowfield, Belfast, for the Very Rev. H. Laverty, D.D., P.P., V.F., St. Matthew's. Bills of quantities have been prepared by Acheson Ferguson, Scottish Provident Buildings, Belfast, and can be obtained from him on deposit of £1 1s. Tenders to be delivered to J. J. M'Donnell, architect, 27, Chichester Street, Belfast.

March 21. **KNARESBOROUGH.**—Erection and completion of new council-room and offices in York Place, and Gracious Street, for the U.D.C. Drawings may be seen, and specifications, bills of quantities, and forms of tender obtained on application at the Surveyor's Office, Town Hall Buildings. A deposit of £1 1s. will be required for quantities. Tenders to be delivered to Thomas Mainman, Clerk to the Council, Council Offices, Kirkgate, Knaresborough.

March 21. **PAISLEY.**—Erection of iron roofing for new retort house, etc., and also for the extension of the gravity bucket coal conveying system, together with tower and conveyor track, and the erection of coal bunkers, at their gas works, Blackstoun Road, for the Corporation. Specifications and schedules may be obtained from Geo. R. Hislop, Engineer and Manager, Paisley Gas Works. Tenders to be lodged with Francis Martin, Town Clerk, Paisley.

March 21. **LEICESTER.**—Erection of new buildings and alterations at the town museum, New Walk, for the Corporation. Bills of quantities may be obtained at the offices of the Architects, Tait and Herbert, M.R.I.B.A., 18, Friar Lane, Leicester, upon deposit of £1 1s. Tenders to be addressed, "The Chairman, Museum and Art Gallery Committee, Town Hall, Leicester," and delivered to H. A. Pritchard, Town Clerk, Town Hall. Local firms only invited.

March 21. **HASLINGDEN (Lancs.).**—Carrying out of the whole of the work required in erection of a new farm house to be erected on a site adjoining the present Union farm buildings, for the Guardians. Plans may be inspected, and copies of the specification and quantities obtained at the office of the architect, A. Brocklehurst, St. James's Chambers, Waterfoot, on payment of a deposit of £1 1s. Tenders must be addressed to J. H. Sinkinson, Clerk, Union Offices, Rawtenstall.

March 21. **PATRICROFT (Eccles.).**—Erection and completion of extension to the Electricity Station, Cawdor Street, Patricroft, for the Borough of Eccles Electricity Committee. A copy of the bill of quantities and general conditions may be obtained from Edwin Parkes, Town Clerk, Town Hall, Eccles, on depositing the sum of 10s. 6d., to whom tenders must be sent. Plans may be inspected and further particulars obtained at the office of the Architect, N. Hartley Hacking, 50, Blackfriars, Manchester. The successful contractor must conform with the fair wages clause of the Corporation.

March 21. **RAMSGATE.**—Erection of a caretaker's cottage on the premises of the Ramsgate Secondary School, for the Kent Education Committee. Plans and specification and form of contract may be inspected at the offices of the committee, until the time appointed for the delivery of the tenders. Any person desiring to tender and to receive a copy of bills of quantities must send in his name to Fras. W. Crook, Secretary, Caxton House, S.W., accompanied by a deposit of £1, not later than March 10, 1910. Tenders must be delivered at the offices of the committee, Caxton House, Westminster, S.W.

March 21. **GLASGOW.**—Adaptation of premises, 31, Prince Edward Street, for the purposes of a telephone exchange, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Clerk of Works, H.M. Office of Works, Head Post Office, Glasgow (Hanover Street entrance), and the building may be inspected between 12.30 p.m. and 2 p.m. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Parliament Square, Edinburgh, on payment of £1 1s. Tenders must be addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

March 21. **GLASGOW.**—(1) Structural steel work; (2) builder's work; in connection with the provision of a new roof, Glasgow Cathedral, for the Commissioners of His Majesty's Works and Public Buildings. Tenders are requested for separate sections of the work under the above designations (1) and (2). Drawings, specifications, and a copy of the conditions and forms of contract may be seen on application to the Clerk of Works, H.M. office of Works, Head Post Office, Glasgow (Hanover Street entrance). Bills of quantities and forms of tender for the structural steel work and the builder's work respectively may be obtained at H.M. Office of Works, 3, Parliament Square, Edinburgh, on payment of £1 1s. Tenders must be addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

March 22. **GRANGETOWN (Sunderland).**—Erection of a nave and aisle of the new church of S. Aidan. Plans and specification may be inspected on application at S. Aidan's Mission Room, Grangetown. Quantities can be obtained from W. Morton, Quantity Surveyor, 45, John Street, Sunderland. Tenders must be sent to C. Hodgson Fowler, F.S.A., Architect, The College, Durham.

March 22. **KINROSS.**—Mason, joiner, slater, plumber, and plaster work required for additions and alterations on The Manse House, Kinross. Plans may be seen at the office of the Clerk to the Heritors, or at the office of the Architects, Smart and Stewart, 42, Tay Street, Perth, from whom may be obtained schedules of measurement. Tenders to be lodged with W. K. Falconer, Clerk to the Heritors.

March 22. **FAREHAM.**—Erection of a hospital block at the Isolation Hospital, situate in Fareham, for the R.D.C. Builders and contractors desirous of tendering are requested to forward their names to Mr. Wilberforce Cobbett, Architect, Fareham, accompanied by a deposit of £3 3s., not later than March 12. Tenders to be delivered to Alfred Laker, Clerk to the Council, Union Offices, West Street, Fareham.

March 22. **BARRY.**—(1) Alterations and additions to Holton Road Infants' School, Barry; (2) plumbing work in connection with such alterations and additions, for the Local Education Authority Plans and specifications can be seen at the offices of the architect, G. A. Birkenhead, 102, St. Mary Street, Cardiff, and St. Nicholas Road, Barry, from whom bills of quantities and forms of tender can be obtained on payment of £2 2s. in the case of the building work, and £1 1s. in the case of the plumbing work. Tenders to be sent to T. B. Tordoff, Clerk, Council Offices, Barry.

March 22. **BIRKENHEAD.**—Alterations and additions to the master's office and the nurses' home, also for the erection of a committee-room, at the Union Workhouse, for the Guardians. Persons desirous of tendering may obtain a copy of the quantities from Edmund Kirby and Sons, Architects, 5, Cook Street, Liverpool, upon payment of a deposit of £5 5s. The persons whose tender is accepted will be required to enter into a contract with the Guardians, and to provide sureties for its due performance. The contractor in carrying out the contract will be required to pay the rate of wages and observe the hours of labour recognised and agreed upon between the trades unions and the employers in the district. Tenders must be delivered to John Carter, Clerk to the Guardians, Poor Law Offices, Birkenhead.

March 23. **MANCHESTER.**—Additions and alterations to the present boiler-house at the Workhouse at Crumpsall, for the Guardians. Bills of quantities may be had from the office of A. J. Murgatroyd, architect, 23, Strutt Street, Manchester, upon payment of a deposit of 10s. 6d. Tenders to be delivered to James Macdonald, Clerk to the Guardians, Poor Law Offices, New Bridge Street, Manchester.

March 24. **BURCHILL (Hereford).**—For erection of an isolation hospital and other contingent works for the Committee of Visitors of the Hereford County and City Asylum. Plans and specifications may be seen, and bills of quantities and form of tender obtained at the office of the County Surveyor, Shirehall, Hereford. Tenders to be sent to the Clerk of the Committee at the Asylum. A deposit of £1 1s. will be required.

March 24. **GLOUCESTER.**—Erection of a new general bath-house on the female side of the second county asylum at Barnwood, near Gloucester, for the Committee of Visitors. Bills of quantities can be obtained from the Clerk of the Works, Wotton Asylum, Gloucester, on payment of £1 1s. Plans and specification can be seen at the office of the Clerk of the Works aforesaid, and also at the office of the Architects, Giles, Gough, and Trollope, 28, Craven Street, Charing Cross, London, W.C. Tenders to be delivered to James Thompson, Clerk to the Visitors, Wotton Asylum, Gloucester.

March 25. **TINSLEY.**—1, constructing a fence wall; 2, wrought-iron railings and gates; for the Parish Council. The above are required for enclosing the recreation ground at Tinsley. Forms of tender and specifications of quantities can be obtained from J. L. Winkley, Clerk to the Council, 15, Harrowden Road, Tinsley, Sheffield, on receipt of stamped addressed foolscap envelope. Plans of the ground and of the work to be done can be seen at the Free Library, Tinsley.

March 25. **LONGLEE.**—Erection of masonry abutments and wing-walls in connection with the reconstruction of Longlee Bridge, over the Warks Burn, near Longlee, Wark-on-Tyne, for the Bellingham R.D.C. Plans will be deposited at "The Black Bull Hotel," Wark, and may be seen there upon application to John Charlton. Conditions, specifications, bill of quantities, and form of tender may be obtained from the surveyor. The surveyor will meet intending contractors at Wark on Thursday, March 17, at 1 p.m., and will explain the drawings and point out the site. Tenders to be delivered to R. E. Riddle, Surveyor, Percy Terrace, Bellingham.

March 26. **STURMINSTER MARSHALL.**—Building a new elementary school at Sturminster Marshall, Dorset, for the C.C. of Dorset Education Committee. Plans and specifications may be seen at the office of the County Surveyor, Wimborne. Tenders to be sent in to the Secretary, County Education Committee, Dorchester.

March 29. **HAYES (Middlesex).**—Erection of St. Mary's parish room, for the Executive Committee. Information, etc., can be obtained on application to C. Dudley Lewis, High Road, Hayes, Middlesex.

March 29. **WEST HARTLEPOOL.**—Erection of bandstand on the Green, Seaton Carew, for the Corporation. Plan, etc., to be seen upon application at office of Mr. Nelson F. Dennis, M.InstC.E., Borough Engineer and Surveyor, Municipal Buildings.

March 30. **RAMSGATE.**—Erection of a new elementary infants' school in Lillian Road, Ramsgate, for the Corporation. Persons desiring to tender must apply, or send in their names, accompanied by a deposit of £2 2s., to the architect, W. T. Stock, at the office of Hinds and Son, architects, 57, Queen Street, Ramsgate, when a copy of the bill of quantities will be at once supplied. Tenders, addressed to the Chairman of the Works Committee, are to be delivered at the office of A. Blasdale Clarke, Town Clerk, Albion House, Ramsgate.

March 31. **ASHBURTON (Devon).**—Addition to the Ashburton and Buckfastleigh Cottage Hospital, for the Committee Tenders to be addressed to H. Mallaby Firth, Hon. Secretary. Plan and specification may be seen at the hospital.

March 31. **WEDNESBURY.**—Erection of public sanitary conveniences (exclusive of sanitary fittings) near the Market Place. Plans, specification, and conditions of contract (no quantities) can be inspected, and form of tender obtained, at the offices of E. Martin Scott, Borough Engineer and Surveyor, Town Hall, Wednesbury, to whom tenders must be sent. The contractor will be required to pay the ordinary rate of wages current in the district.

March 31. **GATESHEAD.**—Erection of the Brighton Avenue new school, for the Education Committee. Send names to the Architect, F. W. Purser, West Street, Gateshead, who will supply quantities. Applicants must deposit a fee of £1 1s. Tenders should be sent to the Education Offices, Gateshead.

March 31. **YSTRADGYNLAIS.**—Alterations and additions to "Maesydderwen," to convert into County schools, for the Governors. Plans, specifications may be seen and bills of quantities obtained from the offices of J. Cook Rees, Architect, Neath. Tenders to be sent to B. L. Thomas, Clerk to the Governors, Tir Roger, Ystradgynlais.

March 31. **BERE ALSTON.**—New elementary school for 124 children at Bere Alston, for the Devon County Education Authority. Bills of quantities will be available in due course on payment of £1 1s. Contractors desiring to tender must apply to the County Architect (Education), 1, Richmond Road, Exeter, not later than the first post on Wednesday, March 9, 1910, enclosing a crossed cheque drawn in favour of the County Treasurer. Quantities will be issued about March 16, and tenders must be delivered at the Architect's office.

March 31. **BROMSGROVE.**—Erection of a Council secondary school, in Stourbridge Road, for the Worcestershire Education Committee. Applications for forms of tender and bills of quantities may be made by March 10, to the County Education Office, Worcester, accompanied by a deposit of £2 2s. The drawings may now be seen at the office of the architect, G. H. Gadd, Town Hall Chambers, Bromsgrove. Tenders must be addressed to the Director of Education, 37, Foregate Street, Worcester.

April 1. **ASTON.**—Aston Provided School.—Drainage and new conveniences (builder, joiner, and plumber), for the West Riding Education Committee. Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A sum of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders must be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

April 2. **CIRENCESTER.**—Demolition of buildings adjoining the Police Station, and construction of a new Superintendent's house upon the site, for the Gloucestershire Standing Joint Committee. Plans and copies of specification may be seen, and bills of quantities and forms of tender obtained at the office of E. S. Sinnott, M.I.C.E., County Surveyor, Shirehall, Gloucester. Persons tendering will be required to pay a deposit of £2.

April 2. **PERTH.**—Repair and reconstruction of the roofing on the west side of Perth General Station. The contract comprises steel and iron work, carpenter and joiner work, slater work, glazier work, plumber work, and painter work. Drawings may be seen at the office of the Engineer-in-Chief of the Caledonian Railway, Buchanan Street Station, Glasgow, where copies of the specification and schedule may be obtained on deposit of £2 2s. An assistant engineer will attend at the station on 21st inst., at 11.45 a.m. Tenders to be lidged with Geo. G. Hamilton, Secretary, Perth General Station Joint Committee's Office, Maritime Buildings, East Dock Street, Dundee.

April 3. **BUGLE (St. Austell).**—Erection of a concrete chapel at Bugle. Plans can be seen at Sunny Bank, Mount Charles, St. Austell. Tenders to be sent to the Rev. J. T. Morris, Primitive Methodist Minister, at above address.

April 5. **WALTHAM.**—Alterations and repairs required to be carried out at Waltham Council school, for the Committee. Specifications and plans can be seen at the house of the correspondent, C. J. Wanley Croft, Bridge, Canterbury. Tenders must be forwarded to the above-named correspondent.

April 5. **MOUNTAIN ASH.**—Erection of an infants' school, with offices, etc., at Clarence Street, for the Education Committee. Plans and specifications may be seen, and forms of tender and bills of quantities obtained, on application to the Architect, W. H. Williams, Town Hall, Mountain Ash, upon the deposit of £2 2s. The committee undertake to open only the bills of quantities sent in by the contractor whose tender will be accepted, and to return all the other bills of quantities unopened. Tenders and bills of quantities to be sent to A. Morgan, Director of Education, Town Hall, Mountain Ash.

April 6. **BOVEY TRACEY.**—New elementary school for 200 children, and a cookery and manual training centre, etc., for the Devon County Education Authority. Bills of quantities will be available on payment of £1 1s. Contractors desiring to tender must apply to the County Architect (Education), 1, Richmond Road, Exeter, not later than Friday, March 11, 1910, enclosing a crossed cheque drawn in favour of the County Treasurer. Quantities will be issued about March 22, and tenders must be delivered at the architect's office.

April 6. **EDENBRIDGE.**—Erection of a new Council school to accommodate 200 children, for the Kent Education Committee. Plans and specification, and form of contract, may be inspected at

(*Continued on next page.*)

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the offices of the Committee, until the time appointed for the delivery of the tenders. Any person desiring to tender and to receive a copy of bills of quantities must send in his name to Fras. W. Crook, Secretary, Caxton House, Westminster, S.W., accompanied by a deposit of £1, not later than noon on March 10, 1910. Tenders must be delivered to the School Correspondent, Chas. Sheal, High Street, Edenbridge, Kent.

April 7. **SWANSEA.**—Extension of the Victoria warehouse for a distance of 67ft. with four floors, and erecting two additional floors on the old building, for the Harbour Trust. Plans, specification and quantities can be seen and forms of tender obtained on application to A. O. Schenk, M.InstC.E., at the Harbour Offices, Swansea. Tenders should be delivered to Talfourd Strick, Clerk, Harbour Offices, Swansea.

April 11. **LINCOLN.**—Construction of a brick and stone tower, 108ft. high to T.W.L., to support a spherical bottomed steel tank, containing over 300,000 gallons of water, and subsidiary works at Westgate, Lincoln, for the Corporation. Drawings may be seen now, and specification, bill of quantities and form of tender obtained at the office of the Engineer, Mr. Neil McK. Barron, Waterworks Engineer, Lincoln, upon production of a receipt from the City Accountant for the sum of £5 5s. Tenders, addressed to the Chairman of the Waterworks Committee, to be delivered at the office of W. T. Page, Deputy Town Clerk, Bank Street, Lincoln.

No date. **EXETER.**—Erection of a detached house at Woodbury Road, for J. L. Langworthy. All particulars can be obtained from Ernest E. Ellis, Architect, Polsloe Road, Exeter, and at Exmouth.

No date. **RIBBLETON (Preston).**—Erection of a parish hall and Sunday school in connection with St. Mary Magdalen Church. Application for bills of quantities to be made to the Architect, H. D. Hartley, 7, Lune Street, Preston.

No date. **CLEATON MOOR.**—Erection of a new residence, for Mrs. Haythornthwaite, Cleator Moor. Persons desirous of tendering are requested to forward their names to Ernest Martindale, Architect and Surveyor, 11, Lowther Street, Whitehaven.

No date. **LLANDDERFEL (Corwen).**—Alterations and additions to Llandderfel Council School, near Corwen, for the Merioneth Education Committee. Plans, specification, and further particulars may be obtained on application to the Architects, Deakin and Howard Jones, M.S.A., Plas Ynys, Borth, S.O.

No date. **EGREMONT.**—Additions and alterations to No. 11, Main Street, Egremont, the property of J. Nicholl. Persons desirous of tendering are requested to send in their names to Ernest Martindale, 11, Lowther Street, Whitehaven.

No date. **LOWESTOFT.**—Erection of a boarding house on the Esplanade, Lowestoft. Drawings and specifications may be seen, and quantities obtained, at the office of the architect, R. Scott Cockrill, A.R.I.B.A., Crossley House, London Road, Lowestoft.

No date. **CLARKSFIELD.**—Erection and completion of 24 houses, Hillside Avenue, Clarksfield, for the Oldham Co-operative Society, Ltd. Plans and specification may be obtained from the architect, F. Thorpe, 7, Clegg Street, Oldham, on payment of £1 1s. deposit.

No date. **SKIPTON.**—Alterations and extensions to the Post Office, Swadford Street, for Scott and Co., Ltd., Skipton. The whole of the works will be let in one contract. For further particulars and for quantities apply to J. W. Broughton, Architect, 19, High Street, Skipton.

No date. **HAWARDEN.**—Construction of a brick and stone gasholder tank, 45ft. in diameter and 15ft. 6ins. in depth, at the works, for the Hawarden Gas and Coke Company. Plans can be seen at the office of the company, and copies may be had on payment of £1 1s.

No date. **TOWYN.**—Alterations and additions to Towyn Council School, for the Merioneth Education Committee. Plans, specification, and further particulars may be obtained on application to the Architects, Deakin and Howard Jones, M.S.A., Plas Ynys, Borth, S.O.

No date. **DYFFRYN (Merioneth).**—Erection of a motor-house and stabling at Llys Andreas, near Dyffryn, Merioneth. Plans, specifications, and further particulars may be obtained on application to the architects, Deakin and Howard Jones, M.S.A., Plas Ynys, Borth, S.O.

ENGINEERING.

March 21. **METHLEY.**—No. 1, the laying of about 716 yards of 9in. stoneware pipe sewer, together with manholes, etc.; No. 2, the laying of about 884 yards of 3in. cast-iron water mains, together with all necessary fittings; for the U.D.C. Plans and specification may be seen at the offices of the Engineer, John S. Richardson, East Parade Chambers, Leeds, and forms of tender may be obtained on payment by cheque of £1 1s. Tenders must be delivered to R. S. Wigin, Clerk, 83, Albion St., Leeds.

March 22. **RICHMOND (Surrey).**—Construction of a pump chamber to be fixed in the Petersham Well, Petersham Meadow, in accordance with plans prepared by W. G. Peirce, the Engineer to the Works. Specifications and forms of tender and plan can be obtained at the water works office, Riverside, Richmond, on payment of a deposit of £1 1s. The contract and bond, stipulated by the Public Health Act, 1875, for the due performance by the contractor of his tender, will be prepared by the town clerk. Tenders, addressed to the Chairman of the Water Committee, must be delivered to the Town Clerk's Office, Town Hall, Richmond, Surrey.

March 24. **WANSTEAD.**—650 yards super. of fireproof flooring, for the Receiving Homes in course of erection at Aldersbrook Road, Wanstead, for the West Ham Union. The drawings, specification, and conditions of contract can be inspected, and forms of tender obtained, at the office of the architect, W. Jacques, A.R.I.B.A., 2, Fen Court, E.C. Tenders to be delivered to Thomas Smith, Clerk to the Guardians, Clerk's Office, Board Room, Union Road, Leytonstone, N.E.

March 24. **VAYNOR AND PENDERYN.**—Construction of about 4¼ miles of 12in., 9in., and 6in. stoneware and cast-iron pipe sewers, together with manholes, lampholes, tumbling bays, flushing chambers, and ventilating shafts, together with other appendages and works, for the R.D.C. Drawings and specification may be seen and bills of quantities and form of tender obtained of Frank T. James, Clerk to the Council, on payment of £1 1s., No. 134, High Street, Merthyr Tydfil, to whom tenders must be sent.

March 29. **MANCHESTER.**—Supply and erection of automatic valves required for the North Wells, consisting of cast-iron bell valves, levers, copper floats, cataract cylinders, and other work in connection therewith; and the syphon outlets required for the South Wells, consisting of castings with reflux doors, to be bolted to the existing syphon pipes, 40in. diameter, for the Waterworks Committee. Specification and form of tender may be obtained on application to G. H. Hill and Sons, Civil Engineers, Albert Chambers, Albert Square, Manchester, and 3, Victoria Street, Westminster, upon receipt of cheque for £2 2s. A limited number of copies of the drawings (uncoloured) are available, and will be lent to persons tendering in priority of application on receipt of £1 1s., which sum will not be returned. Tenders, addressed to the Chairman of the Waterworks Committee, must be forwarded to the Secretary, Waterworks Offices, Town Hall, Manchester.

Continued on next page.)

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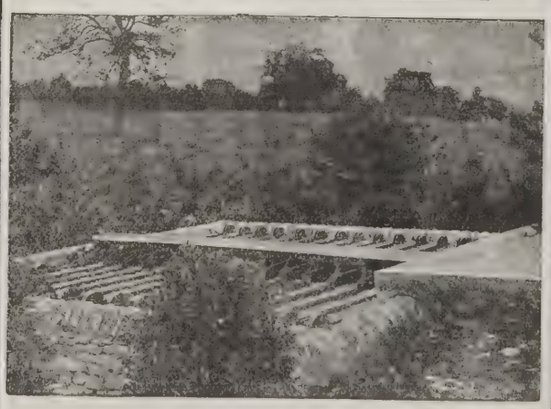
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March 29. **MANCHESTER.**—Laying and jointing of the Southern Section of the third line of pipes from Thirlmere to Manchester, for the Corporation. Works will extend from about three-quarters of a mile north-west of Lostock Junction Station of the Lancashire and Yorkshire Railway to the Audenshaw Reservoirs of the Corporation, and consist of nearly twenty-three miles of cast-iron and steel pipes, 44in. and 40in. diameter, the construction of a tunnel 550 yards long, nine subways under railways and canals, nine bridges under and over railways, valve houses, discharge wells, and outlet works, the fixing of valves and ironwork, and other work connected with the third line of pipes. Plans and drawings may be seen, and printed specification, schedule of quantities, and form of tender obtained at the offices of G. H. Hill and Sons, Civil Engineers, Albert Chambers, Albert Square, Manchester, and 3, Victoria Street, Westminster, on receipt of cheque for £5 5s. A limited number of drawings (uncoloured), excluding ordnance maps, are available, and will be lent to persons tendering in priority of application on receipt of £5 5s. (not returnable). Tenders, addressed to the Chairman of the Waterworks Committee, must be forwarded to the Secretary, Waterworks Offices, Town Hall, Manchester.

IRON AND STEEL.

March 19. **TORQUAY.**—Erection of the proposed pavilion at Torquay, for the T.C. Heavy steel and iron constructional engineers desirous of tendering are invited to forward their names together with a deposit of £3 3s., to Fredk. S. Hex, Town Clerk, Town Hall, Torquay, on or before March 19, after which in due course copies of condition of tender, print of the drawings, specification, etc., will be supplied by the Engineer to the Council, H. A. Garrett, A.M.I.C.E., Market Street Chambers, Torquay. The carrying out of the work is subject to the sanction of the Local Government Board being received to the necessary loan.

March 21. **PAISLEY.**—Erection of iron roofing for new retort house, etc., and also for the extension of the gravity bucket coal conveying system, for the Gas Corporation. Specifications, etc., may be obtained from Geo. R. Hislop, Engineer and Manager, Paisley Gasworks.

March 21. **ILFORD.**—Supplying and fixing about 600 yards lineal of steel unclimable fencing, gates, etc., for Little Heath School site and school recreation ground, for the Ilford Education Committee. Drawings may be seen and copy of specification, schedule, and form of tender, may be obtained at the offices of H. Shaw, M.I.C.E., engineer and surveyor, Town Hall, Ilford, upon payment of £2 2s. Tenders to be sent to W. S. Torbitt, M.A., LL.B., Secretary, Education Offices, Ilford.

March 21. **MADRAS.**—Structural steelwork, galvanised work, etc., for a shed 500ft. long by 120ft. wide, for the Port Trust. Specification, form of tender, and set of eight drawings can be obtained from Rendel and Robertson, 8, Great George Street, Westminster, S.W., on payment of £1 1s.

March 23. **BLACKPOOL.**—Supply and erection in ornamental cast-iron or ornamental cast-iron and steel of a wind screen, 420ft. long, and 8ft. high, for the directors of Victoria Pier Company, Ltd. Further particulars can be obtained on application to George Roberts, Secretary, Victoria Pier, South Shore, Blackpool.

March 23. **WATFORD.**—Erection of a steel and corrugated iron building, size 29ft. by 30ft. by 24ft. high, for the U.D.C. Persons desirous of contracting for the work are required to submit plans and particulars. The Engineer's specifications and particulars may be obtained upon application to D. Waterhouse, Engineer to the Council, High Street, Watford. Tenders must be delivered to H. Morten Turner, Clerk, 14, High Street, Watford.

PAINTING.

March 21. **PRESTON.**—Painting required to be done at public conveniences within the borough, for the Corporation. Specification may be seen and form of tender and other information obtained at the office of the Borough Surveyor, Town Hall, Preston, to whom tenders must be delivered. The contractor will be required to observe the Fair Contracts Clause.

March 22. **PRESTON.**—Painting, etc., required throughout the Cattle Market, Brook Street, for the Corporation. Specification, form of tender, etc., may be obtained at the office of the Borough Surveyor, Town Hall, Preston, on payment of 10s., to whom tenders must be delivered. The contractor will be required to observe the Fair Contracts Clause.

March 22. **EAST RIDING (Yorkshire).**—Painting the police stations at Cottingham, Filey, Hessle, Norton, Withernsea, for the Standing Joint Committee. Specifications may be seen and forms of tender obtained at the above stations, or upon application to the County Surveyor, Beverley. Tenders to be forwarded to J. Bickersteth, County Hall, Beverley.

March 22. **PRESTON.**—Painting, etc., required at the Police Station, Lancaster Road, for the Corporation. Specification, form of tender, etc., may be obtained at the office of the Borough Surveyor, Town Hall, Preston, on payment of 10s., to whom tenders must be delivered. The contractor will be required to observe the Fair Contracts Clause.

March 22. **WEST STANLEY.**—Painting the following schools for the Durham County Education Committee:—South Moor Council, mixed and infants' schools; Greencroft Council, mixed; Annfield Plain Council, infants; Hare Law, mixed and infants; Causey Row, mixed and infants; East Stanley infants, West Stanley senior, and West Stanley infants. Specifications, etc., may be obtained from E. G. Chatt, Station Road, West Stanley.

March 26. **EXMOUTH.**—Painting the railings, etc., of the various pleasure grounds, for the U.D.C. Specifications and particulars can be seen at the surveyor's office, Public Hall. Tenders to be delivered to H. C. Adams, clerk.

PLUMBING AND SANITARY.

March 22. **MOUNTAIN ASH (Wales).**—Laying of new water services and the repairing of services and consumers' fittings in each of the following districts for year ending March 31, 1911, for the U.D.C.: (1) Mountain Ash, (2) Penrhiwceiber, (3) Abercynon, (4) Ynysybwl. The contractor will be required to reside in the district for which his tender is accepted. Specifications may be seen and forms of tender obtained on application to W. G. Thomas, surveyor, Town Hall, Mountain Ash. Contractors will be required to pay their workmen the recognised Trades Union rate of wages. Tenders to be sent to H. P. Linton, clerk, Town Hall, Mountain Ash.

March 26. **BRANKSOME.**—Reconstructing the drainage at Branksome Police Station, for the Dorset C.C. Standing Joint Committee. Plans and specifications may be seen at the Police Station, Branksome. Tenders to be sent to the County Surveyor, Wimborne.

March 28. **STRATTON ST. MARGARET.**—Laying about 260 yards of 9-inch sewer at Crowdy's Hill, Upper Stratton, for the Highworth R.D.C. Plans and specifications can be seen on application to John P. Kirby, Clerk to the Council, Rural District Council Offices, 100, Victoria Road, Swindon, to whom tenders must be sent.

ROADS AND CARTAGE.

March 21. **EARSDON.**—Making good of the following streets:—Laurel Terrace and Mortimer Avenue, near Bates' Cottages, Holywell, for the U.D.C. Plans, sections, and specifications may be seen on personal application to the Surveyor, J. R. MacMillen, Council Offices, Shiremoor, between 9 a.m. and 9.30 a.m. Tenders to be sent to O. E. Hall, Clerk, Council Offices, Shiremoor.

(Continued on next page.)

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March 21. **SPENNYMOOR.**—Making of Back St. Paul's Gardens, for the U.D.C. Plans, specifications, etc., may be seen, and forms of tender obtained on aplication to C. R. Spencer, surveyor to the Council, Silver Street, Spennymoor. Tenders to be sent to F. Badcock, clerk, Council Offices, Spennymoor.

March 21. **EAST ASHFORD.**—Supply and delivery of flint on the various roads in their district, and haulage of gravel and rock from quarries, for the R.D.C. Forms of tender and schedules of quantities may be obtained of the District Surveyor, T. W. Pullen, Kennington, Ashford. Tenders, addressed to the Chairman, East Ashford Rural District Council, must be delivered at the Workhouse, Willesborough, near Ashford, before 9 a.m.

March 21. **SOUTHGATE.**—Execution of certain works of public and private street improvement in Bowes Road (part of), and Hurst Road, respectively, for the R.D.C. Plans may be seen on application to the surveyor, C. G. Lawson, C.E., from whom copies of the specification, conditions of contract, and form of tender may be obtained on depositing £2 in cash. Tenders must be sent to W. M. Ellenor, Clerk of the Council, Council Offices, Palmer's Green, N

March 21. **LONDON, E.C.**—Supply and delivery at their pumping station, at Green Lanes, Finsbury Park, of 2,000 tons of sand required for filtration purposes for the Metropolitan Water Board. Tenders must be made on official forms, which may be obtained from the Clerk of the Board, Savoy Court, Strand, W.C., by personal application or on receipt of a stamped addressed envelope. Tenders, addressed to the Clerk, Metropolitan Water Board, Savoy Court, Strand, W.C., must be delivered at the offices of the Board.

March 21. **PEMBURY (Kent).**—Work in connection with the forming, levelling, kerbing, channelling, paving, metalling, and making up of Canterbury Road, in the parish of Pembury. Length of road about 500ft., 36ft. in width; for the Tonbridge R.D.C. Plans and specification may be seen and bill of quantities and form of tender obtained on application at the office of Frank Harris, engineer and surveyor to the Council, Broadway, Southborough, Tunbridge Wells, on deposit of £1 1s. Tenders to be delivered to Neville R. Stone, Clerk, 23, Church Road, Tunbridge Wells.

March 21. **BLACKBURN.**—Excavating, forming, and paving of the following streets, for the Highways Committee, viz.:—Back roads behind Nos. 522 and 552, Whalley New Road and behind Whalley New Road from Topaz Street to Amethyst Street, back roads and cross roads between Meta Street and Bryan Street, and between Finsbury Place and Oakfield Road and the cross road adjoining No. 15, Bell Street. Plans and specifications may be seen, and all information obtained upon application at the office of William Stubbs, A.M.I.C.E., borough engineer, Municipal Offices, Blackburn. Tenders to be delivered at the Municipal Offices.

March 21. **TUNBRIDGE WELLS.**—Supply of Chert, Penlee, Penmaenmawr, St. Kever basalt, Guernsey granite, quenast, quartzite, ragstone, and tarred rag macadam, tar, and tar compounds for tar painting and grouting, etc. Also the haulage of materials from various railway stations within the district; team labour, in connection with steam roller and general work, and the supply of horses with the sanitary vans, for year ending March 31, 1911. Forms of tender, and further particulars, may be had on application to Frank Harris, engineer and surveyor, Broadway, Southborough, Tunbridge Wells, to whom a small sample of the materials should be sent. Tenders to be sent to Neville R. Stone, clerk, 23, Church Road, Tunbridge Wells.

March 21. **BRIDGE (Canterbury).**—Supply of surface-picked and other hard flints, and gravel, to be delivered at the various numbered depots on the district roads; also for carting out stones from the depots in all the parishes at per yard, and for the supply of horse, cart and man for nine hours per day during the months of November, December, and January, and for ten hours per day during the remaining part of the year at per hour, and for other carting, etc., that may be required, for the R.D.C. Forms of tender and schedules may be had on application to the district surveyor, S. Sladden, Littlebourne, Dover. Applicants for tender forms must state the names of the parish or parishes for which they wish to tender, and the place from which the stone will be obtained. Tenders, addressed to the Bridge Rural District Council, must be delivered at the office of T. Louis Collard, clerk, Workhouse, Bridge, near Canterbury.

March 22. **HEBDEN BRIDGE (Yorks.).** — (1) Supply of 635 square yards of 6in. Lancashire setts, and (2) labour in paving 635 square yards of setts, for the U.D.C. Plans and specifications may be seen, and bills of quantities obtained, on application to T. Waddingham, surveyor to the Council. Tenders to be delivered at the office of Alfred R. Edwards, Clerk, Council Offices.

March 22. **CRICKLEWOOD.**—Road-making and paving works in Heber Road, Cricklewood, for the D.C. Plans and specifications may be seen, and all further particulars obtained, upon application to O. Claude Robson, M.Inst.C.E., Engineer to the Council, Public Offices, Dyne Road, Kilburn, N.W. Tenders to be delivered at the offices of the Council. A £10 note to be deposited with each tender.

March 22. **LONDON.**—Supply of road materials, viz., Channel Island granite, granite siftings, red pit sand, screened river sand, cockle shells, gravel, pea gravel, and Kentish flints, for H.M. Commissioners of Works and Public Buildings. Forms of tender, containing full particulars, may be obtained on application to H.M. Office of Works, etc., Storey's Gate, London, S.W. Tenders must be addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

March 22. **LEXDEN AND WINSTREE.**—Supply of local materials and team labour, and also for steam road roller, in the several parishes of the district, for the R.D.C. 1.—Supply or the supply and delivery of picked stones in any parish of the district. 2.—Supply of sifted stones or gravel at the various quarries in the district. 3.—Carting of stones from the various quarries to the various parishes. 4.—Supply and delivery of broken Kentish flints alongside the wharves in the district. 5. Supply of 250 tons of granite. 6.—Unloading and carting from the wharves to the roads in the various parishes. 7.—Hire of one or two steam road rollers. For the conditions and forms of tender apply to John Ennals, Surveyor's Office, Lexden, Colchester. No other form of tender will be accepted. Tenders to be sent to Chas. H. Tompson, Clerk, Victoria Chambers, Colchester.

March 23. **LEIGH-ON-SEA.**—Making up of the road within the district known as Marine Parade for a distance of about 440 lineal yards, the carriageway to be made up with tarred granite macadam, for the U.D.C. Plans and specification can be seen on application to the Surveyor to the Council, J. W. Liversedge, Assoc.M.Inst.C.E., and a copy of the quantities obtained on deposit of £2 2s. Tenders must be sent to W. Carlyle Croasdell, Clerk to the Council, Council Offices, Leigh-on-Sea.

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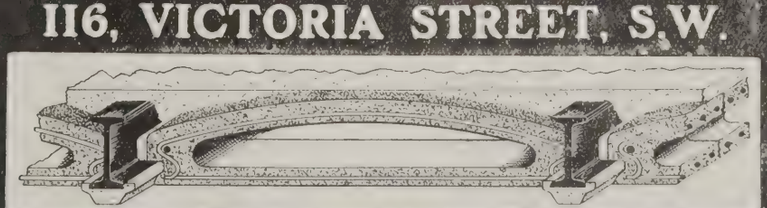
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TO CONTRACTORS AND OTHERS.

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March 23, 1910. Volume 31, No. 790

THE BUILDERS' JOURNAL

AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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P.C. and Provisional Sums.

We publish on another page a letter from a well-known Manchester builder which again raises the perennial question of the method of dealing with p.c. and provisional sums in bills of quantities. The existing method, based upon putting in the quantities net amounts to which the builder is asked to add such profit as he may wish, although apparently a simple and reasonable way of dealing with the matter, notoriously does not commend itself to builders. What builders say they want is that some moderate definite profit for the contractor shall be included in all p.c. and provisional sums. If the builder wants more profit than has been so provided, let him add it. If he is satisfied with less, let him take some or even all of it off, but at all events do not let it any longer be possible to make assertions such as those contained in the letter referred to. The present system leads to much friction between builders and specialists, and is probably injurious to the satisfactory progress and finish of work. When this question is raised, the stock reply is: "Well! why do not builders add profit for themselves as requested in the quantities?" The answer is: "Because they dare not if they want to be in the running for the contract." If we push our enquiry further, it appears that the real reason why they dare not add profit lies in the fact that architects and surveyors do not themselves consistently interpret alike the provisions as to p.c. and provisional sums. Consequently, contractors have to speculate on the kind of treatment they are likely to receive, and inevitably the result is as we have said. Perhaps the most satisfactory method is that adopted by the surveyor in a city in the North of England, whose practice it is to state in the quantities that the p.c. and provisional sums are net, and must be so paid on his certificate, but that at settlement, on production of the net settled accounts, a profit of five per cent. will be added for the benefit of the contractor. On every ground the settlement of this question is desirable, and might, we suggest, be brought about soonest by conferences between the local societies of architects and builders. After all, there can be no desire on the part of architects to deprive builders of a reasonable profit on the p.c. and provisional sums, but they do want to know what that profit is, so that they may be able to satisfy their clients that it is reasonable.

"Strenuous" Humour and Street Traffic.

An ingenious merry gentleman, as Addison might have called him, has an article in the current issue of a popular (and "strenuous") magazine in which he illustrates certain more or less whimsical suggestions for dealing with London's traffic problem. The article is entitled "Tackling the Traffic Tangle," with, for sub-heading, "How to Make London Life Less Strenuous." After that, one naturally expects an intensely practical and up-to-date solution of the problem, and probably more than half his readers will take him quite seriously; the sense of humour in the average reader of the popular (and "strenuous") magazine being inchoate. So far as can be seen, the author does not originate anything; he simply applies to "strenuous" practicality certain cunning inventions which have been hitherto mainly associated with "strenuous" amusement. He gets a photograph of some familiar London street scene, and on it adroitly grafts a flipflap or a switchback, with the most idiotic effects conceivable. Quite serious, however, and of comparatively decent appearance, is a view of Regent Street as it might appear if the shop windows were on the first floor instead of on the ground floor, balconies, spanned by bridges, running at the first-floor level on both sides of the street. Of course this notion of "elevated sidewalks" is by no means new, nor are its advantages very obvious. But the scheme is at least rational. So is not the suggested switchback route between Victoria Station and the Bank. "Why not," our humorist asks, "provide a cheap and satisfactory means of transit by erecting switchback routes, using the natural rises and falls [ominous expression] made by the roofs of buildings and the intersecting streets? The delicious whiz downwards, after a slope had been climbed, would act as a stimulus to the jaded system, and our doctors' bills would be halved if not abolished." Exactly. It would be distinctly bracing to the nervous system; and in the little accidents that must necessarily happen now and again, it would be quite superfluous to call in the doctor, except as an expert witness at the inquest. A flipflap in front of the Royal Exchange, or at Piccadilly Circus, would, our author urges, prove an incalculable blessing. "Thanks to these flipflaps, a trembling grandmother would be lifted in the air, say, at the corner of Shaftesbury Avenue, and deposited safe and sound at the corner of Piccadilly without the nerve-racking experience of making agonised rushes across the seething roadway, either with or without the kind assistance of an overworked policeman." Of course it is all very idiotic, as its sardonically humorous writer doubtless intends it to be; but surely the same adjective applies, with even greater force, to circumstances that give him the occasion of which he has made such adroit use. There are flipflaps and there are deadly dangerous street crossings. There is no sane reason why we should tolerate either; and the suggestion that they should be seen in combination is in reality an excellent stroke of satire, for which we are duly grateful.

Bricklayer's Bitter Cry.

Reinforced concrete construction has many enemies, but not all of them are so frankly reactionary as the brickmaker who recently wrote a letter of protest to a morning contemporary. "It is time," he says, "that bricklayers protested against the system of reinforced concrete recently [!!] introduced into this country. It is a system of building that encourages unskilled labour—the cause of unemployment in towns—and it ought to be checked. Bricks," he continues, "have been in use for centuries past, and have withstood all the weathers of all the ages. Therefore bricks should remain in use. By this means more employment would be provided for bricklayers, who are skilled mechanics." It is quite impossible to withhold all sympathy with this man's point of view, or to turn an entirely deaf ear to his exceeding bitter cry. It is equally impossible to grant him all his premises, logical or physical. Reinforced concrete construction certainly is checked, in various ways—by inconvenient by-laws, by the still unsolved problem of architectural treatment, by unfitness for small buildings; but to ask for legislative prohibition is to cry for the moon. Nor is it quite fair to say that the labour employed on it is unskilled; for we are being constantly reminded that success very largely depends on the careful supervision of experienced men. We fully share the love and praise of honest bricks; but that they are in any serious danger of being soon or generally superseded is surely a wild imagining of bitterness and despair. For the smaller buildings they are still, and are likely to remain, as in-

dispensable as they are appropriate; and as to their supersession in the larger works, it can only be said that events will take their natural course in spite of prejudice and protest. Is it not better, therefore, for architects, and indeed all sorts and conditions of builders, not to waste effort in futile opposition to the new movement, but to endeavour to be in it?

The Welsh National Museum.

Congratulations to Messrs. Smith and Brewer on their success in this big competition. Though competitions are frequently denounced as an unmitigated nuisance to the architectural community, and responsible for all kinds of evils, this competition proves once again how valuable is this method for discovering latent talent, and for enabling young firms to come to the front. Though it would, of course, be untrue to include Messrs. Smith and Brewer among neophyte firms of architects, since they are already well known for much delightful and valuable domestic work, we believe this to be the first occasion upon which they have launched out into the more strenuous flights of large public work, and their success is interesting as a proof of unusual excellence in two rather widely separated branches of the architectural art. Still, it is not unduly straining the point to say that it has brought three new firms into prominence in this class of work, while Mr. H. T. Hare maintains his reputation for either being top or very near it in big competitive work.

Municipal Trading.

The smouldering controversy between those who advocate and those who oppose municipal trading frequently bursts into flame in Leeds, where once again the rival forces have joined issue. Large sewerage works are in contemplation, and a deputation has waited on the Council to request that those works shall be carried out by direct labour. Fortunately for the ratepayers, Leeds has a powerful master builders' association, which is able and willing to present an overwhelming case for the other side. Its secretary, Mr. J. Davidson, has diligently collected and carefully digested a mass of data, of which already excellent use has been made. He has again stated his case with telling cogency, adducing several instances of the disastrous financial result of employing direct labour. Bradford, he points out, has had to abolish a slab-making department on account of its heavy loss; and he is able to show, from other specific citations, that the system has been wasteful and extravagant in the extreme. Moreover, private "employers have on many grounds greater incentives to closer oversight, and consequently a larger percentage of expenditure is available for actual wages when the work is done by contract than is possible where it is carried out under public officials"; while, on the other hand, "the keen competition during this period of continued depression makes it absolutely essential upon an employer thoroughly to organise his work, to use the best equipment, and to obtain a fair and honest day's labour for the standard wage which he pays." A further important consideration is that the supply of skilled labour depends entirely on private traders, since corporations do not take apprentices. This does not by any means exhaust the arguments against municipal trading; and, in fact, Mr. Davidson has put forward several other strong reasons why the particular work in question should not be undertaken by the corporation; but the arguments for and against municipal trading are sufficiently familiar, and it is hardly too much to say that the system has been everywhere discredited. The master builders of Leeds should therefore have no very difficult task in carrying their point.

Architecture and Airy Flight.

Aerial navigation seems at length to have emerged from that critical period during which it is almost impossible to discuss with high seriousness an innovation that lends itself to irrepressible jocularity. Barely a year ago, any suggestion that architects or engineers should give serious attention to the ways and means of housing air-ships would have been smothered in inextinguishable laughter, but now we find the Hamburg papers publishing a prospectus inviting subscriptions to a new company that is being formed for the purpose of constructing an airship dock at the cost of a million marks. It may therefore be assumed that the matter is beyond joking, and that those architects who are permitting their minds to speculate on the modifications or extensions of their art that are likely to ensue upon a vast development of aerial navigation need no longer be intimidated by ridicule. It is no very airy flight of fancy to imagine, for instance, that at some future period, perhaps not very remote, Gothic spires and other spiky skyward projections may be prohibited as dangerous to aerial navigation, while flat roofs with landing stages will be indispensable to every country mansion. At any rate, Count Zeppelin and his supporters have determined to make Hamburg the first point of departure for oversea airship lines, for which, in the opinion of the German aeronautic world, the time is now ripe; and this is a portent which it would be more absurd to ignore than to ponder.

London's Old Wall.

It is rather surprising how little is known of the wall that once surrounded London. When, in the course of demolitions or excavations for new buildings—as, for instance, on the site of the new post office in Newgate Street—portions of the wall are revealed, very little interest is awakened, and investigation is usually left to private enterprise. It is deplorable to reflect how much of historical and architectural interest has been lost through lack of systematic records. Mr. G. L. Gomme, F.S.A., Clerk to the London County Council, has recently stated that no direct record exists of the complete destruction of the wall, although it remained intact until well into the eighteenth century, and, as Mr. J. Landfear Lucas states, appears in perfect order in Jeffrey's "Plan of London" (1735). It had disappeared, however, when Rocque published his map in 1746. All the seven gates were taken down in 1760-2 Portions of the wall that are still exposed—as at St. Giles's, Cripplegate—are but little regarded; but such fragments are usually of exceeding interest to the builder when he comes upon them unexpectedly, as they cause an enormous amount of trouble in demolition, the stuff of which they are composed being of uncommon toughness and obduracy. Its constituents might form an interesting and perhaps instructive study to some member of the Concrete Institute who is not too proud to acknowledge that the most modern-minded man may still learn something from the ancients.

Mr. H. H. Statham and the Journal.

As most of our readers are already aware, this Journal, with its issue of April 6th next will enter upon a new phase of its existence. Commencing with that number, Mr H. H. Statham, F.R.I.B.A., will be associated with the editorial conduct of the Journal, which will thenceforth be known as "The Architects' and Builders' Journal." As has been explained in a circular that has been issued, the old title was, strictly speaking, comprehensive enough to include all sorts and conditions of builders, and very particularly the Architect or Chief Builder; but the slight modification of title will remove all possibility of apprehension as to the scope of the Journal. The number of pages will be increased, there will be more illustrations, and they will be more effectively printed on paper of superior quality. There will, in fact, be an all-round improvement in the appearance of the Journal and in the character of the contents. There will, however, be no change in the price, which will remain at twopence weekly.

Notes and News.

Rome's Proposed Boulevard.

Commendatore Boni has delivered before the King, the Minister of Education, and a large audience an eloquent lecture in defence of the natural beauties of Italy, and strongly urged that a huge boulevard should not be allowed to replace the Appian Way.

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Kingston Bridge.

It has been decided to incur an expenditure of not more than £700 for the purpose of making an examination of the foundations of Kingston Bridge before finally deciding as to the widening or reconstruction of the bridge so as to increase its width to 55ft. At present a double line of tramway metals crosses the bridge, leaving a space of about a foot between the lines and the footway.

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Town-planning Tour.

Under the auspices of the National Housing and Town Planning Council a visit has been arranged to Paris, Ulm, Vienna, Dresden, and Berlin. The date of the tour will be May 25th to June 9th, and its object will be the study of town planning in the various capitals visited, and participation in the International Housing Congress at Vienna. All applications in regard to the tour should be addressed to the Secretary of the National Housing and Town Planning Council, Leicester.

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The Mall Improvements.

Sir Henry Tanner, on behalf of His Majesty's Office of Works, has submitted to the Improvements Committee of the Westminster City Council a plan showing the levels of the proposed new road from the Mall into Charing Cross. The plan shows the widening of Spring Gardens from 28ft. to 88ft., by adding to the public way the vacant site on the north side of the existing narrow street, as well as the adjacent land at present occupied by buildings, Nos. 55 and 56, Charing Cross. The necessary paving, etc., is recommended to be carried out, and that as the improvement is of a Metropolitan character, the London County Council should be asked to contribute to the cost.

* * *

The Venice Campanile.

It was hoped that the old Campanile of St. Mark's at Venice, which collapsed on July 14th, 1902, after an existence of 1,014 years, would have been completely replaced by Easter of the present year. There is, however, no possibility of the work being finished in time, but it is con-

fidently expected that the bell of St. Marco will again ring out on St. Mark's Day, April 25th, 1911. The intention was to reproduce the old tower as faithfully as possible, and with that object in view the bricks, of which there are about one million, have been specially selected and laid. The bricks are each 12ins. long, 6ins. wide, and 3ins. deep. The clay is twice mixed to secure homogeneity. These bricks contain salt, which threatened to turn the tower white. An outcry was raised, and the work was suspended while an inquiry was held. It was found that by prolonged soaking in water the salt was removed. The shaft, which was completed four months ago, is composed of an inner and an outer shaft, between which mounts the inclined plane which leads to the bell chamber. The walls of the outer shaft are 6ft. thick. The inclined plane is lit by 36 windows. In the new tower the shafts are bound together by iron rods, and the pilasters at the angles of the inner shaft are similarly united.

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Northern Architects' Prizes. The assessors' awards in connection with the Glover travelling studentship and the students' prizes competitions have been announced at a meeting of the Northern Architectural Association, held in the rooms of the association, at Higham Place, Newcastle. It was found, on opening the sealed envelopes, that two firsts were obtained by Mr. G. E. Charlewood for measured drawings of existing work and architectural sketches, open to students under 21 years. In the same departments of work, for students under 25, Mr. W. Nimmo obtained both awards. The best set of testimonials on study required for the Royal Institute final examination was adjudged to be that sent in by Mr. Wilfrid Lawson. For similar drawings for the intermediate examination Mr. Joseph Hill and Mr. Stanley Milburn were bracketed. Mr. Joseph Hill was successful in winning the Glover studentship, which, subject to certain conditions being observed, carries with it the Glover medal and the prize of ten guineas.

A Campbell-Bannerman Memorial. In the Civil Service Estimates for 1910-11 the sum of £2,100 is set apart under the heading of "Campbell-Bannerman Memorial." This is in accordance with the decision of the House of Commons in May, 1908, "that a monument be erected in the Collegiate Church of St. Peter, Westminster, to the memory of the late Right Hon. Sir Henry Campbell-Bannerman, with an inscription expressive of the high sense entertained by this House of the eminent services rendered by him to the country in Parliament and in great offices of State." It is hardly necessary to point out that the Collegiate Church of St. Peter, Westminster, is the official title of Westminster Abbey.

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Birmingham "Cathedral." The condition of the exterior stonework of the tower of St. Philip's Church, which serves as the cathedral for the diocese of Birmingham, has caused considerable anxiety to the Cathedral Council. During the last few years the process of decay has advanced to such an extent that something must be done to arrest it, if only in the interests of public safety. For some months a temporary wooden roof has been placed over the western entrance to the church to protect passers-by from possible injury through the falling of fragments of stone. During last year a special Tower Committee of the Cathedral Council was formed to ascertain what might best be done for the preservation of a piece of architecture which is of special interest as an example of the period to which it belongs, and is in some respects unique. The tower is illustrated in Mr. Reginald Blomfield's "History of Renaissance Architecture in England," and the author says:—"Thomas Archer (the architect of St. Philip's, Birmingham) was the son of Thomas Archer, M.P. for Warwick, and was a person of some consideration, being appointed Groom Porter to Queen Anne, George I., and George II. He was a pupil of Vanbrugh." "In 1710 Archer designed the Church of S. Philip's, Birmingham. The tower at the west end is helped by its commanding position, but it is certainly a powerful and original design, and unlike anything of its kind in England. Of its kind S. Philip's is one of the finest steeples in England." The Tower Committee have now formulated a definite scheme of renovation. The plan which they have adopted is that of renewing those portions of the casing which are hopelessly decayed, and of dealing with the rest of it by a preservative process of a special kind. The estimated cost of carrying out the proposed scheme of preservation will be about £2,000. The method decided upon is that in which here and there new stones are inserted. In other places breaks in the architectural lines and larger mouldings are built up with tile and cement, and the rest is treated with a silicate solution, enabling the surface of the old stone to resist the disintegrating effects of the weather. The net result will be to leave the appearance of the tower with its soft weather-worn aspect, but so to reinforce it as to enable it to endure for an indefinite period.

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Individuality in Modern Art. Sir William Richmond, R.A., speaking at the recent dinner of the Royal Institute of Painters in Water Colours, declared English Art to be intensely interesting because every kind of temperament was reflected in it. "They felt that every artist had done a special thing because that was the thing he liked and wanted to do and because he did not want to do anything else. That, surely, was the great thing that moved the outside world more and more towards art. It was the feeling that each observer of a picture was coming into touch with each other individual who put paint upon a canvas or upon paper." Whether this insistence on individuality in English Art is quite a desirable matter, one may, however, take leave to doubt. The great masters were certainly not imbued



MURAL PAINTINGS AT ST. LUKE'S MISSION HALL, CHELSEA.

This very interesting scheme has been carried out by fourteen artists, under the direction of Professor W. R. Lethaby and Mr. Halsey Ricardo, the general arrangements being in the hands of Mr. Noel Rooke. The general motive is suggested by the signs of the Zodiac, with fruit and flower decoration appropriate to the months they represent.

with individuality in their early training; and the early works of Raphael, to mention one example, were as like those of his master, Perugino, as he could make them. In fact, the deliberate and conscious copying of the Italian masters' methods and styles by their pupils has made it necessary to divide Italian pictures into "schools," and many pictures, in the absence of definite marks and signatures, have to be attributed to a pupil of such and such a master. It cannot be said, therefore, that intense individuality was the moving force of the golden period of Italian Art; and it is open to question whether intense individuality all round is the best quality to produce a great art forward movement such as we desire. Individuality we certainly desire, but the individuality that is the product of discipline, restraint and subordination to accepted teaching. The individuality most apparent at the present day is something akin to the irresponsible whims of an uncorrected child.

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"Square Chancels and Round Visits." We must relate a little tale against ourselves. In commenting on the lecture by Mr. Frederick Batchelor, President Royal Institute of Architects of Ireland, at Liverpool, last month, we referred to him as an Irish architect. This is hardly a grievous error, since Mr. Batchelor practises in Dublin; but we went on to refer to the "fine taste of the Irish in the Arts" and "to their natural gift of eloquence," attributes which were quite obviously based on the excellent lecture in question. A correspondent, however, points out that Mr. Batchelor is an English architect, who has practised in Ireland for some years past. Mr. Batchelor may take it from us, however, that Ireland has no monopoly in a fine taste for the arts or a natural gift of eloquence.

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Unloveliness in Leeds. With the demolition of the old buildings at the end of South Parade, Leeds, the appearance of Victoria Square, a writer in a Leeds newspaper observes, has become still more uninviting. The square itself is paved with unsightly cobble-stones, which are a quite inappropriate setting to the three statues in it. Altogether the appearance of the Town Hall and the statues fronting it give visitors the impression that they have been dumped down anywhere without regard to surroundings. Time and time again has this dismal ugliness been commented on, though any material improvement is impossible without a wholesale demolition of many of the adjacent buildings.



THE WOODLANDS MINING VILLAGE, NEAR DONCASTER. GENERAL VIEW ON THE GREEN. PERCY B. HOUFTON, ARCHITECT.

This is a very complete scheme, necessitated by the opening of a new colliery. Mr. Houfton, who is already well known for garden-city work, has made of it a very complete garden-village scheme, and one which is regarded as one of the most satisfactory yet carried out.

The Horniman Museum. The London County Council has received an offer from Mr. E. J. Horniman to expend a sum of £4,500 on the building of a suitable lecture hall as an extension of the Museum to seat about 200 persons, and for the provision of better accommodation than is now available for the library. The gift is conditional on the design of the hall being approved by Mr. Horniman, and on an undertaking that at least 48 lectures shall be given to teachers or children free of charge.

* * *

Sticke Courts. Some interesting particulars are given in a recent issue of "The Times" concerning the game of stické, which is not very well known. Particulars of the court will be useful to readers who may be suddenly called on to provide one. The dimensions are those of a new court now being built at the Queen's Club, West Kensington, and this in turn is based on a court erected at Esher some years ago. The court is 78ft. long by 27ft. wide, and is enclosed by walls 9ft. high, above which is stretched wire netting at least 6ft. high. The walls are of wood, and the floor of the court is made of concrete, cement faced. There is no roof. In each corner of the court a square of 9ft. is marked out, in which the server must stand; the service line runs across the court 18ft. from the back wall. The net in the middle of the court is similar to that used in lawn tennis. Above the net and 8ft from the ground is stretched a tape, above which the server must serve the ball. The Tennis and Rackets Association have standardised the measurements of the court. It should be noted that from the centre of the court to each of the back walls the floor has a slight fall, so that rainwater may drain away rapidly after rain.

The Abolition of White Lead. We notified some time ago the passing, by the French Government, of a measure prohibiting the use of white lead as a basis for any paints, or for use in house-painting. The abolition is to be gradual, five years being allowed for the extinction of the trade. The Chamber of Deputies and the Senate came into collision over the question of compensation to the white lead manufacturers, the Senate standing out for compensation, and the Deputies refusing any indemnity to the manufacturers of "murderous products." Commissions were appointed by each house, but the Senate has finally given way, though the delay in the operation of the law has been agreed to. The essence of the agreement is that in five years after the promulgation of the law the use of white lead and all products containing white lead shall be prohibited in the painting of buildings, both of the exterior and the interior.

COLOURED MATERIALS IN BUILDING.

By HALSEY RICARDO, F.R.I.B.A.

[*These notes are an abstract of a Lecture delivered by Mr. Ricardo at the Carpenters' Hall. Mr. Ricardo is well known as the leading advocate of colour as an essential factor in modern architecture, and advocates the use of glazed materials for buildings in cities. Such buildings alone can resist the smoke and grime of modern towns, and can be periodically rejuvenated by washing down. A house in Addison Road, London (shown in this issue) was designed by Mr. Ricardo, and is a practical illustration of his theories.*]

Retrospective.

Mr. Ricardo said his paper was mainly retrospective of what had been done in colour building. It went back to ancient history—in fact, it goes back to the garden of Eden. Man has used colour in the heraldry of his dress and in the heraldry of his buildings from earliest times, in a manner at once intelligible to his tribes and to his enemies. In the garden of Eden, which we now call Mesopotamia, the use of colour building came about from the pressure of constructional conditions. Their houses were built for the most part of sunburnt bricks made from alluvial clay. These bricks, so long as they kept out the rain, met all their needs, but the rain turned them into slime, and they were a poor defence against hostile tribes. The remedy was to coat them with a coat of mail. Kiln-burnt bricks would do this, but fuel was scarce. They found that a glazed brick fused at a lower temperature, and was more durable. There are immense mounds existing to-day which show the deliquescent nature of their mud bricks. They are the ruins of walls and palaces, and there they remain, great silent heaps of soil, to this day. Experiment led them to discover colour glazing. About 600 B.C. the axiom in their minds was that their buildings must be sheathed to preserve them. The lecturer briefly described the Babylonian cities, with their tiers of terraces, and on the top terrace was placed the king's palace, and the astronomers observatory above it. A side of a staircase from one of these was exhibited on the screen, showing the application of their coloured bricks. The material was not fire-clay, it would not stand great heat, and was easily fused, the colours being yellow, green, blue, and white. One has to remember that at the back of their minds, before ever architecture was, there were many other arts, and especially the art of weaving. They lived in tents before they shaped stone, and they weaved and dyed, and when they built walls, what they did was, they either hung tapestry on the walls or gave something akin to a woven texture. This ideal was an accepted thing in the East. It was accepted by the Greeks, who heightened their sculptural work with colour, and by the Romans, who followed the Greeks, but were more profuse. The gateway of a mosque in Persia showed the whole building sheeted with enamelled plaques or tiles. The condition of colour in the East was accentuated by the conditions of climate. The winter was dry and arid, then came the spring with a great sprouting of almond and maize and rice, which was soon over, followed by the summer, very hot and very dry, with a great absence of colour. That they compensated for by colour on their buildings. A mosque in Persia was shown with the whole face of the masonry covered with plaques of colour—not any great variety of colours; you can see types of them in South Kensington Museum. But see what a refreshment in a dry city it must be to have a building glowing like a rainbow! A small building, part of the Mosque of Omar at Jerusalem, showed the treatment of marble used as a plaque. It was done quite frankly as a painting, with no attempt at constructional value; the windows being made of pierced marble.

Some Examples of Colour Architecture.

An interior view of Santa Sophia at Constantinople, looking towards the east end, showed several treatments—the plating of marble with faience, then mosaics over, and then those great circles containing pieces out of the Koran, which were very decorative. All mosques had a courtyard, where people cleaned themselves and settled themselves into a peaceful frame of mind before going in. One of these showed the constructional use of marble, with relief of sculpture and arabesque plating of the wall surface, and on the walls in the courtyard a tile decoration after the style of arras. An antechamber in the Alhambra was shown where ablutions were performed before entering the presence of the Amir. Here again we see the revel and delight with which they used their colour. Spain has much in common with Persia—stony, dry hills, with not much vegetation; so in their houses they tried to make up for it. The Hall of the Ambassadors at Seville is a riot of colour. An interior of a church at Monreale in Sicily showed a marble dado, which is in reality quite a textile hanging of a beautiful quality. The Crusader on his return home had strange tales to tell of the wonderful buildings he had seen on his journeys. His listeners were not to be crushed by his extravagant accounts, and the craftsmen of the twelfth century wanted nothing to spur them on. Florence, Pisa, etc., grew up in coloured stone, and marble mosaic lent its aid to the decoration of cathedral fronts. The baptistery at Pisa is a wonderful fusion of different coloured marbles, and panels put in. The marble for the most part is taken as it should be, as a species of jewellery which you can apply. The Duomo, Lucca, is a little nearer a marble country. They take their work a little more constructionally. The front is built of marble. They carved their marble friezes into figures, etc., and then filled them in with varied coloured marbles, so as to form an inlay. The Duomo at Florence, with the base of Giotto's tower, shows the constructional method with the application of coloured work.

A Mediæval Example.

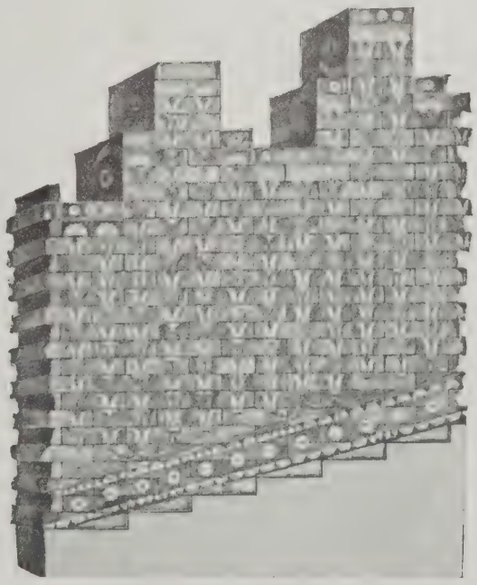
The great front of Orvieto Cathedral gives one a much fairer idea of what mediæval architecture was than the cathedrals we see now, all bleached, with the colour all gone We talk learnedly about form and proportion, light and shade, a thing which did not concern them perhaps one bit. They formed their front first for ritual. The churches, especially the portals, were the bibles of that time—their legends and the history of the gospel were there. The statues were not the frozen figures we see now; they were coloured to look as real as possible, illustrating the lives of men before Christ and great men after Christ. Those who came to see them either knew the story or would be told it by others. Such of the colour as remains to this day gives one a very imperfect idea of the original effect. We only get the ground colour—the base. In answer to a query, Mr. Ricardo said that the kings in the front of Wells Cathedral were undoubtedly coloured, with a background of azure.

Glazed Terra Cotta.

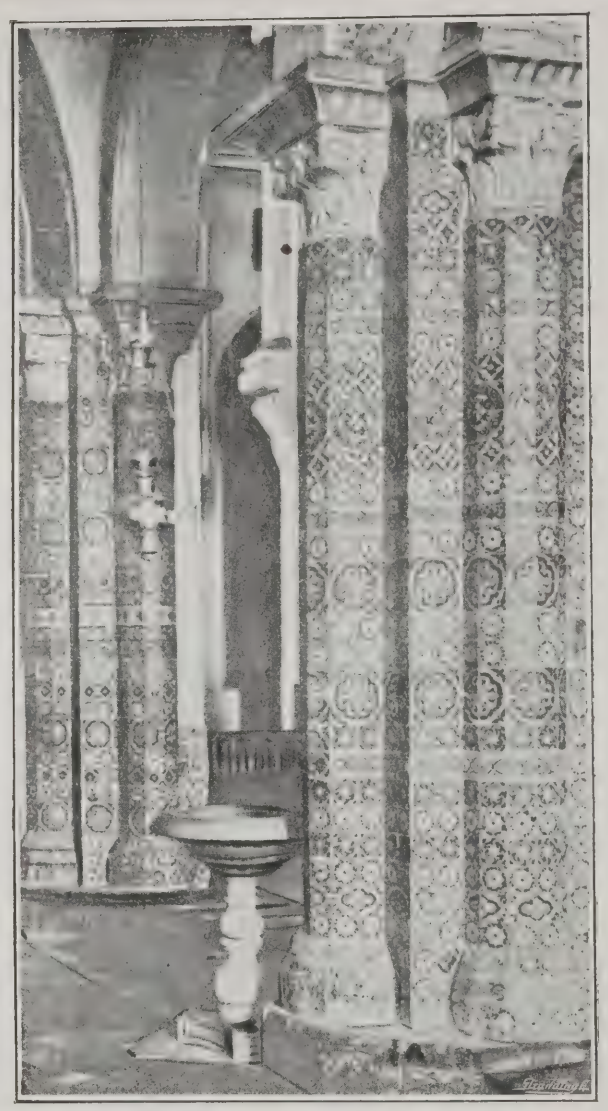
Terra cotta, at first unglazed, becomes in the hands of the della Robbia family the supreme expression of colour sculpture. Terra cotta being a moulded material, when you have made your mould you may as well take 50 reproductions as one, so you should use the decoration profusely. The Ospedale del Ceppo at Pistoja, which was shown, is an example of a succeeding generation of Luca della Robbia. It is the shelter to the hospital for the lame, and all along are representations of the people to whom it is the duty of the hospital to minister, carried out in glazed terra-cotta and the roundels filled with patron saints. The building generally is in grey stone, and these plaques are inserted as jewels.

St. Mark's, Venice.

In the front of St. Mark's we get an idea of what Venice appeared like in the sixteenth century. This front may be looked upon as a



COLOURED MATERIALS IN BUILDING: RAMPED DADO TO STAIRWAY IN ASSYRIAN ENAMELLED BRICKS.



COLOURED MATERIALS IN BUILDING: INLAID MARBLE PIERS, COIMBRA CATHEDRAL, PORTUGAL.

gorgeous monument of plunder from the East; all the beautiful columns being plundered or pilfered. The Courtyard of the Ducal Palace, Venice, showing the Giant's Staircase, was illustrated as showing the architect's sympathetic use of the marble, using the coloured marble for panels, etc., and the white marble as a frame to the coloured work, the white marble only being carved. The outside of the Ducal Palace was shown, with its front composed entirely of two marbles—one Istrian, which is inclined to go yellow, and the other almond blossom inclined to go russet. By now the craftsmen had spread into different branches of the building crafts; the masons' guild became bare; the artist, too, who had found that in careful measuring of buildings, and in looking at colourless images, began to talk about proportion. Gradually the working and jointing of the stone was all the mason had to think about. Into the middle of this languor came the Gothic Renaissance at the beginning of the nineteenth century.

Butterfield's Example.

Mr. Butterfield in the quiet of his office schemed out elaborate designs and set them down on paper, stone for stone, brick for brick, so that there was no chance of anything going wrong. He was a great artist, and had trained himself in mediæval methods. For all this there is a difference between the scholarly touch of the architect and the Gothic craftsmen. Time, however, is already justifying Mr. Butterfield's confidence in his actions. Keble College, Oxford, was shown, and also Keble College Chapel, which Mr. Ricardo said rather exemplifies the insistence of the individual. The interior of All Saints', Margaret Street, which is a church built under great difficulties, has no east window, lighting only from clerestory and west window. Several views of Holt Place, in Norfolk, by Mr. E. S. Prior, were shown. Attention was drawn to the use of tiles as lintels, courses, wreaths in chimney stacks, etc., the other materials being flints and pantiles on the roof. The colour to the house in Addison Road belongs to another category: instead of natural materials we have artificial materials covered with a glaze. The greater part of the building is in white Carrara ware, with green panels. The interior of the hall is lined with de Morgan's blue tiles in a great variety of colour. The justification for using such a material lies in the corrosive action of the atmosphere of our manufacturing towns. If we get rid of the soot from our chimneys we cannot get rid of the acids from our manufacturing chimneys. To clean brick and terra cotta is to court their destruction, so we are driven to employ glazed surfaces, and are forced to use colour. The fact that glazed bricks and glazed terra cotta are unchangeable, and that the building is impervious to wind and rain, is not sufficient were it not for the colour. Nor can we question that colour is the desire of man's heart. Finally the lecturer expressed a hope that as trees are now usually planted in newly laid-out streets presumably for their colour, so more colour would be introduced into the buildings to temper the lot of the thousands who fled nightly from this miserable place of colourless monuments in stone.

A Plea by Mr. Joseph Armitage.

[In a lecture on "Wood-Carving," read before the Leicester and Leicestershire Society of Architects, Mr. Armitage made a strong plea for Colour Architecture, which is not without its interest here.]

Compare the best or even the most extravagant of modern work with the work of the ancients of which we have descriptions, and I think you will agree with me that we show a distinct lack of the spirit of adventure in our treatment of wood.

Take, say, the description of Solomon's Temple, which can be built up from references in the Bible. It was built of stone, lined with cedar, and consisted in the main of the Holy Place or nave—a rectangular chamber of 2 cubes of 24 feet, and the Holy of Holies (answering in plan to our chancel) of 1 cube of 24 feet. The porch at the East was lined with cedar and the olive wood doors to the Holy Place were 4-leaved, carved in low relief and overlaid with gold.

The Temple was a place of thick darkness, so there was a shallow vestibule with inner doors of cypress wood, carved as the outer doors. The Holy Place and the Holy of Holies were lined with cedar, and the roof was of beams and planks. On the walls were carved cherubim, palm trees and open flowers, covered with gold fitted on. The ceiling was overlaid with gold and the cedar door was plated with gold. Dividing the Holy Place from the Holy of Holies was a screen of 6 pillars which reached half-way to the ceiling. Double doors of olive wood filled the centre opening, and were carved and overlaid with gold. A curtain (the Veil which was rent at the Crucifixion) hung over the screen on the outside and was blue, embroidered. Against the walls in the Holy Place were 10 tables bearing 10 seven-branched candlesticks, five of which burned by day and five by night. These were the only lights in a chamber 48ft. × 24ft. × 24ft. Think of the beauty of the golden chamber—the Holy Place, with its blue embroidered veil, in the dim candlelight.

Of the wood effigy, at Fersfield, Norfolk, of Sir Robert du Bois, d. 1311, Blomefield the historian, who was rector of the church early in the eighteenth century, records that he found part of the original decoration perfect, the cushions being flowered with silver on red and gold on green, other enrichments being gilded on a cement and let into the wood in several places on his belt, sword, and spurs, and then covered with glass, but most were defaced; but as the figure was very dirty, he had it washed very clean and caused the whole to be repainted.

These descriptions of ancient work sound extravagant and almost vulgar to modern ears. Modern life is grey. We live in the steel and concrete age, but the old builders revelled in colour—strong, rich colour, boldly used in ways which almost make us shudder to hear of. Think of the west front of Wells painted, for instance, or the interior of Westminster Abbey with the walls white lined with red, diaper work of the triforium gold on red ground, wall arcades vermilion and gold, the capitals, the sculptured bosses, the shields in the aisles outside the choir with straps and heads to which they appear to be suspended, gilt and coloured; the screen between presbytery and Confessor's chapel decorated with azure and vermilion, with mouldings and carvings gold, and the altar and all placed near it gilded. The marble work, polished and varying in colour, from grey-green to purplish-grey, must be remembered when we try to conceive the colour scheme. It sounds gaudy, and the description of the statue of Athena sounds vulgar, but can you imagine vulgarity enshrined in the Parthenon, or men capable of the Chartres glass spoiling their exquisite work with colour?

Why are we so much afraid of colour? Largely, I think, because we are still under the influence of the Puritan idea that beauty is the enemy of the soul.

Correspondence.

[The Editor declines responsibility for the statements made or opinions expressed by correspondents.]

Prime Cost and Provisional Sums.

SIR,—It would, I think, serve a good purpose if architects and others whom it may concern were asked to consider the important question of the discount which should be allowed to the builders and included in the p.c. prices and amounts of provisional sums included in architects' quantities.

Architects and public bodies have of late adopted a system of fixing up nett prices and contracts with manufacturers and specialists, and afterwards issuing certificates on the builder, who is called upon to pay on demand the nett sum included in the bills of quantities, without any discount for cash.

This system, I maintain, is very unfair, and totally opposed to business principles, in so much as the builder is requested to accept the estimates of the manufacturers and specialists, order the goods, give all instructions with regard to supplying same, take all responsibility, give every assistance and facility for the carrying on of the special work, allow use of scaffolding, and pay cash immediately the architect issues his certificate, notwithstanding the retention of money to the amount of 20 per cent. on the contract during the progress of the work, and having to wait twelve months for the balance.

I beg to suggest that architects responsible for arranging the p.c. prices or provisional amounts, should provide for a discount to be allowed by the manufacturer or specialist to the builder, or the manufacturer and specialist should combine with the builder to ensure this discount.

R. C.

Manchester.

Views and Reviews.

Modern House Construction.

It was an excellent idea to deal with the principles of modern house construction sectionally, and to allot each section to a writer who is a specialist in his own department, the only drawback being the bulk and expense indispensable to such an ambitious undertaking; the work being in six volumes, which, however, although of large quarto size, and printed in large type, with sumptuous margins, all in the "grand manner," are not unwieldy, but, by reason of their comparative slenderness, are light and convenient in the handling.

The editor and the publishers are certainly to be congratulated on the courage with which they have acted on the recognition that a large subject should receive large treatment. Glancing through the volumes in this new edition, we feel justified in expressing the opinion that, on the whole, the book is marked by soundness and thoroughness. Its chief value to the architect, we imagine, will be found in the sections that have been written by others than architects. The purely architectural sections, while serving undoubtedly to refresh his memory and consolidate his knowledge, cannot be reasonably expected to tell him anything fresh; but, on the other hand, he may expect to obtain a good deal of substantial information from the experts who write on water-supply, on sanitary plumbing, sanitary fittings, drainage, sewage disposal, warming, ventilation, lighting, decoration, and furniture in their sanitary aspects, sanitary law, and other subjects on which the architect naturally seeks the aid of the specialist.

The illustrations are abundant and useful, and, like the text, have been carefully revised and considerably amplified, and include an ingeniously devised paper "model," in which the various parts of a house are superposed, so that, for instance, by lifting the ground-floor picture you reveal the foundations, and so forth. The general get-up of the work leaves nothing to be desired.

A Useful Pocket Book.

Mr. H. G. Richey is an American author who is responsible for a number of useful works of the pocket-book character, in particular a number of books known under the title of "The Building Mechanic's Ready Reference," of which there are various editions for carpenters, wood workers, stone and brick workers, plumbers, steam fitters, and finally, "The Building Foreman's Pocket Book and Ready Reference." This last named work is larger than the others, and is about as big as the author's "Handbook for Superintendents of Constructions, for Architects, Builders, and Building Inspectors." We suppose that every additional volume that Mr. Richey turns out makes it easier for him to produce pocket books for various classes of purchasers connected with the building trades. Certainly we find—though there is a good deal of duplication in the various volumes—that each book seems to have a special value to the ordinary student of building construction in the wider sense. This foreman's pocket book is indeed very valuable. It contains a mass of information, and from one point of view we may say that it is a very comprehensive work on the subject of building construction work generally. A building foreman has to deal with so many subjects in his work that it is natural for this book to be almost all-embracing. There is a valuable introductory chapter on the duties of a foreman and the points to be observed in commencing any work; then the various trades are dealt with, and many valuable tables and data of all kinds are given, which will provide a foreman with practically every thing that he requires, and will assist in providing information on out-of-the-way points that seldom arise in the ordinary run of practice and may not come within the experience of the majority of foremen. The book is, of course, written for the United States, but it will be of almost equal assistance to English readers. It was perhaps only to be expected that a new subject such as reinforced concrete would not be dealt with in these general text-books and aid-books so thoroughly or so authoritatively as in special books on the subject, for knowledge grows at such a rate nowadays that it needs a specialist to keep up-to-date; therefore, we find that Mr. Richey, though he has made an effort to record the latest practice, does not really deal at all adequately with the subject of concrete and reinforced concrete; he makes only a digest of information obtained from various sources, such as some popular hand-books



COLOURED MATERIALS IN BUILDING: INTERIOR OF SIENA CATHEDRAL, LOOKING EAST.

"The Principles and Practice of Modern House Construction," including plan and design, construction, water supply and fittings, sanitary fittings and plumbing, drainage and sewage disposal, warming, ventilation, lighting, stables and cow-houses, sanitary law, etc. By many leading specialists, under the Editorship of G. Lister Sutcliffe, A.R.I.B.A., M.S.I. New edition, thoroughly revised and considerably extended. The Gresham Publishing Company, 34 and 35, Southampton Street, Strand, London.

issued by American Cement Companies. We find builders' foremen and mechanics, engaged in building work, often hopelessly ignorant of the manner in which to make concrete properly, and of the carrying out of reinforced concrete work, so that it is worth while making some effort to provide in this book such important information. We feel sure that Mr. Richey could view it from the right standpoint, and, while not going into the subject of design, could give the foreman a clue to the designer's ideas and the importance which attaches to the most careful carrying out of every little detail. If the importance of the details is not understood, and the designer's object appreciated, inaccurate workmanship will result, and the consequences are very serious. There is a certain amount of information of an ordinary character provided about various kinds of reinforcements, and a few systems, but the principles of design are ignored; therefore, even a careful reader of this work will not understand the drawings he may be provided with, and as it is often impossible to provide inspectors to check and watch every detail of practical construction there is a liability for serious error. If a multitude of sins are covered by the concrete, and the work holds up, it may be almost upon the point of collapse, and its life in a building may be very short. In the more ordinary subjects of building construction Mr. Richey's hand-book is, however, admirable, and it seems to provide most information likely to be of service, for it is no use in a book of this character trying to give too much; severe pruning must be done to compress the matter into the space available, and we are sure that the author has done his work very well.

"The Building Foreman's Pocket Book and Ready Reference." By H. G. Richey. London: Chapman and Hall, Limited. Price 21s.

Legal.

The Quality of Bricks.

At the Manchester Assizes, before Mr. Justice Walton and a jury, an action was brought by Henry Thomas Kenyon, of Prestwich, trading as the Standard Brick and Terra Cotta Company, at Buckley, Cheshire, to recover damages from J. T. Moore, builder and contractor, Eccles, for breach of contract.—It appeared that the defendant arranged with the Eccles Corporation to build them a school, and he contracted with the plaintiff for a supply of bricks. The order was for 45,000 seconds glazed bricks. Two truck loads were delivered and rejected by the clerk of the works. The contract was thereupon cancelled by the defendant. The plaintiff's case was that the bricks were as good as any that could be secured at the rate of £7 per thousand. A representative of the plaintiff company said that all he desired was to put his firm right with the building trade.—An independent expert witness, who had examined the two truck loads of bricks, said 20 per cent. of them were rejects. He considered the remaining 80 per cent. a good delivery. He would pass a delivery containing 10 per cent. of rejects.—The jury returned a verdict for the plaintiff. Judgment was reserved.

Waiting for Wages.

At Southend-on-Sea, on March 12th, two labourers sued the Corporation for one hour's money in lieu of notice, and for 1s. 7d. for the time they were kept waiting for the payment of their wages. It appeared that the men were employed to clear away snow, and were ordered to bring in their tools at 11 a.m. and receive their wages. They were not paid until 2.30 p.m. Several cases were brought before the judge, who held that a simple claim for payment for waiting could not succeed, as there was no implied promise to pay at the hour named, and even promise to pay at a given time involved no ground for more than nominal damages in case the promise was not kept, as the labourers might have gone away. It was further held that when the man received his wages he accepted them in satisfaction of any claim for nominal damages. The claim was in some cases amended to the effect that the men were entitled to an hour's notice or an hour's pay. In some of the cases an adjournment was granted in order to give the labourers an opportunity of establishing custom. On the resumption, the judge held that whether a man was entitled to notice was a question of the terms of the contract at the time the engagement was made. He found that in most cases where general labourers were employed, the contract was for so much per hour in order to indicate how much the men were to receive for their work, and in this particular case the men were not engaged hour by hour, but to work until they were stopped. As to the question of custom, the principal evidence on behalf of the plaintiffs was given by builders and contractors of great repute and position, and if the case before him had been a question respecting labourers on large building, engineering, or railway works, he should certainly say that there was a great deal of evidence which went to support the custom alleged, a great many witnesses having given evidence of payment for waiting time. There was, however, a good deal of evidence the other way; but he was not called upon to decide that question, as in this instance the custom was not confined to a definite class of labourer. He must hold that there was not sufficient evidence to establish that such a custom applied to all general labourers, and judgment was therefore for the defendants.



COLOURED MATERIALS IN BUILDING: THE MOSQUE OF AHMED, CONSTANTINOPLE. DETAIL OF COLOUR DECORATION.





Photos: E. Dockree.

AN ESSAY IN COLOUR ARCHITECTURE. HOUSE IN ADDISON ROAD, KENSINGTON, LONDON. HALSEY RICARDO, F.R.I.B.A., ARCHITECT.

This house is remarkable as being an original essay in colour architecture. Glazed material is used throughout, both inside and outside, the colour scheme being daringly vigorous. The basement storey is faced with blue-grey semi-vitrified Staffordshire bricks. The upper portion has a framework of Carrara ware filled in with glazed brickwork—the lower panels of a soft dark-green colour and the upper panels a bright blue. The roofs are covered with green Spanish tiles. The lead rainwater heads are picked out in red, green and gold. The top illustration is a general view from Addison Road; the lower one a view from the garden, and shows the open-air breakfast-room on the right.

Enquiries Answered.

spondents are particularly requested to be as brief as possible. The querist's name and address must always be given not necessarily for publication.

Editor is willing to answer enquiries from readers who require information on architectural, constructional, or legal matters. Such information must be regarded as the gratuitous advice or information of a friend, and not as the professional opinion of one who holds himself out as possessing expert knowledge on the subject in question. The Editor, will, however, avail himself of the assistance of a large staff of experts in the matters above mentioned, but the enquiries sent must be on the express understanding that he is not to be held responsible for any delays, mistakes, inaccuracies, or negligences which may occur.

urers whose questions involve possible legal proceedings are strongly urged to consul their solicitors before taking definite steps in regard thereto.

ers by post will be sent if the enquiry is accompanied by a postal order for 1s., made payable to Technical Journals, Ltd. and crossed, and stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

fee of 1s. required for answers by post is in no case to be regarded as payment for the answer given, but merely as a registration fee to meet the extra clerical and other expenses incurred in dealing with these special replies.

Editor also reserves the right of refusing to reply to any question that he may deem to be unreasonable or unsuitable, and it must be understood that both question and reply will, as a rule, be published in these columns.

Buildings to Measure near Horsham.

TESTIMONY" (Horsham) writes: "Could give me an account of any buildings th measuring or sketching near Horsham articularly a window or doorway suitable a R.I.B.A. Intermediate Testimony of dy?"

-Horsham is not situated in the most nitecturally fruitful district of Sussex, and fine church has suffered much from oration and enlargement. The nave, ade, and clerestory are Early-English, and e are a few good tombs Crawley Church Decorated and Perpendicular work, but obably the most suitable church near by n which details might be measured for the rmediate examination is Ardingly. This nainly of Decorated date, and has good ilinear windows. There is a low-side dow and a priests' door, a perpendicular screen and tomb (1457) and two other bs and Decorated canopies. Rudgwick rch has geometrical tracery windows, a le sedilia, and fine piscina. Most of the ages contain something sketchable; either icturesque group of cottages, a chimney k, or a church tower with shingled broach e. There is a fine timberhouse (restored not spoilt) at East Mascalls. G.

The Order of a Cap.

B. (NORWICH) writes: "Can you tell me er what order of architecture this cap reproduced] would come? There has n a stone porch erected in Norwich, the caps are worked as above sketch. uppose it must be fairly correct, as the nitects are a London firm, and the onry was carried out under the instruc- and setting out of a Norwich technical ructor of masonry."

-Your sketch appears incorrect, but the tal is quite probably that of the ordinary nan Doric order, in which the whole of abacus should be square and not merely cyma and fillet. G.

eement with Regard to a Plot of Ground

. J. D. (PLYMOUTH) writes: "I bought a of ground, a portion of which was sub- to an agreement drawn up by the ad- ing villa owner, as between himself and predecessor. This agreement prevents from building or erecting anything on portion. The plot was divided from the ining property by a wooden paling fence, ch had quite recently been repaired at adjoining owner's wish by the owner of plot to keep cattle off his land. I removed fence, and to his knowledge proceeded to d a hedge, with which he (adjoining er) was well pleased, although I en- ched four inches on his land (1) Can I e him pay a portion of the expense of the hedge? (2) Has he violated the agreement by his sanction to have the hedge built, coupled with his words in a recent letter to me, saying, 'When I permitted you to build a hedge in place of a fence'? (3) Does not this make void this entire agreement? (4) He has fixed in the centre of my hedge a wire fence, quite 2ft. beyond the line of the old fence, on my rights. If he sets a claim in any way, can I compel him to pay for part of the hedge?"

—As to (1) it is difficult to see upon what principle the adjoining owner could be made to pay any share of the cost of putting up the hedge. Presumably he would have been quite pleased with the fence as it stood, and mere acquiescence cannot make him liable. As to (2), see answer to (1). The fact that the adjoining owner sanctioned the pulling down of the fence and the erection of the hedge would probably estop him from complaining of the action of our correspondent. Otherwise it is clear that the adjoining owner might have maintained an action for trespass (see *Voyce v. Voyce*, Gow. 201; *Martyn v. Knollys*, 8 T.R. 145). As to (3), see answers to (1) and (2). The mere fact that the adjoining owner has permitted the fence to be pulled down and the hedge put up does not invalidate the agreement made with our correspondent's predecessor. Thus the adjoining owner could always enforce it so as to prevent the erection of a house or building on the land. As to (4), it is not stated when the wire fence was put up. If it was put up *before* the hedge was planted, and our correspondent made no protest, it is difficult to see how he can complain. But of course it is a technical trespass to place wires on a man's land without his consent (*Finchley Electric Light Co. v. Finchley U.D.C.* (1903) 1 Ch. 437), and if our correspondent can show there was a violation of his rights he would be entitled to bring an action. Generally, upon the whole case, the facts (so far as they are stated) lead us to the conclusion that our correspondent would be well advised to let well alone. There is no such grievance here as would justify the commencement of expensive legal proceedings.

B.

Repairs to a Conservatory.

W. M., PECKHAM BUSH, writes: "My services were called in two years ago last December to repair a large disused conservatory, which was badly damaged by a gale, and was leaning 7in. out of vertical in 7ft. (to gutter). I got this in position, and repaired the woodwork and glazing. When finished, my client asked for my account twice. Before attempting to pay, however, another gale removed some more glass at another part of the roof. He expected me to repair this further damage for the same account. I objected, as the whole structure was in a decayed condition. He then called in a surveyor, who valued the work at a sum less than my account. I offered to have the work valued by my own



Photo: E. Dockree.

COLOURED MATERIALS IN BUILDING: HOUSE IN ADDISON ROAD, LONDON, W.
HALSEY RICARDO, F.R.I.B.A., ARCHITECT.

This house is a practical illustration of Mr. Ricardo's views on Colour Architecture.
(*See also Views and Notes on the Centre Plate.*



COLOURED MATERIALS IN BUILDING: THE WEST FRONT OF ORVIETO CATHEDRAL.

surveyor, but the other gentleman refused, because my surveyor is not in the "*Association.*" (1) Am I bound to accept *his surveyor's price*? (2) If summoned for the amount, would the judge have power to appoint an impartial man? (3) Can I obtain legal assistance from any association connected with the trade?"

—Much depends upon the terms of the original order to repair the structure; but it appears that if our correspondent had completed the repairs properly in the first instance, he cannot now be made responsible for the damage caused by the second gale. That is the legal position of the matter.

With regard to (1), it is clear that our correspondent is *not* bound by the price as fixed by the other surveyor. If the "client's" surveyor refuses to meet the man chosen by our correspondent, the whole arrangement falls to the ground, and the parties are relegated to their legal rights. That being so, there would be nothing to prevent our correspondent from going to law. The action might be commenced in the County Court, and then it is probable that the lawyers could agree upon an independent arbitrator. Even if they do not agree, the judge has power (under s. 104 of the County Courts Act, 1888) to refer the matter to an expert, with the consent of the parties. If the matter can be settled without going to law, so much the better; for litigation—especially when it ends up in a reference of the matters in dispute to an arbitrator—is a costly business.

B.

Books for Small House Work.—"REX" (BERKDALE) writes: "I should be obliged if you would inform me of a book or two likely to be useful in giving the probable cost of certain materials, work, etc., when designing or detailing buildings. The books should advise how to build a cottage artistically, yet cheaply. Can you recommend any book that would be useful to an architect about to touch speculative house work, giving particulars of cost of drains and mains, etc., also how to arrange a mortgage for a plot and all incidental expenses?"

—I think the best book that he could have for his purpose would be Rea's "How to Estimate." He would also find Stephenson's and Fletcher's books very useful.

B. T

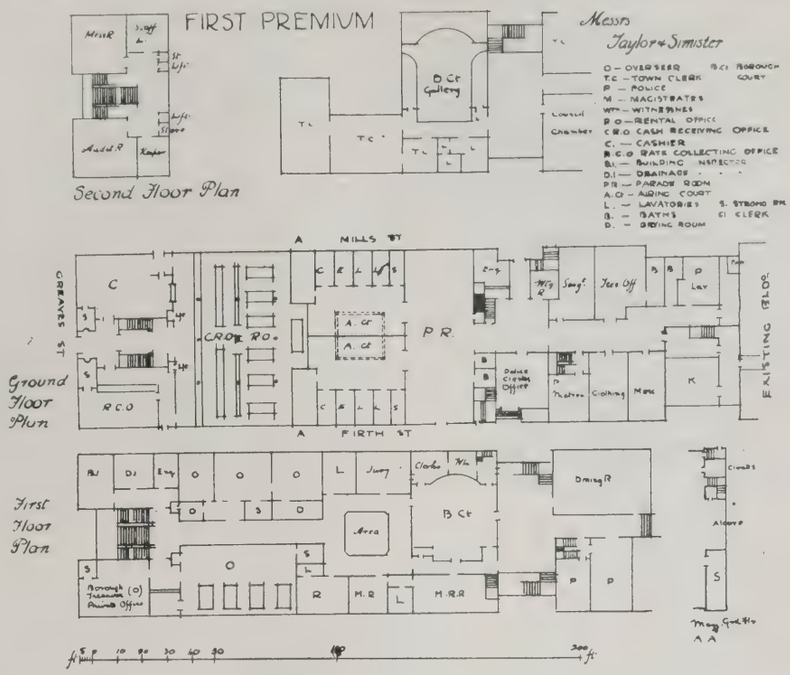
OLDHAM TOWN HALL EXTENSION.

The proposed extension to Oldham Town Hall is intended to be an addition to the existing central block, and was consequently required in the conditions to harmonise with the latter in style and general characteristics, so as to present, as far as possible, a homogeneous whole. The levels of the floors were to correspond, and convenient means of access were to be arranged, on each floor, from the present corridors in the Town Hall. The site to be covered is on the south side of the present building, bounded by Greaves Street, Firth Street, and Mill Street, and has a steep slope. The completed group will thus stand on an island site, the lowest point of which is in Greaves Street.

The principal elevations—in stone—were to be toward Greaves Street and Firth Street. The elevation to Mill Street, a very narrow thoroughfare, was to be executed in white glazed brickwork, similar to the existing facing on that side of the Town Hall.

The sum to be expended on the building was not to exceed £25,000. This, whilst including the cost of drainage, water supply, lighting, heating, ventilation and fixtures, was not intended to be taken as including architect's commission, clerk of work's salary, furniture, fittings, and final decoration.

The first premiated design is the work of Messrs. Taylor and Simister, Queen Street, Oldham, who have obtained a direct and uncomplicated solution of the problem. The disposition of the rooms grouped round the main entrance (in Greaves Street) is particularly good—the one entrance serving for both cash receiving and rate collecting offices, although in the case of the latter a separate



OLDHAM TOWN HALL EXTENSION: SKETCH PLANS OF SECOND PREMIATED DESIGN. WINDER AND TAYLOR, ARCHITECTS.

SECOND PREMIUM

MESSRS WINDER & TAYLOR

OLDHAM TOWN HALL EXTENSION: SKETCH PLANS OF FIRST PREMIATED DESIGN BY TAYLOR AND SIMISTER.

entrance is also provided. In many of the schemes submitted, several entrances are provided, yet the cashier's office can only be gained by traversing other rooms. The rearrangement of the rooms adjoining the Borough Court is also highly satisfactory. The position of the staff mess room would, however, we think, bear reconsideration—its isolation on the top floor and in a remote corner of the building is hardly desirable.

In the disposition of the prison cells it will be noted that the airing-yard is subdivided so that the women have one half and the men the other. There is, however, no direct entrance to the cells from the street, such as is provided in the schemes placed second and third.

With regard to the elevations, we do not like either the general modelling of the façades, or conventional profusion of keystones, distorted pediments, etc.

In the second premiated design, that by Messrs. Winder and Taylor, Union Street, Oldham, an attempt has been made to harmonize the new block with the old. The latter, whilst badly planned internally, is inoffensive in appearance, if dull in the detail. We could have wished Messrs. Winder and Taylor had contented themselves with a more faithful following of the original. It will be observed that the part to Greaves Street is not squared on in the first design, and the gain in space thus obtained appears to us not to be worth the unpleasant appearance of an acute angle at the corner. The planning of the rooms adjacent to the Borough Court and the lighting of the parade room would bear revision. The entrance to the cells, however, is certainly good, a drive straight through being obtained. We must also commend the way in which the cells themselves are entered off a corridor at the back and not off the exercise yard. But everywhere the entrances seem insignificant.

Messrs. Jenkins, Matley, and Mills, Queen Street, Oldham, the authors of the third premiated design, have placed their staircase in one corner of the Greaves Street façade, which results in rather awkward communication being obtained on the first floor. The arrangement of the borough treasurer's rooms on the Greaves Street façade has a lack of balance, and the drive-through for prison vans across the exercise yard on to which the

cells face is not all that could be desired. In short, whilst the disposition of the rooms round the borough court is quite good, the plan could be improved in its smaller details.

Amongst the other designs submitted that deserve mention, the first, by C. T. Taylor, is remarkable for its well-thought-out façades, slightly neo-Grec in character and carefully drawn. We may be permitted to doubt, perhaps, whether Mr. Taylor's elevation to Firth Street could quite stand the three features given to it.

The second is the work of Mr. T. J. Hall, in the general lines of whose design there is a commendable restraint.

In no design submitted did we see the faintest trace of any French or American influence in the planning.

The assessor was Mr. G. H. Willoughby, F.R.I.B.A.

Societies' Reports.

Leeds School of Art.

Before the students of the Leeds School of Art last Wednesday Mr. Butler Wilson gave his fourth and concluding lecture on "The Arts in England at the Close of the Seventeenth Century," his subject being "Interior Decoration and Furniture."Mr. John Proctor presided. The lecturer, after referring to the interior decoration and furniture of English homes during the reigns of Charles II., James II., and William and Mary, 1660-1700, said that the evolution of the English traditions with the marked influence of France, Holland, Italy, Spain, and Portugal, was traced in the wall panelling, doors, chimney pieces, and tapestries, together with the innumerable variety of pieces of furniture which, during this period, in many cases were produced for the first time in England. The relationship between Louis XIV. and Charles I., with the presence at the English Court of Louise de Kerouaille, was given as the reason for the great advance in luxury amongst the English nobles. Mdle. de Kerouaille, or Madame Carwell, created Duchess of Portsmouth, drew from the Treasury in 1687, a sum of £136,000, her regular pension being £12,000. Evelyn, in his diary, recorded that in 1675, "I was casually showed the Dutchesse of Portsmouth's splendid apartment at Whitehall, luxuriously furnished, worth ten times the richness and glory beyond the Queene's, such massey pieces of plate, whole tables and stands of incredible value." The lecture was illustrated by specimens of furniture of the period from the collections of Mr. Butler Wilson and Mr. Haywood Ryder (headmaster of the School of Art).

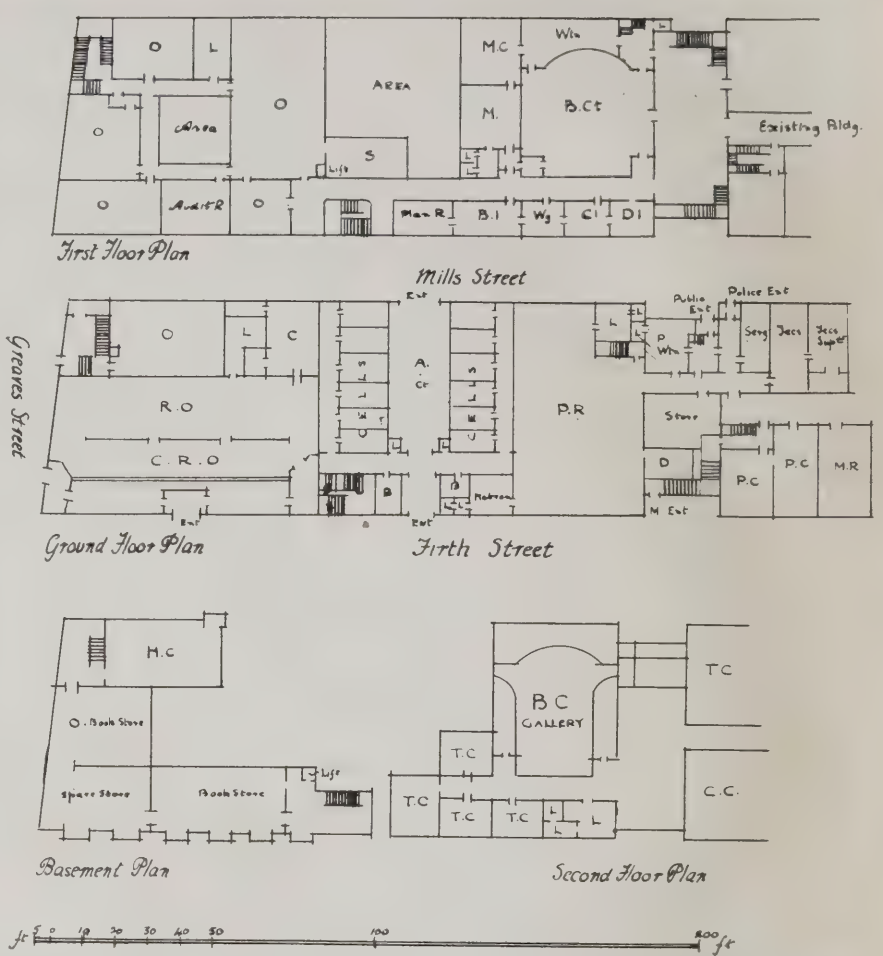
Junior Institution of Engineers.

A combined meeting of this Institution and of the Architectural Association Debating Society recently took place at the rooms of the Architectural Association, Tufton Street, Westminster, for the consideration of the subject of "Town Planning," the architect's point of view being represented in a paper by Mr. Stanley Hamp, and the engineer's in one by Mr. Frank R. Durham. The importance of comprehensive and orderly planning and the necessity of provision for development was urged by Mr. Hamp, in illustration of which reference was made to Paris, Germany, and America. The limitation of town areas, open spaces, and grouping of buildings were dealt with, and the difficulties due to various circumstances in regard to the character and height of buildings to be erected were touched upon, the value of forecourts in any scheme, and the position of public buildings, traffic problems, etc., were discussed. Mr. Durham showed how essential it was that the architect and engineer should co-operate, and made reference to the pioneer and later work in Germany, Austria, etc., carried out by Mr. W. Lindley, including the rebuilding of the city of Hamburg. The æsthetic, hygenic, social, and economical principles involved in the question were reviewed, and the author showed that the sewerage system was a determining factor in designing main arteries. The survey of the ground, width of streets, position of sewer, water and other pipes, engineering, considerations due to traffic, planning and class of buildings, and depths of plots were dwelt upon, the Housing and Town Planning Act, of course, receiving notice.

A discussion followed the reading of the papers, and a vote of thanks to the authors brought the proceedings to a close.

Royal Photographic Society.

A meeting was held recently at the Society's premises, 35, Russell Square, W.C., to discuss the formation of a federation of Photographic Survey and Record Societies. Mr. J. C. S. Mummery, who presided, said he belonged to a profession which constantly brought him in touch with the vanishing works of man—old buildings, old streets, and all sorts of ancient things. They were disappearing so fast that there seemed to be no one available to capture the likenesses for the people who were to come after them. Photography was an absolute and perfect recorder, and yet little opportunity had been taken of its powers. There were little societies here and there, but if they could be brought into touch with other people enthusiasm might be stirred up. There was also a fountain which had not been tapped—professional photographers throughout the country, whose thousands of accumulated negatives might be purchased or brought into use. The federation would arrange that collections should be transferred to places of safety, and it would be able to photograph existing records in other people's possession. A resolution, "That it is desirable that a federation of photographic survey and record societies should be formed," was carried unanimously.



OLDHAM TOWN HALL EXTENSION: SKETCH PLANS OF THIRD PREMIATED DESIGN. JENKINS, MATLEY, AND MILLS, ARCHITECTS.

Obituary.

Mr. James Armitage, builder and contractor, of Southwick-on-Wear, has died at the advanced age of 82.

Mr. Richard Bowen, one of the principal builders and contractors at Leamington Spa, who has died after a brief illness, was seventy years of age. He began business at Leamington in 1873, and amongst the important buildings erected by him may be mentioned the Leamington Free Library and Technical School. Mr. Bowen had been a member of the local association of master builders since its formation, and he took a keen interest in the management of its affairs.

Mr. Reuben Castle, F.R.I.B.A., of Cleckheaton, at the age of 63, was the the son of the late John Castle, of Batley Carr, and as a young man emigrated with the family to Philadelphia where his father died. Mr. Castle then returned to Yorkshire, and was articled to Mr. Samuel Overend, of Dewsbury and Cleckheaton. On the completion of his articles he commenced practice on his own account at Cleckheaton in 1872, and continued there until his death. A few years ago his son, Mr. J. G. Castle, joined him as partner.

Mr. Charles Lomax, head of the firm of Charles Lomax, Ltd., contractors, of Ramsbottom. The deceased, who was 67 years of age, was a member of the Bury and District Building Trades Employers' Association, which was represented at the funeral by Messrs. John Inman, James Fletcher, J. W. Hall, Howard. J. Hopkinson, Robert Shilton, John Castle, and others.

ARCHITECTURAL SCHOOLS IN THE UNITED STATES.

I.—THE SCHOOL IN MASSACHUSETTS INSTITUTE OF TECHNOLOGY, BOSTON.

By J. A. O. ALLAN, A.R.I.B.A.

[In a lecture by Professor C. H. Reilly delivered at Liverpool recently on "Some Lessons in America," he says this school is the greatest outside Paris, and that it still exerts the most vital influence over a whole Continent. This short exposition of its curriculum and aims by Mr. Allan (who has been touring, as Godwin Bursar of 1910, for the purpose of studying educational buildings in America and reporting thereon to the R.I.B.A.) will be of special interest. The question of Architectural Education in this country, in view of our comparative failures in the design of big buildings, is one of paramount importance.]

Constitution.

The "M.I.T." (its colloquial title) was the first Technical College in the States to institute a regular course in architecture. It was opened in 1866, its first professor and director being William Ware, a pupil of the late Richard M. Hunt. The organisation and methods were modelled on those of the Ecole des Beaux-Arts at Paris. Mr. Létang came from Paris to become instructor in design, and his talents gave the school a reputation which it has maintained ever since. M. Despradelle, a Grand Prix de Rome student, is now Professor of Design, and his work with that of his colleagues keeps the school in the front rank. The whole department is under the charge of Professor F. W. Chandler.

The staff includes four professors—the Professor in charge, with his assistant Professor, the Professor of Design, and an assistant Professor of Architectural Engineering—all fully engaged in the work. There are also ten lecturers or special teachers of such subjects as modelling, water colour work, drawing, etc., while the professors (to the number of fourteen) of other related subjects in the institute, such as mechanics, chemistry, and various branches of engineering, give instruction in various parts of the architectural course.

The fees for regular students taking the full course are about £50 per annum. Anyone may, however, attend any of the classes by simply paying the ordinary fee. The number of students in regular attendance is about 140 at the present time.

Entrance to the school is only to be had after passing a fairly stiff examination in English literature, two modern languages, history (especially of the United States and of Greece and Rome), mathematics, physics, and a number of other optional subjects.

Details of the Course.

The general subjects mentioned above in the entrance examination are also continued during the first three years of the course, ending in the fourth year with a study of European civilisation and art, which includes an extended survey of political, ecclesiastical, and social history, quite as necessary as architectural history itself if the spirit of classic, Gothic, and Renaissance Art is to be understood.

The course is a four-year one. The first year is devoted mainly to technical and general subjects. Professional work begins with freehand drawing, which is continued throughout the course. Students have individual instruction in working from the cast of the antique and of architectural detail, and from life. The drawing exercises are supplemented by lectures on art, anatomy, and memory drawing. In the last year decorative figure design is studied in association with architecture. The courses in freehand drawing are supplemented by lessons on drawing in pencil, pen and ink, and water colour. In all these mediums the instruction is given with a view to good rendering of architecture, but as students progress opportunity is given for outdoor sketching, and during the summer vacations they are expected to make sketches to present for criticism at the opening of the next term. Instruction is given in modelling, with the purpose of teaching the student the value of the third dimension, and its importance in architectural design. He is taught the manipulation of clay and its practical use in modelling as an aid in design.

In the second year, design and the history of ancient architecture are taken up simultaneously. Classic work is taken as the starting point, being the origin of all the great styles which developed in after years. These subjects are treated so as to unfold the fundamental principles of architecture, and train the student to analyse the best examples of classic work, and study their elements, in order to cultivate his taste and sense of proportion, and to give him a sound and logical sense of balance, scale, light, shade, and colour. Lectures are given on the proportions and use of the Greek, Roman, and Renaissance Orders, arcades, windows, and other architectural details. A course in Shades and Shadows is given concurrently with that relating to the Orders, so as to teach the value of light and shade in architectural composition.

Lectures are also given on architectural design at frequent intervals by instructors who are actively engaged in the profession, so as to avoid the danger of the work running into an academic groove, and to remind the students that architecture is a living and progressive art.

The study of design is made by means of problems regularly set, the results being criticised before the classes. The subjects assigned to each class vary from sketch problems to be designed and rendered in one day "en loge" to those to be finished in a week, and the more elaborate problems to which a month or more may be allowed.

Professor Chandler says, that in order to accustom the students to concentrate their minds on the development of a single idea, instead of wasting their energies in the successive adoption and abandonment of different solutions of the given problems, two days are allowed after the posting of the larger problem of the month, within which time each student must fix upon some general scheme for his design, and show his idea by sketch, plan, and elevation to a small scale. The purpose of this is to teach the student to formulate his ideas quickly and definitely, and to compel him to adopt some definite solution at once in order that he may hope to complete his problem in the necessarily limited time assigned to it.

These preliminary sketches are ultimately attached to the completed designs, which must correspond with them in the essentials. The sketches are criticised before the class. regular individual criticism is given the student while working up his scheme to the finished design. and at the conclusion of each problem every design is subjected to a final criticism before all the students, and compared with the preliminary sketch.



From a Sketch by D. C. Leigh.

In the course of the History of Architecture, the aim is to enable the student to see that the styles simply represent certain epochs in the progress of the art; that they developed naturally and logically in harmony with their varied conditions; that down all the ages construction has been the basis of all good architecture; that the relationship between those periods in the history of architecture is so intimate that none of them can be ignored if the student is to have an intelligent understanding of the architecture of the past, and its proper influence on the architecture of to-day. This history is taught by lectures, fully illustrated by lantern, photographs, and books. The resources of the school for instruction in this department of the work may be judged when it is mentioned that the library contains almost 4,000 books on architecture, 16,000 photographs, and 15,000 lantern slides. Each week the students are required to present for criticism abstracts with sketches of the historical buildings discussed. They are also required to test, by comparison with accurate drawings and photographs of the buildings, the descriptions and views of the leading architectural authorities, and to prepare these and sketches showing the results of their research. To supplement the work of the classroom, sets of photographs, properly

labelled for study, are exhibited in the architectural library, the collection being changed from time to time to keep pace with the work of the classes.

Instruction in Ornament explains its historical development, and the student is taught the general treatment of colour in decoration, as well as the characteristics of different styles. Problems are designed and rendered in colour, and when finished are criticised before the class.

Scientific construction is daily becoming of greater importance in the practice of the modern architect, who must be not only a skilled artist, but be capable of dealing with the many serious structural problems which the buildings of to-day have created. Unless the architect be a constructor (the primary meaning of the word) he will sink into a mere decorator, and when architecture has become mere decoration, it is a dead thing. Architecture is not simply an accessory of construction. Architecture is neither decoration nor ornament, nor even "beauty in building." It is something deeper than ornament and more subtle than decoration. It is the fine art of building according to the principles of truth, fitness, and beauty. All these may be built into its stones, though there be not one scrap of ornament on it.

As constructor, the architect considers the practical requirements of the buildings which he designs. He deals with the structural conditions of the problems he has to solve; he studies many different materials, calculates their weights and strengths, determines their forms and sizes, and orders all these, stone and brick, lime and cement, iron and steel, lead and copper, wood and glass and slate, and many more, into such relation to each other that a building, solid and convenient, comes into being. As artist, however, the architect invents such combinations of lines and forms, solids and voids, lights and shadows, as express in a fitting way the purpose and character of the building, whether homelike and unpretending, dignified and austere, sublime and majestic, or shaped into graceful beauty with a lighter hand.

In order to secure the true and appropriate treatment, scientific and æsthetic, of the materials at his disposal, the architect must know them thoroughly, and in all their combinations. In America, the rapid advance in the height of buildings, and the many difficulties raised by the weight of such high buildings as the skyscrapers, the great wind pressures to which they are frequently exposed, their protection from fire, their sanitation, and their heating and ventilating arrangements, crowded into the smallest space for the sake of the all-devouring dollar, constitute a series of structural problems which require the greatest skill for their successful solution. During the last year of the course instruction in Advanced Constructive Design is given, which can, however, even at the best, only lay a good foundation on which the architect may build out of his own study, research, and experience.



From a Sketch by D. C. Leigh.

Other studies towards the close of the four years include instruction in the preparation of working drawings and specifications, such details as may be better learned by practical experience in an architect's office being omitted. Building materials are studied, and tested in the laboratories. Stones are dealt with from their geological position to the many practical considerations involved by their structure and composition, their strength and powers of weathering. The fundamental principles of heating and ventilation are taught, and also the proper application of these principles to practice in the solution of problems in this department of building engineering.



From a Sketch by D. C. Leigh.

The Summer School.

A summer school is held, whenever a class is large enough to warrant it, for the purpose of bringing the students directly into contact with buildings, ancient and modern. For this purpose, visits are made to localities where buildings of importance are to be found. These schools have not only visited various American cities, but have crossed to England, France and Italy. Measured drawings and sketches are made on the spot, and careful studies made of the buildings included in the tour.

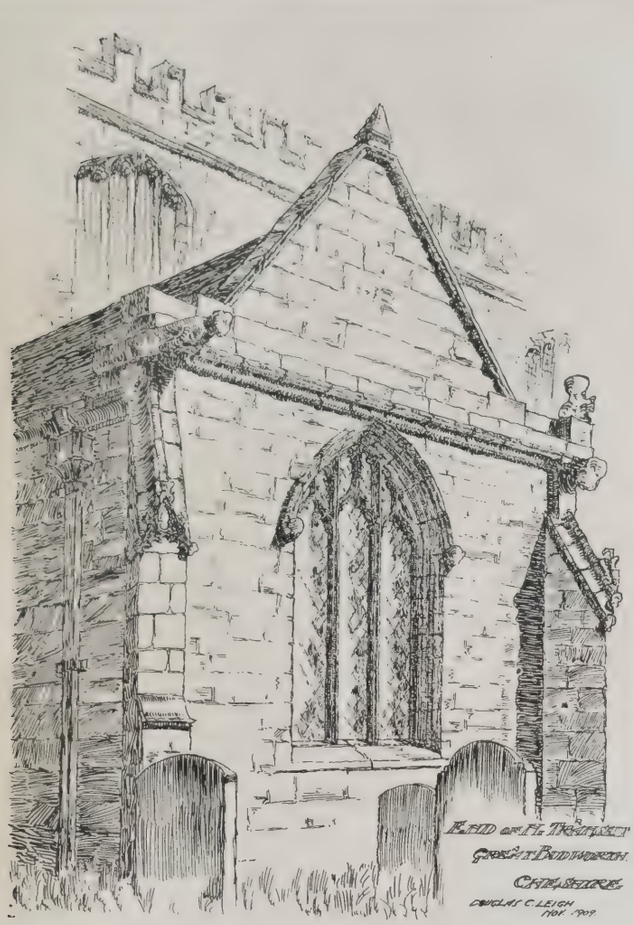
Degrees and Prizes.

To obtain the degree S.B. (Bachelor of Science) in the architectural school the student must have completed all the prescribed studies of the four years' course, and have submitted, at the close, an original thesis design accompanied by an explanatory memoir.

In addition to the general studies already mentioned, degree students are required to complete a prescribed course of reading of a non-professional character during the summer vacations following the first and second years, the purpose of the general course is to increase the acquaintance of the student with literature, history and general science, to develop in him a taste for reading and literature and to impress him with the importance of general culture.

The master's degree can be obtained only by graduates in the bachelor's degree. To attain it candidates must pursue their course of studies continuously, under the direction and oversight of the Faculty, for at least one full school year beyond the ordinary course. The student must pass with credit the prescribed examinations, and present a thesis for approval before receiving the degree.

There are several valuable prizes for undergraduates at the different stages of their studies, and travelling scholarships for graduates awarded solely for distinguished merit.



From a Sketch by D. C. Leigh.

In Parliament.

(By our Press Gallery Representative.)

The Committee on Public School Buildings.

In the House of Commons on 9th inst., Sir John Rolleston asked the President of the Board of Education, whether, in regard to the departmental committee lately appointed to inquire into the cost of public buildings for schools, etc., he would consider the advisability of adding to that committee the names of one member of the council of the British Architects' Institution, one member of the council of the Surveyors' Institution, and one member of the council of the Institution of Civil Engineers.

Mr. Runciman, in reply, said: I purposely restricted the membership of the committee in order that it might be able to report quickly. It is not intended to be a committee of experts who could authoritatively recommend particular materials or methods of construction for adoption by local education authorities.

The practical question which lies behind their reference is whether the Board of Education can properly modify their building regulations and entertain or encourage proposals from the local education authorities who are primarily responsible for school buildings for the adoption of new materials and methods, and, if that question is decided in the affirmative, what further arrangements are necessary to give effect to the decision. I think a small committee of administrative officers collecting the best expert opinion on the subject, which I hope will be placed at their disposal by the great bodies named in the question, is the best body to deal with the matter from the point of view which I have indicated.

Labour Exchange Buildings.

Mr. Bottomley asked the First Commissioner of Works if he could state how much of the £70,000 voted as a Supplementary Estimate for the accommodation of the Labour Exchanges had so far been expended; and whether it was proposed to suspend expenditure upon permanent buildings pending an opportunity for ascertaining the utility of such exchanges.

Mr. Harcourt said his Department was practically committed to the expenditure of the full sum of £70,000 provided by the Supplementary Estimate for the accommodation of Labour Exchanges during the current financial year, though some small surplus might have to be surrendered in respect of accounts which might be outstanding on the 31st of March next. The Board of Trade was empowered by the Labour Exchanges Act to establish and maintain Labour Exchanges in such places as they thought fit, and he would be prepared to comply with the lawful requirements of that Department.

Rosyth Garden City.

The Lord Advocate, answering a question by Mr. Ponsonby said: I understand that the Admiralty are proposing that a certain area of their property at Rosyth should be developed on Garden City lines. A conference has been held between representatives of the Admiralty and the Scottish Local Government Board in order that the Admiralty may be advised as to the best means by which the scheme can be carried out.

Duke of York's School Chapel.

The second reading of the bill to permit the destruction of this building and to deal with its site was moved by Mr. Lewis Harcourt on the 17th inst. After considerable opposition the debate was adjourned.

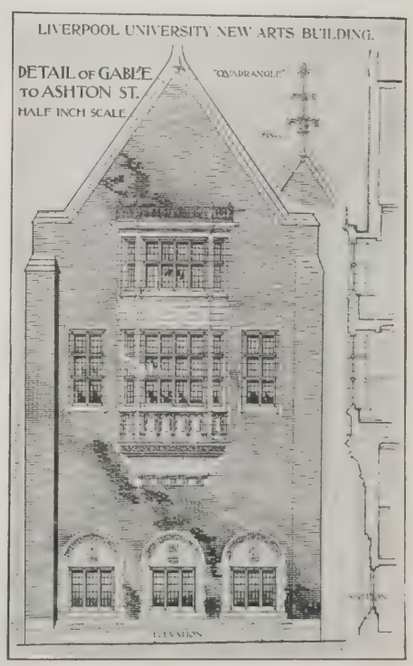
UNIVERSITY OF LIVERPOOL: NEW ARTS BUILDING.

The committee, appointed by the Council of the University, invited designs from Messrs. Briggs, Wolstenholme and Thornely, Mr. J. T. Doyle, Mr. F. W. Simon, and Messrs. Willink and Thicknesse, for an extension of the existing Victoria Building, to be used in conjunction with the latter to house the Faculty of Arts.

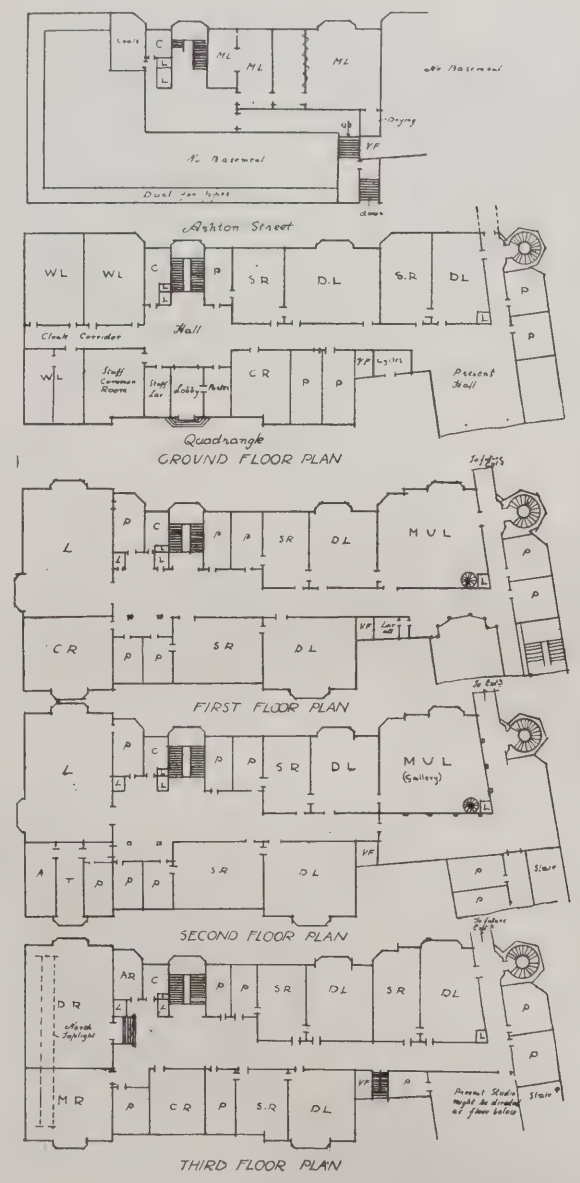
The new building was to have a frontage to Ashton Street and another to the quadrangle, with a possible third towards the Physics Building; though, as it was required to provide a carriage entrance, with gates, from Ashton Street to the quadrangle, it was left to the discretion of competitors either to leave a space of 30ft. for this entrance between the new building and the Physics Building, or to carry the former along the whole of the Ashton Street frontage of the site and make the entrance in the form of an archway through the new building. This latter arrangement would involve blocking the south windows of the Physics Building, which would then require to be in communication on one floor at least with the new building.

With regard to the actual construction, it was to be assumed that a good rock foundation could be obtained at an average depth of 4ft. 6in. below the ground surface. The whole structure was to be built of fire-resisting material up to but excluding the roof, and was to be designed to withstand the stresses of quickly moving crowds. The internal walls and floors were to be soundproof.

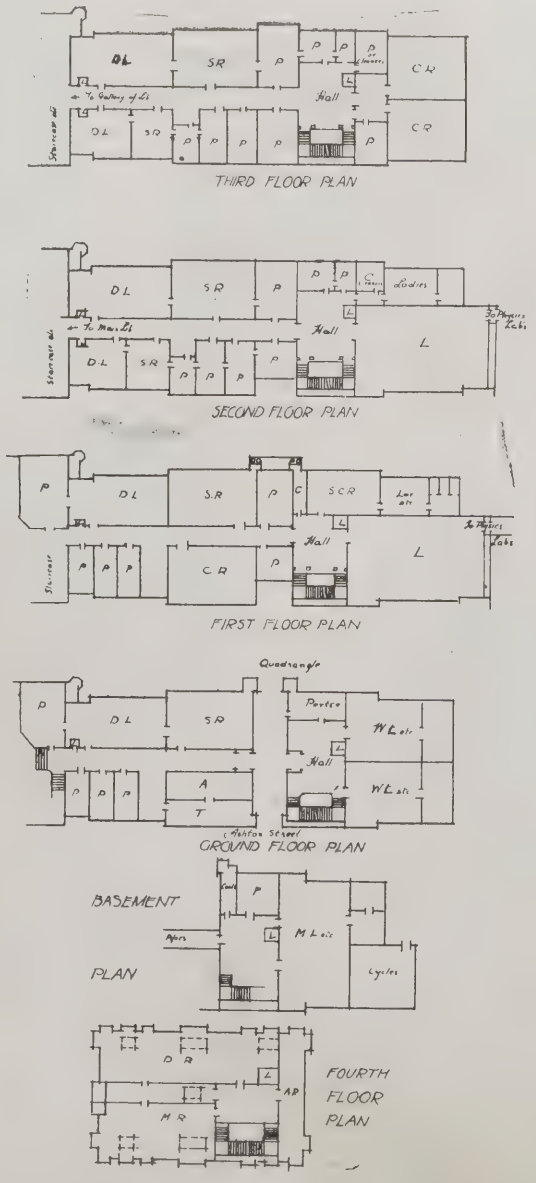
It was required that the new building should be so arranged as to render possible a reconstruction of that part of the Victoria Building which extends from the corner of Ashton Street to the junction with the new building whereby the headquarters of the University Library would ultimately be placed at this point, and the principal departments of the Faculty of Arts would radiate from it. The plans submitted were to indicate the way in which the architect would propose to effect this future change. It was advisable consequently (1) that there should be free communication with the Victoria Building on every floor; (2) that the



PREMIATED DESIGN SUBMITTED BY BRIGGS, WOLSTENHOLME, AND THORNELY.



Premiated Design submitted by Briggs, Wolstenholme, and Thornely.



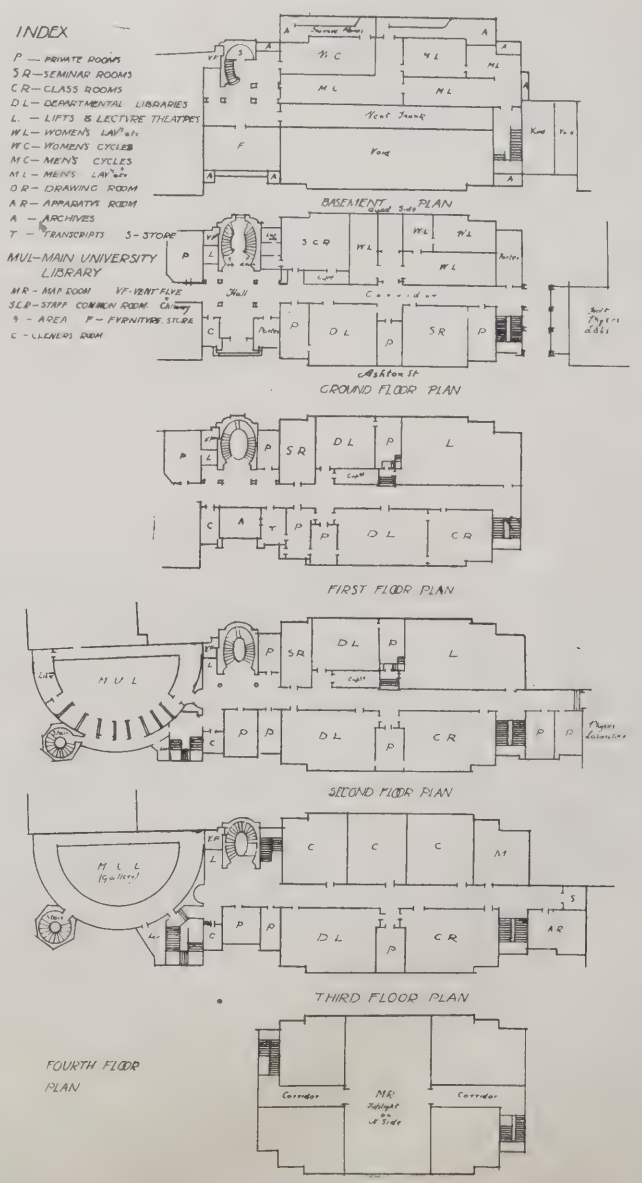
Design submitted by Willink and Thicknesse.

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D L— DEPARTMENTAL LIBRARIES
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A R— APPARATUS ROOM
A — ARCHIVES
T — TRANSCRIPTS S - STORE

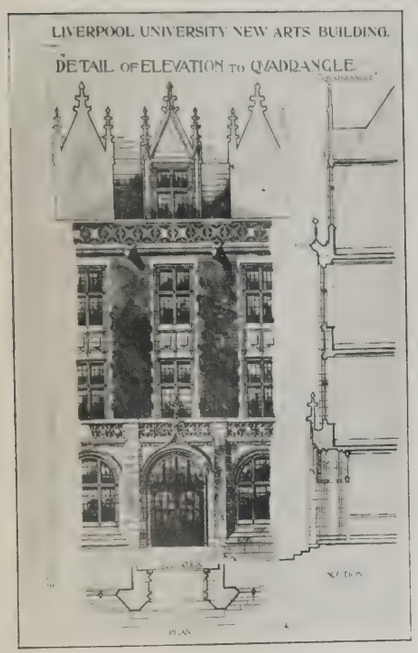
MUL—MAIN UNIVERSITY LIBRARY

MR - MAP ROOM VF-VENT FLUE
S C R—STAFF COMMON ROOM Cl—Cloakroom
A - AREA F — FURNITURE STORE
C - CLEANERS ROOM



Design submitted by F. W. Simon.

UNIVERSITY OF LIVERPOOL: NEW ARTS BUILDING COMPETITION.



PREMIATED DESIGN SUBMITTED BY BRIGGS, WOLSTENHOLME, AND THORNELY.

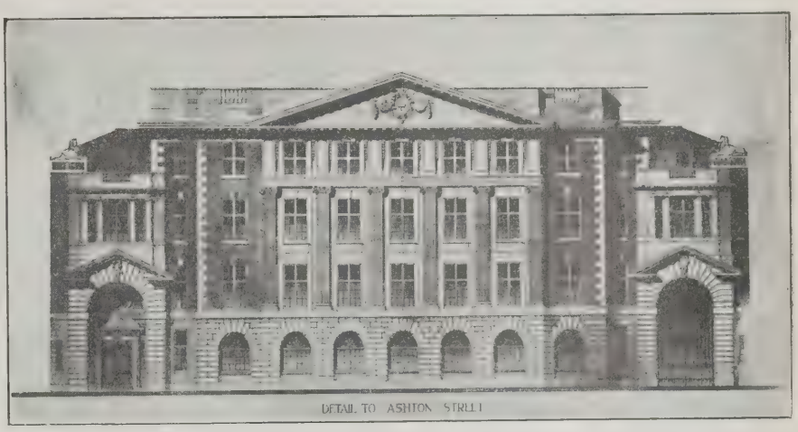
floor levels of the two buildings should be the same, and (3) that the rooms on each floor of the new building should be so planned as to provide one or two "departmental suites," each consisting of the following rooms, arranged in this order: (a) A departmental library in as close relation as possible with the future headquarters of the University Library; (b) one or more class-rooms communicating with the departmental library; (c) two or more private rooms for lectures and research students; (d) a lecture-room which should be on each floor at the end of the building next to the Physics Laboratory.

The total sum to be expended was £25,000, a premium of £150 being allowed to the author or authors of the designs placed first by the assessor, and £50 each to the authors of those placed second, third, and fourth.

Mr. Guy Dawber, as assessor, awarded the first premium to the design submitted by Messrs. Briggs, Wolstenholme, and Thornely ("Quadrangle"), and though we can have no hesitation in expressing our admiration of the exceedingly workable and practical plan which they have evolved, we find the elevation rather disappointing. The façades are conceived in a brick and terra-cotta Gothic that was scarcely to be anticipated from the authors of the Liverpool "free-Renaissance" Dock Board offices. Messrs. Briggs, Wolstenholme, and Thornely seem to have been influenced by the somewhat vaguely-worded clause in the conditions which suggests that the new building should harmonize externally as far as possible with the Victoria Building on the one hand, and the Physics Building on the other—though this same clause expressly stated that there was no intention of imposing upon competitors a continuation of the late Mr. Waterhouse's internal and external detail or of restricting the choice of style or material. The suggestion, we presume, was simply intended to secure preservation of scale and tone. As will be seen from our reproductions of the elevations, Messrs. Briggs, Wolstenholme, and Thornely's interpretation of the clause was quite different. Whether they were justified in this is, of course, purely a matter of artistic opinion.

The mediæval character of the elevations is maintained consistently in the plan throughout, the symmetry of the front toward Ashton Street being only apparent, as it would inevitably be destroyed in the formation of the future quadrangle on that side. Though a general disregard for balance is frequently considered to conduce to convenient planning, we cannot but regret what we ourselves regard as the unfortunate absence of axial disposition in this plan. A haphazard grouping of rooms, however convenient, cannot produce architecture; and conscious picturesqueness is almost "a contradiction in terms." Ill-shaped rooms, even if of the specified area, do not constitute the highest forms of practicability. Moreover, in such an all-important matter as the position of the main staircase, the access obtained leaves something to be desired in point of directness. For example, a person desiring to reach the ground floor seminar class-room from the identical room above, would be forced by whichever descent he chose—either the main staircase of the old Arts building, or the new staircase—to traverse a considerable distance. In other respects, however, the arrangement of the whole shows an intimate knowledge of the requirements and actual working of a University department.

Mr. F. W. Simon submits a design ("Red Seal"), in which it will be seen that a distinctive French influence is evident. An examination of the general disposition of the plans betrays a tendency to extravagance—though a commendably economic remodelling of the Arts Theatre as the main University Library is achieved. It is perhaps to be regretted that the principles involved in axial planning have not been carried through in every case; some of the shapes of the rooms would bear revision. Still, on the whole,



DESIGN SUBMITTED BY F. W. SIMON.



DESIGN SUBMITTED BY WILLINK AND THICKNESSE.

the author has been exceptionally successful in combining architectural planning and satisfactory provision. The barrel-vaulted corridors, sub-divided into compartments, from the centres of which doors open off naturally, form genuinely pleasant features in the general lay-out. The only serious defect in the plan from the point of view of convenience appears to us to be that the position of the new departmental libraries in relation to the remodelled main library is such that all service between the two must be across the landing at the head of the main staircase. The latter, however, is of most graceful shape, and is otherwise very fortunately placed.

Mr. Simon's elevations at once attract the eye as being most pleasantly rendered. The masses are handled with facility, and a certain breadth and scale is well maintained throughout the whole. At the same time, we cannot feel ourselves altogether in sympathy with the introduction of the luscious sculpturesque excrescence in the pediment, the somewhat over-topical and over-large sphinxes ("The Sphinx," it will be recalled, is the University Undergraduates' Magazine) surmounting the end blocks, and with the depth of the main frieze, which has been apparently regarded as possessed of unlimited

elasticity. With these trifling exceptions, we consider the design to be admirable. It has real architectural feeling, and sufficient realisation of the classic spirit to merit its erection as a University building.

In criticising Messrs. Willink and Thicknesse's drawings ("A") we must confess ourselves handicapped to some extent by the opaque nature of the colouring.

In the plan the grouping of the library and seminar rooms next the library seems to us highly satisfactory. It will be seen that Messrs. Willink and Thicknesse have striven to reduce, as far as possible, the width of their building, so that the entrance to the existing Physics Building may not be unduly thrust out of the centre of the old quadrangle. The long, low, tunnel-like carriage entrance from Ashton Street, and the imperfectly-lighted central corridor, seem to call for further consideration. With regard to the elevations, the proportions of the main masses are generally good, and the employment of the Mansard form of roof helps to preserve the coherence of the whole. But we do not understand either the detail or the principles of the minor composition in this design. We must, however, commend the complete scheme for a new quadrangle accompanying it. This differs significantly from the perpetration of the past—comparing more favourably with the existing sporadic distribution of the University buildings, which have been disposed with a fine disregard of the real possibilities of the site.

Mr. Doyle's design ("Arts") is frankly a continuation of the late Mr. Waterhouse's terra-cotta Gothic.



MOYNS PARK, ESSEX: GENERAL VIEW OF THE FRONT.

AN ELIZABETHAN HOUSE.

The Eastern Counties abound in fine examples of old brick houses, erected either by the Flemish immigrants or by English craftsmen who took up the manner of building thus introduced. But it would be difficult to find one which, for simplicity of charm, excels Moyns Park, Essex. As the accompanying illustrations show, there is a quiet breadth of treatment about it which is altogether delightful. Houses of this character, like many of the colleges of Oxford and Cambridge, have a bald appearance when set down on paper in mere elevation; there seems then to be nothing remarkable or especially attractive about them; yet when seen set round with green, the brick and stonework mellowed by exposure, they at once draw our admiration. Possibly some of the attractiveness they unquestionably possess is attributable to sentimental considerations, for, as Ruskin says, the greatest glory of a building is not in its stones, but in its age, "in its lasting witness against men, in its quiet contrast with the transitional character of all things"; and though Moyns Park, like many another house of its kind, has intrinsic architectural merit, no small measure of the total effect is accountable to the hand of Time working through more than three hundred years. The house was erected by a worthy lawyer, Sir Thomas Gent, one of Queen Elizabeth's Barons of the Exchequer; and the property is still in the hands of his descendants. The ancient lords of the manor were the Le Moignes, from whom the derivation of the present title is obvious.



MOYNS PARK, ESSEX: DETAIL OF THE BAYS.

Beautifully wooded grounds surround the house. The old builders commenced their work here in 1580. There was then existing on the site a half-timber and brick house, dating from the early years of the sixteenth century, and it was decided to retain this for use as domestic offices. Accordingly the new building was erected at a right angle in front of it, and so the two remain to this day—the small building of Shakespeare's time, with quaint carving in the gables, and the large building overshadowing it.

A notable feature of the front is the treatment of the great bays, which alternate with the gables, instead of coming below them in the usual way; while other prominent features are the fine brick chimneys.

The walls are of red brick with stone dressings, now grown over with moss and lichen, the beautiful effect of which can only be appreciated when seen.

Over the doorway is carved the coat-of-arms of the Moignes—*or* a cross engrailed sable, a label of three points gules, each point charged with bezants.

Unfortunately the interior of the house has been considerably altered in the course of years, and the present arrangements have no historical interest. The exterior, however, is left in its original state, and part of the old gardens also, and these combine to give us a most delightful impression.



MOYNS PARK, ESSEX: THE OLD BUILDING, EXISTING AT THE TIME THE ELIZABETHAN HOUSE WAS BUILT.

New Buildings.

Proposed.

Benwell (Newcastle-on-Tyne).—It is proposed to considerably enlarge the Parish Hall, at a probable cost of about £2,600. The hall, when completed, will accommodate 400 people, and other enlargements will be carried out, including the building of large classrooms, and a spacious billiard room in the basement. In conjunction with this scheme it is proposed to erect a new church at Scotswood, with accommodation for 600 people. The plans have been prepared by Messrs. Hicks and Charlewood.

Frimley.—It is proposed to erect a chapel at the Brompton Hospital Sanatorium at an estimated cost of £2,000.

Greenock.—In connection with the new Government torpedo factory, which is nearing completion, it is expected that by the beginning of July 400 workers from Woolwich will be sent North. It is proposed to lay out a garden suburb on the English villa principle for the workers and their dependants at Gourock. The building scheme is expected to cost £10,000, and provision will be made for 600 villas.

Knaresborough.—It has been resolved by the Urban District Council to borrow the sum of £3,500 for the purpose of alterations to premises in York Place and Gracious Street for council room and offices.

Lancaster.—A scheme is on foot for restoring the Church of St. Michael, Cockerham, near Lancaster, and Messrs. Austin and Paley have prepared plans which provide for a practically new building except the ancient tower, which is to be retained. The cost is estimated at about £3,900.

London (Camberwell).—Nine blocks of Peabody tenements are shortly to be erected at Camberwell Green—so it is stated in the report of Peabody Governors just issued. A site has been purchased of nearly an acre and a quarter, and plans and specifications have been approved for the erection of buildings, which will comprise, altogether, 420 rooms.

Newcastle.—It is proposed to erect a Queen's Hall, in a central position, near the foot of Northumberland Street, from designs prepared by Messrs. Graham and Hill, architects, Newcastle. A company has been formed with a capital of £50,000 to carry out the scheme.

Pickering.—The proposed new Catholic Church and hall will stand on a site between the new schools and the present chapel. The estimated cost is £3,359, and Mr. Leonard Stokes, F.R.I.B.A., has prepared the plans.

Slough.—The King has given a donation of twenty guineas towards the Parish Church Completion Fund. The east-end of the building, which cost £12,500, has been in use for some years, and it is now proposed to erect the west-end in harmony with the existing portion of the edifice.

Streatham.—A movement is on foot to erect a block of buildings comprising a skating-rink, public hall, and cinematograph, on a site in close proximity to Streatham Hill Railway Station. The buildings will be erected by Messrs. Townson and Sons, Ltd., of London and Bolton, and the exterior will be faced with shops looking upon the Streatham High Road.

Swansea.—At a recent meeting of the Estates Sub-Committee a letter was read from the War Office accepting the terms which provide for the surrender of the present Arsenal site and the erection of a new drill and public hall at a cost of some £12,000 on the same site.

In Progress and Completed.

Bradford.—The Manningham new branch Free Library, in Carlisle Road, has been opened on completion. The new premises, which have cost about £4,000, were designed by the former City Architect (Mr. F. E. P. Edwards), and the work has been continued under the present holder of that office, Mr. R. G. Kirkby.

Castleton.—The new Corporation Baths in Manchester Road have been built by Messrs. Thompson and Brierley of Bury from plans and designs by Messrs. Wallis and Bowden, of London, at a cost of about £8,285.

Leicester.—The new Victoria Road Schools and Institute are in course of erection. The cost, including site, is estimated at £13,000. Mr. Lawton Brown is the architect.

Little Kimble (Aylesbury).—The alterations and additions to Chequers Court, the seat of Mr. Arthur Lee, M.P., have been completed. Mr. Reginald Blomfield, A.R.A., was the architect, and Messrs. Maides and Hamper, of Croydon, were the contractors.



MOYNS PARK, ESSEX: CHIMNEY STACKS.

Norwich.—The scaffolding has been removed from St. John's Catholic Cathedral at Norwich, and it is expected that the edifice will be opened in June next. It has been erected by the Duke of Norfolk.

Royton.—The public baths built at Royton, at a cost of £8,000, have been opened. The gentlemen's swimming bath has a water area of 75ft. by 27ft., capable of holding 57,000 gallons of water. There is accommodation around the bath for about 700 spectators, and the bath can be covered and converted into a hall. Mr. Ernest Woodhouse, F.R.I.B.A., was the architect. The contractors were Messrs. S. and J. Smethurst, Ltd., Rochdale Road, Oldham; stonework by S. and J. Whitehead, Oldham; constructional ironwork by Baxendale Bros., Manchester; plumber's work by R. Chadwick and Sons, Oldham; joiner's work by J. W. Kent, Royton; slating by R. Bamford, Royton; electric bells by R. O'Brian and Co., Manchester; wrought-iron railing by J. Jones and Sons, Manchester; aerating plant by Royles, Ltd., Irlam; tiling by the Marsden Tiles, Ltd., Manchester; engineering by W. Matthews and Son, Princes Street, Manchester.

Stoke.—The new Town Hall, which is in course of erection, will be of fireproof construction throughout, and the cost of the whole scheme will be £25,791. Messrs. Willcock and Co., of Wolverhampton, are the contractors, and the joint architects Messrs. Wallis and Bowden, of Westminster.

Washington.—The new schools have been completed and were recently opened. They are erected near to the main road, and are of brick. The schools will provide accommodation for 360 mixed scholars, and the total cost was £7,660 8s., or £12 15s. 11½d. per head. Mr. F. Rennoldson, of South Shields, was the architect.

Notes on Competitions.

Examination Hall, Royal College of Physicians and Surgeons.

The result of this limited competition, in which seven architects competed, has been announced. Mr. T. E. Collcutt, F.R.I.B.A., was the Assessor. Mr. A. N. Prentice, F.R.I.B.A., Hastings House, Norfolk Street, Strand, was appointed architect. A premium of £100 was awarded to Mr. Henry T. Hare, F.R.I.B.A., 13, Hart Street, Bloomsbury; £75 to Mr. E. T. Hall, F.R.I.B.A., 54, Bedford Square, W.C., and £50 to Mr. John W. Simpson, F.R.I.B.A., 3, Verulam Buildings, Grays Inn.

The Welsh National Museum.

The result of this competition was announced on Friday last. The Council, acting on the report of the assessors, has appointed Messrs. A. Dunbar Smith and Cecil C. Brewer, of 2, Gray's Inn Square, W.C., as architects of the buildings; and has further awarded the following premiums:—

£200 to Mr. T. L. Vesper, 16, Old Square, Lincoln's Inn, W.C.

£150 to Mr. Henry T. Hare, 13, Hart Street, Bloomsbury.

£100 to Messrs. David Milne and J. William Hepburn, 55, Southampton Row, W.C.

The designs are on exhibition at the City Hall, Cardiff, from Monday last until April 2nd.

LIST OF COMPETITIONS OPEN.

Date is that by which designs must be sent in.

MAR. 31. SHEFFIELD ENDCLIFFE PARK CHURCH. Particulars given in our issue of March 16th.

MAR. 31. MUNICIPAL OFFICES, KARACHI. Particulars given in our issue of March 16th.

APRIL 23. COUNTY OFFICES, NAVAN. Particulars given in our issue of March 16th.

JUNE 15. ELEMENTARY SCHOOLS, ACTON. Particulars given in our issue of March 16th.

NO DATE. NEW ELEMENTARY SCHOOL AND ENLARGEMENT OF ANOTHER, COVENTRY. Particulars in our issue of March 16th.

NO DATE. ELEMENTARY SCHOOL, BLOXWICH. Particulars given in our issue of March 16th.

Coming Events.

Wednesday, March 23.

CARPENTERS' HALL LECTURES. — Mr. R. Anning Bell, R.W.S., on "Coloured Reliefs and Mosaic," 7.30 p.m.

ROYAL SANITARY INSTITUTE.—Mr. J. Wright Clarke on "Details of Plumbers' Work," 7 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. Thomas Beattie on "Plaster Decoration, principally Handwork," 8 p.m.

Friday, March 25.

GOOD FRIDAY.

Monday, March 28.

BANK HOLIDAY.

Wednesday, March 30.

CARPENTERS' HALL LECTURES. — Mr. F. W. Pomeroy, A.R.A., on "Sculpture as applied to Buildings," 7.30 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. J. B. Stoughton Holborn on "The Spirit of Mediæval Art," 8 p.m.

Friday, April 1.

ROYAL SANITARY INSTITUTE. — Mr. W. C. Tyndale, on "House Drainage," 7 p.m.

LEICESTER AND LEICESTERSHIRE SOCIETY OF ARCHITECTS.—Students evening, 8 p.m. Mr. B. J. Fletcher, on "A Sketching Tour in Normandy." Mr. S. J. Wearing, on "A Sketching tour in Brittany." Mr. D. W. Day, on "Osmaston Hall, Derby."

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS (Southampton Row).—Mr. G. H. Palmer, on "The Influence of Illuminated MSS., on the Type and Decoration of Early Printed Books." 6 p.m.

Monday, April 4.

ROYAL SANITARY INSTITUTE. — Mr. J. E. Worth, on "Sewerage."

R.I.B.A.—Mr. George Hubbard on "Architecture on the Eastern side of the Adriatic." 8 p.m.

Trade and Craft.

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Acetylene Installations.

The advantages of acetylene lighting are attractively set forth in a catalogue (C 16), which has just been issued by Imperial Light, Ltd., incorporating the Standard Acetylene Co., Acetylene Engineers and Carbide Merchants, 123, Victoria Street, London, S.W. This catalogue deals exclusively with acetylene installations for country houses, and contains particulars of the firm's machines, with views of some of the houses in which their system has been installed.

Specification for Painting and Varnish.

"A Complete Specification for Painting and Varnishing," for the use of architects and builders in preparing contracts, takes the regulation or authentic form of a specification—with an unessential but delightful difference. It is artistic. The matter is printed in bold and legible type (showing the influence of the "Golden type" beloved of the late William Morris), on art paper (one side only) with wide margins, and the ruling, the marginal headings, and the notes, are printed in red. There are also included some excellent coloured illustrations, showing a country house of beautiful design (of which the plan is so meritorious as to be well deserving of close study), and several charming details. The booklet is to be had from Messrs. Robt. Ingham Clark and Co., Ltd., St. Helen's Place, E.C.

Electrical Installations and Appliances.

Messrs. Simplex Conduits, Ltd., have issued the eleventh annual edition of their catalogue, comprising 374 pages, in which their specialities are classified in sixteen sections, dealing respectively with the Simplex system of steel conduits, the flexible system of electric wiring, switches and fuses, watertight fittings, wires and cables, china accessories, bell material, porcelain insulators, filament lamps, fans and small motors, electric cooking appliances, electric heating and radiators, electric signs, metres, fixtures, and various shades. The catalogue is illustrated copiously and well.

The plumbing, sanitary, and cast leadwork at the Lancaster Town Hall, illustrated in our last week's issue, were executed by Messrs. Wm. Griffiths and Sons (Liverpool), Ltd.

* * *

"The largest lift contract ever placed with a firm in England for the equipment of one building" is claimed by Messrs. R. Waygood and Co., Ltd., Falmouth Road, London, S.E., with respect to the installation at the large new building that has been erected for the Royal Liver Friendly Society at Liverpool. In the centre of the building, there will be a "battery" of ten lifts, six of which will be express lifts, moving at a speed of 400ft. per minute, while at the pierhead entrance there are four similar lifts, with another at a private entrance.

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Messrs. Ben Henry Johnson and Sons, 69, Victoria Street, Westminster, S.W. (also at Liverpool and Johannesburg), plain and decorative plasterers, decorators and architectural modellers, give notice that the partnership formerly subsisting between Mr. George Henry Johnson and Mr. Ben Henry Johnson, under the style or firm of "Henry Johnson and Sons," has been dissolved by mutual consent as from March 5th. All debts due to or owing by the late firm will for the purpose of adjusting the accounts of the partners be received and paid by the auditor, Mr. George Fewkes Clarke, chartered accountant, 7, Victoria Street, Liverpool. Mr. Ben Henry Johnson will for the future carry on business at 69, Victoria Street, London, and in Liverpool, under the firm of "Ben Henry Johnson and Sons."

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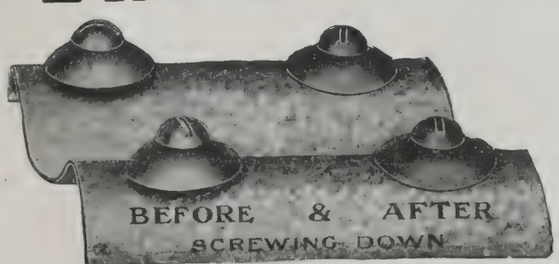
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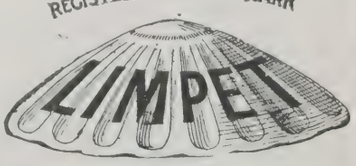


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Tenders.

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Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Abertillery (Mon.).—For extension of the Queen Street infants' school, for the Urban District Council Education Committee. Mr. W. H. Hiley, architect, Chapel Street, Abertillery.

J. Jones	£2,282 0 0
D. Davies and Son	2,156 0 0
R. Tudor,* Abertillery	2,090 0 0
A. J. Colborne	1,899 10 0

*** Accepted.**

Cholsey (Berks.).—For the enlargement of the Council school at Cholsey, Berks., for the Berkshire Education Committee.

Stephens, Bastow, and Co., Bristol	£1,652 0 0
W. T. Bloxham, Banbury	1,531 0 0
J. Smallbone and Sons, Wallingford	1,426 10 0
H. W. Godwin, Reading	1,419 0 0
Mc. E. Fitt, Reading	1,375 0 0
Brasher and Sons, Wallingford	1,315 12 1
G. H. Wheeler, Abingdon	1,310 19 8
Bosher and Sons,* Cholsey	1,308 8 6
A. J. Colborne, Swindon	1,288 15 3

***Recommended for acceptance.**

Leyton (Essex).—For carrying out alterations and additions at the police station at Lea Bridge Road, Leyton, E. Mr. J. Dixon Butler, F.R.I.B.A., architect and surveyor, New Scotland Yard, S.W. Quantities by Messrs. Thurgood, Son and Chidgey, 8, Adelphi Terrace, Strand, W.C.

Jarvis and Sons, Ltd.	£1,746
Higgs and Hill, Ltd	1,694
Willmott and Sons	1,598
Todd and Newman	1,594
Harris and Wardrop	1,592
Newby Bros.	1,591
Grover and Son	1,532

London, W.C.—For erection of clergy house, choir rooms, etc., for the rector and churchwardens of St. Anne's Church, Dean Street, Soho. Mr. W. Courtenay Le Maitre, A.R.I.B.A., architect, 63, Finsbury Pavement, E.C. Mr. W. C. Goodchild, F.S.I., surveyor, 63, Finsbury Pavement, E.C.

Leslie and Co., Ltd.	£2,948
Bywaters and Sons, Ltd.	2,895
A. E. Townsends	2,779
J. Marsland and Sons	2,745
A. J. Staines and Co., Ltd.*	2,744

***Accepted.**

Londonderry.—For erection of semi-detached villas at the Glen, Londonderry, for Mr. J. A. M'Cay. Mr. James V. Johnston, A.U.S.A., architect, The Diamond and Butcher Street, Londonderry.

E. Hughes	£930 0 0
W. Cooke	929 15 0
Shannon and Routledge	915 0 0
J. McBride, Ballyshannon	910 0 0
R. and J. Stewart	795 0 0
J. A. Fulton*	711 5 0
Rest of Londonderry.	

***Accepted.**

Lowestoft.—For reinstatement of premises, 116, London Road. Messrs. Morgan and Buckingham, architects, Upper King Street, Norwich.

Gravelling	£927 6 6
C. Earl	864 0 0
J. and B. Swatman	794 17 0
R. C. Todd	758 10 0
R. C. Cole	748 0 0
Bedwell and Parker	737 0 0
G. E. Hawes and Sons	730 0 0
T. Yelf	685 0 0
J. Youngs and Sons,* Norwich	669 0 0

***Accepted.**

Norwich.—For erection of warehouse, St. Stephen's Street. Messrs. Morgan and Buckingham, architects and surveyors, 1, Upper King Street, Norwich.

J. Holmes	£751
J. S. Smith	699
J. Youngs and Son	694
T. Gill and Son	667
W. J. Hannant,* Norwich	611

***Accepted.**

Lancaster.—For a closed house for refractory cases, at the County Lunatic Asylum, Lancaster. Mr. H. Aspinall, F.R.I.B.A., architect, 36, Dale Street, Liverpool.

Webster, Bootle	£11,850 0 0
Hughes and Stirling	10,580 0 0
Morrison and Sons	10,400 0 0
Kitchen, Lancaster	9,918 3 0
Huntington, Lancaster	9,720 0 0
Hatch and Sons, Lancaster	9,594 0 0
Dilworth, Lancaster	9,499 0 0
Parkinson, Lancaster	9,475 0 0
Wright and Sons, Lancaster	9,380 0 0
Thoms, Lancaster	9,356 0 0
Tyson, Lancaster	9,190 0 0
Thompson,* Lancaster	9,100 0 0

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Middlesbrough.—For the erection of a villa-residence, Marton, Middlesbrough. Mr. Jas. Forbes, architect, 43, Albert Road, Middlesbrough.

H. McNaughton	£1,640 11 7
King and Son	1,592 16 2
Coates, Ltd.	1,590 0 0
Allison Bros.	1,475 0 0
Bastiman Bros.	1,450 0 0
Doughty and Sons	1,432 0 0
Hudson Bros.*	1,430 0 0

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Shepshed (Leics.).—For erection of a handicraft centre, together with out-offices, drainage, etc., for Leicestershire County Education Committee. Mr. E. G. Fowler, architect to the Committee. Quantities by the architect.

H. Hammond, Toothill Road, Loughborough	£1,420 0 0
Griffin Bros., Hugglescote	1,415 0 0
Haycock Bros., Great Glenn	1,410 10 0
G. Bramley, Kegworth, Derby	1,405 0 0
Atkin Bros., Shepshed, Loughborough	1,380 0 0
W. Moss and Sons, Ltd., Queen's Road, Loughborough	1,380 0 0
J. Cole and Son, Bridge Road Works	1,359 0 0
W. F. Harding, 38a, Sparrow Hill, Loughborough	1,329 0 0
T. Barker and Sons, 14, Swan Street	1,298 0 0
E. Fox, 6, Evington Street	1,295 10 0
A. J. Wileman, 53, Queen's Road, Loughborough	1,289 0 0
J. Chapman, Rutland Avenue	1,289 0 0
W. Potter, Blaby	1,273 0 0
A. Faulks,* 4, Sparrow Hill, Loughborough	1,238 0 0
W. Moss and Son, Coalville (withdrawn)	1,225 0 0

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COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about five days or longer after the date of this issue. Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders. The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

March 21—April 2. **PERTH (Scotland).**—Repair and reconstruction of the roofing on the west side of Perth general station. Comprising steel and iron work, carpenter and joiner work, slater work, glazier work, plumber work, and painter work, for the Perth General Station Joint Committee. Drawings may be seen at the office of the Engineer-in-Chief of the Caledonian Railway, Buchanan Street Station, Glasgow, where copies of the specification and schedule may be obtained, on deposit of £2 2s. An assistant engineer will attend at the station on March 21, at 11.45 a.m., to describe and point out the site of the works. Tenders to be lodged with Geo. G. Hamilton, secretary, Perth General Station Joint Committee's Office, Maritime Buildings, East Dock Street, Dundee.

March 24-31. **DARTFORD.**—Construction of a timber wharf at Little Powder Creek, Dartford, Kent, for the West Kent Main Sewerage Board, in accordance with drawing and specification prepared by G. Percy Williams, M.I.C.E., 14, Victoria Street, Westminster, engineer to the Board. Application for quantities to be made in writing to Henry F. Priter, Secretary, Park House, Bromley, Kent, not later than March 24, enclosing a postal order for £1 as deposit for a copy of the quantities. Drawing and specification may be seen between 10 a.m. and 1 p.m. at the offices of the engineer to the Board. Tenders to be delivered at the office of the Secretary. Satisfactory sureties in a bond of £100 will be required.

March 28. **NEWBLISS (Ireland).**—Additions and alterations to Killeevan Church, Newbliss, County Monaghan, for the Rev. Patrick McDonnell, P.P. Drawings and specification may be inspected at the Parochial House, Newbliss, or at the office of W. A. Scott, A.R.I.B.A., M.S.A., Architect, 45, Mountjoy Square, Dublin, to whom tenders must be sent.

March 29. **HAYES (Middlesex).**—Erection of St. Mary's parish room, for the Executive Committee. Information, etc., can be obtained on application to C. Dudley Lewis, High Road, Hayes, Middlesex.

March 29. **WEST HARTLEPOOL.**—Erection of bandstand on the Green, Seaton Carew, for the Corporation. Plan, etc., to be seen upon application at office of Mr. Nelson F. Dennis, M.InstC.E., Borough Engineer and Surveyor, Municipal Buildings.

March 29. **TREDEGAR.**—Erection of 76 or more houses proposed to be built at Tredegar for the Park View Building Club. Plans, specifications, and form of tenders may be seen at the office of Wm. Harris, Architect and Surveyor, Bank Chambers, Bargoed. Tenders to be sent in to the Chairman, J. Jackson, Esq., Boot Stores, 96, Commercial Road, Tredegar.

March 30. **CHESTERFIELD.**—Erection of new offices at the junction of West Bars with Foljambe Road, for the Gas and Water Board. Plans and specifications may be seen and bills of quantities and form of tender obtained on application to the Borough Surveyor's Office, Salter Gate, Chesterfield, on payment of £3 3s. Tenders to be delivered to Jno Middleton, Law Clerk, 24, Gluman Gate, Chesterfield.

March 30. **BELFAST.**—Erection of a terrace of six houses on the Ravenhill Road. Plans and specification may be had at the office of Thomas Houston, Architect and Civil Engineer, Kingscourt, Wellington Place, Belfast. Tenders to be lodged with William Beattie, Solicitor, Mayfair, Arthur Square.

March 30. **MIDDLETON.**—Erection of a new condenser at the Gasworks, for the Corporation. Further particulars and form of tender, which will contain a fair-wages clause, may be obtained on application to C. F. Broadhead, gas engineer, Gasworks, Middleton. Tenders, addressed to the Chairman of the Gas Committee, must be delivered at the office of Frederick Entwistle, Town Clerk, Town Clerk's Office.

March 30. **RAMSGATE.**—Erection of a new elementary infants' school in Lillian Road, Ramsgate, for the Corporation. Persons desiring to tender must apply, or send in their names, accompanied by a deposit of £2 2s., to the architect, W. T. Stock, at the office of Hinds and Son, architects, 57, Queen Street, Ramsgate, when a copy of the bill of quantities will be at once supplied. Tenders, addressed to the Chairman of the Works Committee, are to be delivered at the office of A. Blasdale Clarke, Town Clerk, Albion House, Ramsgate.

March 30. **BALLYBODEN.**—Erection of a public library at Ballyboden, Rathfarnham, for the Library Committee. The person (if any) whose tender may be accepted will be required to enter into a contract and bond for the due performance of the contract, and to furnish solvent security in connection therewith. Plans and specifications may be seen, and forms of tender obtained, at the office of the Architect, T. J. Byrne, A.R.I.B.A., 1, James's Street, Dublin, to whom tenders, addressed to the "Presiding Chairman, Whitechurch Library Committee," are to be delivered. Fair wages clause.

March 30. **WALTON.**—Construction of an open-air bath on land in Queen's Drive, Walton, for the Liverpool Corporation. Plans and specifications may be inspected and quantities obtained on application to the engineer and chief superintendent, W. R. Court, at his office, Municipal Offices, Liverpool, on deposit of £1 1s. Tenders must be delivered at the Town Clerk's Office, by letter post. Any tender which may be accepted will be subject to the sanction of the Local Government Board being given to the borrowing by the Corporation of the requisite amount, and to a contract to be prepared by the Town Clerk.

March 31. **MONTGOMERY.**—Erection of a dwelling house, etc., at Montgomery, for the Misses James, Plas Offa. Plan, etc., to be obtained on application to R. W. Davies, M.S.A., architect and Surveyor, Carno.

March 31. **ASHBURTON (Devon).**—Addition to the Ashburton and Buckfastleigh Cottage Hospital, for the Committee. Tenders to be addressed to H. Mallaby Firth, Hon. Secretary. Plan and specification may be seen at the hospital.

March 31. **RADYR.**—Erecting a club house. Plans and specification can be seen and bills of quantities obtained on deposit of £2 2s., on application to H. Snell, Architect, Hickman Road, Penarth. Tenders to be sent to W. T. Davies, hon. sec., 59, Queen Street, Cardiff.

March 31. **HALIFAX.**—Alterations to residence, Savile Park, Halifax. Bills of quantities may be obtained and plans and specifications inspected at the offices of Clement Williams and Sons, Architects, etc., Post Office Buildings, Commercial Street, Halifax, to whom tenders must be sent.

March 31. **GATESHEAD.**—Erection of the Brighton Avenue new school, for the Education Committee. Send names to the Architect, F. W. Purser, West Street, Gateshead, who will supply quantities. Applicants must deposit a fee of £1 1s. Tenders should be sent to the Education Offices, Gateshead.

March 31. **SALFORD.**—Building an addition to the disinfecting station at Mode Wheel, for the Corporation. Plans may be seen and the specified quantities and form of tender obtained at the office of the Borough Engineer. Tenders must be delivered to L. C. Evans, Town Clerk, Town Hall, Salford.

March 31. **YSTRADGYNLAIS.**—Alterations and additions to "Maesydderwen," to convert into County schools, for the Governors. Plans, specifications may be seen and bills of quantities obtained from the offices of J. Cook Rees, Architect, Neath. Tenders to be sent to B. L. Thomas, Clerk to the Governors, Tir Roger, Ystradgynlais.

March 31. **LARNE (Co. Antrim).**—Repairing and making additions to the Mission Hall, Pound Street, Larne, County Antrim, for the trustees of the John Getty estate. Copy of plans and specification may be had from John Seeds, Architect, 7, Donegall Square West, Belfast, with whom tenders must be lodged. The lowest or any tender not necessarily accepted.

March 31. **HIGH SPEN AND LEADGATE (Durham).**—Alterations and improvements to 38 cottages at High Spen, 10 cottages at Derwent Cottages, and 4 cottages at Leadgate, Co. Durham, for the Consett Iron Co., Ltd. Plans and specifications may be seen and quantities obtained upon application to the architect, Chas. E. Oliver, at the company's general offices, Consett.

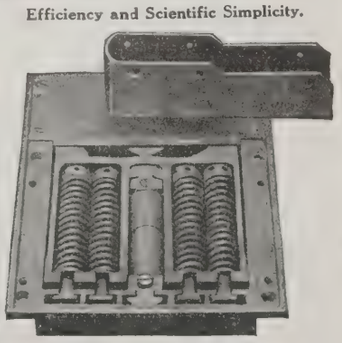
March 31. **WEDNESBURY.**—Erection of public sanitary conveniences (exclusive of sanitary fittings) near the Market Place. Plans, specification, and conditions of contract (no quantities) can be inspected, and form of tender obtained, at the offices of E. Martin Scott, Borough Engineer and Surveyor, Town Hall, Wednesbury, to whom tenders must be sent. The contractor will be required to pay the ordinary rate of wages current in the district.

March 31. **CHISLEHURST.**—Erection of stables, cart-sheds, caretaker's house, mortuary and cemetery chapel, at Perry Street, for the U.D.C. Forms of tender, with a copy of the bills of quantities, can be obtained on application at the Council offices, Church Row, Chistlehurst, on deposit of the sum of £2 2s. The plans, sections, specification, and conditions of contract may be seen at the Council offices. Tenders must be delivered to H. F. Knight, Clerk of the Council, Council Offices, Chislehurst.

(*Continued on next page.*)

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March 31. **BROMSGROVE.**—Erection of a Council secondary school, in Stourbridge Road, for the Worcestershire Education Committee. Applications for forms of tender and bills of quantities may be made by March 10, to the County Education Office, Worcester, accompanied by a deposit of £2 2s. The drawings may now be seen at the office of the architect, G. H. Gadd, Town Hall Chambers, Bromsgrove. Tenders must be addressed to the Director of Education, 37, Foregate Street, Worcester.

March 31. **WALTON-ON-NAZE.**—Erection of a new public elementary school at Walton-on-Naze, for the Essex Education Committee (Tendring District Sub-Committee). Send names to the architects, Tomkins, Homer and Ley, Frinton-on-Sea. Any tender recommended for acceptance will be subject to the approval of the Essex County Council and the Local Government Board. A bond for the proper completion of the work will be required from an approved guarantee society. A deposit of £3 3s. will be required for a copy of the bill of quantities.

March 31. **BERE ALSTON.**—New elementary school for 124 children at Bere Alston, for the Devon County Education Authority. Bills of quantities will be available in due course on payment of £1 1s. Contractors desiring to tender must apply to the County Architect (Education), 1, Richmond Road, Exeter, not later than the first post on Wednesday, March 9, 1910, enclosing a crossed cheque drawn in favour of the County Treasurer. Quantities will be issued about March 16, and tenders must be delivered at the Architect's office.

March 31. **BERMONDSEY.**—Providing and fixing lantern light over kitchen at the Workhouse, Tanner Street, Bermondsey, S.E., for the Guardians. Persons desirous of tendering may obtain printed forms of tender and specification containing full particulars and conditions of contract, between the hours of 10 a.m. and 12 noon daily, from 21st March to 24th March, 1910, by depositing a £5 Bank of England note (cheques or cash will not be received), at the office of E. Pitts Fenton, Clerk, 283, Tooley Street, S.E., to whom tenders must be sent.

April 1. **ASTON.**—Aston Provided School.—Drainage and new conveniences (builder, joiner, and plumber), for the West Riding Education Commistee. Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A sum of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders must be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

April 1. **BRYNMAWR (Brecon).**—Erection of proposed cookery-kitchen and classroom at Brynmawr Council School, for the Breconshire Education Committee. Send names to Charles W. Best, M.I.C.E., surveyor to the Education Committee, County Hall, Brecon, accompanied by particulars of works recently carried out by them, and the names of two references relative to the quality of the work done, unless they have previously carried out work for the county. Such persons can see plans and specification and obtain copies of bills of quantities on the usual conditions at the Surveyor's office. Tenders must be sent to the Surveyor.

April 2. **PORTADOWN.**—Erecting a residence and making additions to the Masonic Hall. Tenders, marked "Chairman, Masonic Committee," to be lodged with J. W. Walby, Architect, Portadown. Plans and specifications may be seen at the office of the architect.

April 2. **DONINGTON.**—(Spalding).—Erection of an elementary school, for the Governors of Cowley's Charity. Drawings and specification may be inspected at the offices of Jas. Rowell, architect, Church Lane, Boston, and a copy of quantities may be obtained upon the deposit of £2. Tenders to be delivered to Ben Smith, Solicitor, Donington, Spalding.

April 2. **CIRENCESTER.**—Demolition of buildings adjoining the Police Station, and construction of a new Superintendent's house upon the site, for the Gloucestershire Standing Joint Committee. Plans and copies of specification may be seen, and bills of quantities and forms of tender obtained at the office of E. S. Sinnott, M.I.C.E., County Surveyor, Shirehall, Gloucester. Persons tendering will be required to pay a deposit of £2.

April 2. **SHEFFIELD.**—Erection of school buildings, etc., Psalter Lane, Sheffield, for the Committee of the Boys' Charity School. Drawings and specifications may be seen and bills of quantities obtained on application to Gibbs, Flockton, and Teather, Architects, 15, St. James' Row, Sheffield. Tenders, on forms supplied, to be delivered to "The Chairman, Building Committee, Boys' Charity School, East Parade, Sheffield."

April 2. **PERTH.**—Repair and reconstruction of the roofing on the west side of Perth General Station. The contract comprises steel and iron work, carpenter and joiner work, slater work, glazier work, plumber work, and painter work. Drawings may be seen at the office of the Engineer-in-Chief of the Caledonian Railway, Buchanan Street Station, Glasgow, where copies of the specification and schedule may be obtained on deposit of £2 2s. An assistant engineer will attend at the station on 21st inst., at 11.45 a.m. Tenders to be lidged with Geo. G. Hamilton, Secretary, Perth General Station Joint Committee's Office, Maritime Buildings, East Dock Street, Dundee.

April 3. **BUGLE (St. Austell).**—Erection of a concrete chapel at Bugle. Plans can be seen at Sunny Bank, Mount Charles, St. Austell. Tenders to be sent to the Rev. J. T. Morris, Primitive Methodist Minister, at above address.

April 5. **WALTHAM.**—Alterations and repairs required to be carried out at Waltham Council school, for the Committee. Specifications and plans can be seen at the house of the correspondent, C. J. Wanley Croft, Bridge, Canterbury. Tenders must be forwarded to the above-named correspondent.

April 5. **BIRMINGHAM.**—Alterations to Birmingham head post office, for H.M. Commissioners of Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to H.M. Office of Works, Birmingham. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on payment of £1 1s. Tenders must be delivered, addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

April 5. **MOUNTAIN ASH.**—Erection of an infants' school, with offices, etc., at Clarence Street, for the Education Committee. Plans and specifications may be seen, and forms of tender and bills of quantities obtained, on application to the Architect, W. H. Williams, Town Hall, Mountain Ash, upon the deposit of £2 2s. The committee undertake to open only the bills of quantities sent in by the contractor whose tender will be accepted, and to return all the other bills of quantities unopened. Tenders and bills of quantities to be sent to A. Morgan, Director of Education, Town Hall, Mountain Ash.

April 6. **BOVEY TRACEY.**—New elementary school for 200 children, and a cookery and manual training centre, etc., for the Devon County Education Authority. Bills of quantities will be available on payment of £1 1s. Contractors desiring to tender must apply to the County Architect (Education), 1, Richmond Road, Exeter, not later than Friday, March 11, 1910, enclosing a crossed cheque drawn in favour of the County Treasurer. Quantities will be issued about March 22, and tenders must be delivered at the architect's office.

April 6. **EDENBRIDGE.**—Erection of a new Council school to accommodate 200 children, for the Kent Education Committee. Plans and specification, and form of contract, may be inspected at the offices of the Committee, until the time appointed for the delivery of the tenders. Any person desiring to tender and to receive a copy of bills of quantities must send in his name to Fras. W. Crook, Secretary, Caxton House, Westminster, S.W., accompanied by a deposit of £1, not later than noon on March 10, 1910. Tenders must be delivered to the School Correspondent, Chas. Sheal, High Street, Edenbridge, Kent.

(*Continued on next page.*)

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April 7. **SWANSEA.**—Extension of the Victoria warehouse for a distance of 67ft. with four floors, and erecting two additional floors on the old building, for the Harbour Trust. Plans, specification and quantities can be seen and forms of tender obtained on application to A. O. Schenk, M.InstC.E., at the Harbour Offices, Swansea. Tenders should be delivered to Talfourd Strick, Clerk, Harbour Offices, Swansea.

April 7. **LONDON (Walworth).**—Reconstruction of part of drainage and alterations to and addition of new w.c.'s on the women's side of Newington workhouse, Westmoreland Road, Walworth, S.E., for the Southwark Guardians. A copy of the specification, plan, and form of tender may be obtained from A. W. Tribe, Architect, 120, Clapham Road, S.W., on the deposit of £2 2s. Tenders to be sent to Sydney Wood, Clerk, Union Offices, Ufford Street, Blackfriars Road, S.E.

April 9. **TINSLEY.**—Erection of a boarded fence dividing the cricket ground from the recreation ground, for the Parish Council. Specification and quantities can be obtained on receipt of stamped addressed foolscap envelope, from J. L. Winkley, Clerk to the Council, 15, Harrowden Road, Tinsley, Sheffield, to whom tenders must be sent.

April 11. **SHOTLEY BRIDGE (Gateshead).**—Erecting new hospital for consumptive patients on the Whinney House Estate. Persons desirous of tendering are requested to send their names to George Craighill, Union Clerk, Poor Law Union Offices, Gateshead, to whom tenders must be sent. Quantities and further information will be forwarded in due course. Plans, etc., may be seen at the offices of the architects, Newcombe and Newcombe, 89, Pilgrim Street, Newcastle-on-Tyne. Names must be sent in by March 25.

April 11. **LINCOLN.**—Construction of a brick and stone tower, 108ft. high to T.W.L., to support a spherical bottomed steel tank, containing over 300,000 gallons of water, and subsidiary works at Westgate, Lincoln, for the Corporation. Drawings may be seen now, and specification, bill of quantities and form of tender obtained at the office of the Engineer, Mr. Neil McK. Barron, Waterworks Engineer, Lincoln upon production of a receipt from the City Accountant for the sum of £5 5s. Tenders, addressed to the Chairman of the Waterworks Committee, to be delivered at the office of W. T. Page, Deputy Town Clerk, Bank Street, Lincoln.

April 11. **YORKSHIRE (East Riding).**—(a) The erection of a teacher's house and alterations to school at South Duffield; (b) for alterations and additions to the Council school at Pocklington; (c) for alterations and additions to the Council school at Withernwick, for the Education Committee of the C.C. Plans and specifications may be seen and forms of tender obtained on application to the building surveyor, County Hall, Beverley. For the convenience of persons desirous of tendering, a copy of the plans and specifications, together with forms of tender, will be deposited at the respective schools. Tenders to be delivered to John Bickersteth, Clerk to the East Riding Education Authority, County Hall, Beverley.

April 19. **HAZEL GROVE (Stockport).**—Erection of a new public elementary Council school on land in Chapel Street, Hazel Grove, near Stocport, to accommodate 800 children, with housewifery, laundry, and cookery centres, and caretaker's quarters, for the Cheshire Local Education Authority. Plans and specifications may be inspected and quantities obtained from the architect, C. T. Adshead, Leinster Chambers, 4, St. Ann's Square, Manchester, on payment of a deposit of £2 2s., on and after Tuesday, March 29. Tenders to be sent to J. W. Bain, Clerk, School Brow, Romiley, near Stockport.

April 21. **BUILTH WELLS.**—Erection of a new mixed and infants' school (346 places), and cookery kitchen, at Builth Wells, for the Breconshire Education Committee. Names to Charles W. Best, M.Inst.C.E., Surveyor to the Committee, County Hall, Brecon, accompanied by particulars of works recently carried out, and the names of two references relative to the quality of the work done.

No date. **BINGLEY.**—Bricklayer's and mason's, carpenter's and joiner's, plumber's and glazier's, plasterer's, and slater's work required in the erection of a detached villa residence in Bramham Road, Bingley. Particulars may be had from Wm. Rhodes Nunns, Architect and Surveyor, Bingley.

No date. **SHREWSBURY.**—Persons desirous of tendering for the erection of the Corporation stables and depot at Roushill, for the Corporation, are requested to forward their full name and address not later than the 21st inst., together with a deposit of £2 2s., to Arthur E. Williams, Architect and Surveyor, County Chambers, 12, High Street, Shrewsbury. Bills of quantities and form of tender will be forwarded in due course.

No date. **WYE.**—Erection of additions to the College buildings at Wye, for the Governors of the South-Eastern Agricultural College. Persons desirous of tendering are requested to send in their names to A. E. Lacey, A.R.I.B.A., Architect, Ashford, Kent, enclosing a cheque for £2 2s. as deposit upon receipt of which a copy of the bills of quantities will be forwarded. Drawings and specifications may be seen at the office of the architect, 13, North Street, Ashford.

ENGINEERING.

March 28. **EDINBURGH.**—Construction of sidings and loading banks at the Gorgie Cattle Markets, for the Corporation. Drawings and specification may be seen at the office of Blyth and Westland, C.E., 135, George Street, Edinburgh, and the specification with copies of the schedule of quantities and form of tender, may be obtained from them on deposit of £1 1s. An engineer will meet intending offerers at the Gorgie Tramway Terminus, on Monday, the 21st inst., at 12 o'clock noon, to exhibit the plans and point out the site of the works. Tenders must be lodged with Blyth and Westland.

March 29. **POLESWORTH.**—Laying about 4,000 lineal yards of stoneware pipe sewers and building the necessary manholes, etc.; also for the construction of sewage tanks, filters, pumping station, pumping main, and incidental works, for the township of Polesworth, within their district. Drawings may be inspected at the offices of H. J. Coleby, Engineer and Surveyor, Council Offices, 102, Long Street, Atherstone, where also a copy of the specification and bill of quantities may be obtained upon deposit of £2 2s. Tenders must be delivered to W. A. Hatton, the Clerk to the Council, 120, Long Street, Atherstone.

March 30. **WETHERBY.**—Construction of about 3,700 lineal yards of 9in., 8in., and 6in. earthenware pipe sewers, with manholes, etc., also sewage tanks, continuous filters, and other works, for the R.D.C. Drawings and specification may be seen, and quantities, with form of tender, obtained at the office of the Engineer, H. A. Johnson, M.I.C.E., 15, The Exchange, Bradford, on payment of a deposit of £2 2s. Tenders to be sent to E. N. Coates, Clerk to the Council, Wetherby.

March 31. **PENARTH.**—Construction of two ferro-concrete (Hennibique system) footbridges, in the Dingle, for the U.D.C. Plans and specifications may be seen and copies of quantities obtained on application to Edgar J. Evans, A.M.I.C.E., Surveyor, District Council Offices, Penarth.

March 31. **SALFORD.**—Provision and erection of the steelwork, etc., brickwork, concrete, etc., required in the repairing and strengthening Palatine Bridge over the River Irwell, for the Building and Bridges Committee of the Borough. Drawings may be seen, and specification and bill of quantities obtained at the offices of the Engineers, C. S. Allott and Son, 46, Brown Street, Manchester. A deposit of £2 2s. will be required for the specification and bill of quantities. Tenders to be delivered to L. C. Evans, Town Clerk, Salford.

(Continued on next page.)

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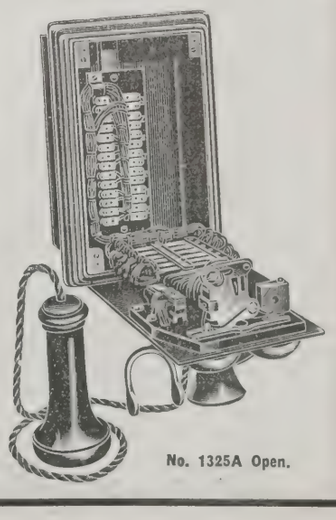
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March 31. **LONG EATON (Notts.).**—Erection of (1) proposed bridge over Erewash canal, Sawley Road, Long Eaton, with approaches and other contingent works; (2) proposed widening of existing bridge over the Erewash canal, Derby Road, with approaches and other contingent works; brick, concrete, and road-making works, for the U.D.C. Plans may be inspected, and general conditions, specification, bill of quantities, etc., obtained from Frank Worrall, A.M.I.C.E., Engineer and Surveyor, Electricity Supply Works, Long Eaton, on deposit of £3 3s. Tenders, addressed to the Chairman of the Council, are to be delivered to the Engineer.

March 31. **YARDLEY.**—Provision and construction of about 983 yards of 2ft. 6in. brick and concrete sewer, and 90 yards of 2ft. 6in. cast-iron sewer, partly in tunnel under a canal; together with manholes and other works appertaining thereto, for the R.D.C., in accordance with plans, drawings, specification, and conditions of contract; which may be seen on application to the Acting Engineer and Surveyor, Mr. Philip H. Thompson, at the Council House, Sparkhill, near Birmingham, from the 21st to 24th March, and on the 29th and 30th March. Specification, bill of quantities, and form of tender may be obtained on deposit of £3 3s., with Francis Ladbury Thompson, Clerk of the Council, The Council House, Sparkhill, near Birmingham, to whom tenders must be sent. The contractor whose tender is accepted will be required to pay his workmen not less than the minimum standard rate of wages in the district for each class of labour respectively, and to observe the recognised hours and conditions of labour generally, and shall forfeit to the Council the sum of £1 for each infringement of this clause, and a further sum of £1 for each day such infringement continues after his attention has been called to it. The contractor shall, whenever possible, in the execution of the works, give preference to such competent workmen of the class required as may be residents of the parish of Yardley, and may offer themselves for employment.

April 2. **ABERDEEN.**—Reconstruction of a steel girder bridge over the River Deveron at Cairnford, near Huntly, for the Huntly District Committee, in accordance with plans and specifications, which may be seen with James Barron, M.I.C.E., Central Chambers, 216, Union Street, Aberdeen, from whom schedules of quantities can be obtained on deposit of £1. Tenders to be lodged with J. R. M'Math, District Clerk, Huntly.

IRON AND STEEL.

March 28. **GLASGOW.**—Iron and steel fencing work required in connection with buildings proposed to be erected in Moore Street and Hill Street, for the Corporation. Plans may be seen at the office of the City Engineer, and forms of tender obtained at the office of Public Works, City Chambers, 64, Cochrane Street, by depositing £3 3s. Tenders must be lodged with A. W. Myles, Town Clerk, City Chambers, Glasgow.

March 30.—**HARTLEPOOL.**—Supply of cast-iron palisading, with carriage and wicket gates, for their new cemetery, for the Corporation. Plans and specifications may be seen and full particulars obtained on application at the office of H. C. Crummack, A.M.I.C.E., borough engineer, Borough Buildings, Hartlepool. Tenders must be addressed to the Chairman of the Property (Burials) Committee.

March 30. **BELFAST.**—Supply of about 100 tons of best rolled steel girder tramway rails, with fishplates and bolts to suit, of which 50 tons are to be delivered on the County Antrim Side and 50 tons on the County Down Side of the River, where pointed out, the whole to be weighed on one of the Harbour Comissioners' weighbridges, at the contractor's expense. Specification, form of tender, section of rail, etc., and any further information required may be obtained from the Harbour Engineer, W. Redfern Kelly, M.Inst.C.E. Tenders stating time of delivery, to be addressed to W. A. Currie, Secretary, Harbour Offices, Belfast.

April 2. **BRADFORD.**—Supply and delivery of steel girder tram rails and steel poles, for the Corporation. Drawing, specification, and form of tender for rails and poles may be obtained at the office of W. H. S. Dawson, City Engineer and Surveyor, Town Hall, Bradford. Tenders to be sent to Frederick Stevens, Town Clerk, Town Hall, Bradford. The contracts will be let subject to the fair contracts clauses of the Corporation, which may be seen at the Town Clerk's office, and which the contractor will be required to sign.

PAINTING.

March 28. **CLITHEROE.**—Painting, etc., offices, showrooms, and house, at the gas works, for the Gas Committee. Specification may be seen at the offices of Robert Barrett, Gas Manager, Gas Works, Clitheroe. Tenders to be addressed to the Chairman of the Gas Committee, and delivered at the Town Clerk's office.

April 21. **HUDDERSFIELD.**—Painting and decorating of the Town Hall, crush room, and artistes' retiring rooms, for the Corporation. The successful tenderer will be required to execute a contract, the draft of which may be inspected at the Town Clerk's Office, Town Hall. Plans, specifications, and general conditions may be seen, and bills of quantities and forms of tender obtained, on application at the offices of K. F. Campbell, M.Inst.C.E., Borough Engineer, 1, Peel Street, Huddersfield. Tenders to be addressed to "Town Clerk, Town Hall, Huddersfield."

PLUMBING AND SANITARY.

April 7. **LONDON (Walworth).**—See under buildings.

ROADS AND CARTAGE.

March 28. **TENTERDEN.**—Supplying and delivering the following materials, for the R.D.C.:—620 cubic yards granite; 3,270 cubic yards stone cliff rock; 570 cubic yards flints; 1,590 cubic yards rag stone; 140 tons of beach; also for steam rolling the above. Further particulars and forms of tender may be obtained of W. L. C. Turner, District Surveyor, Tenterden. Tenders to be sent to J. Munn-Mace, Clerk, Tenterden, Kent.

March 29. **WITHNELL.**—Materials for the 12 months ending March 31, 1911: Broken granite, limestone, setts and kerbs, gas slack. Also for the sale of tar and ammoniacal liquor from the gas works. Particulars and forms of tender may be had from Thomas Moss, surveyor, Council Chambers, Brinscall, near Chorley, to whom tenders must be sent.

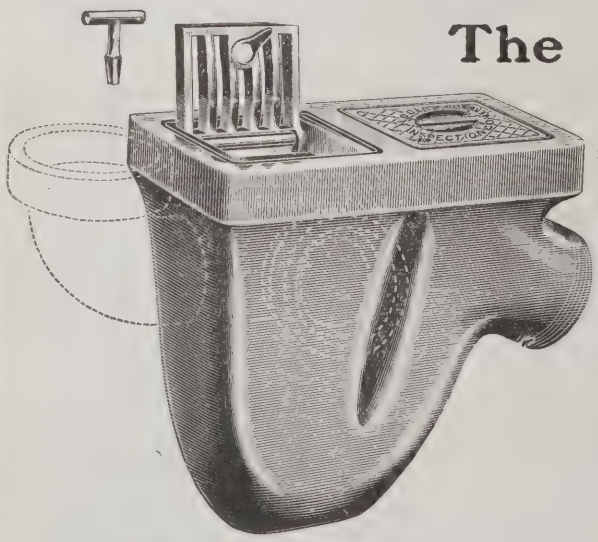
March 29. **YARMOUTH.**—Supply of:—2,400 tons of 1½in. Guernsey granite; 2,000 tons 1½in. basalt, quartite, Penlee, or other stone of equal value, for road making; 1,000 tons 5in. granite setts; 2,000 yards cube broken flint; 800 yards cube coarse gravel; 500 yards cube footpath gravel. Specifications, form of tender, and envelopes, in which tenders must be enclosed, can be obtained at the office of J. Wm. Cockrill, M.InstC.E., Borough Surveyor, Town Hall, Great Yarmouth. Tenders are to be delivered at the office of the Town Clerk, Town Hall, Great Yarmouth.

March 29. **GRETTON.**—Supply of about 920 tons of broken XX and XXX granite and screenings, for the R.D.C., on or before December 1 next, to be delivered (carriage free) at the following stations:—Corby and Weldon, Gretton, Fineshade Siding, Harringworth, Rockingham, and Wakerley, at such times and in such quantities as the Surveyor of the Council shall from time to time order. Forms of tender and specifications may be obtained on application (enclosing a stamped, addressed envelope) to Fredk. Oakley, Clerk, Council Offices, Uppingham, to whom tenders must be sent.

March 29. **WARBLINGTON.**—Victoria Road, Bridge Road, and Washington Road.—Forming, sewering, levelling, paving, metalling, channelling, and making good the above roads and the footways thereof at Emsworth, within the district, for the U.D.C. Plans, specifications, and conditions can be seen, and forms of tender obtained, on application to H. W. Stringfellow, C.E., Surveyor to the Council, Council Offices, North Street, Emsworth. Tenders for each road must be delivered at the office of J. W. Loader Cooper, Clerk to the Council, 14, Queen Street, Emsworth. The person or persons whose tender is accepted will be required to enter into the usual formal contract and to give proper security for due performance.

(*Continued on next page.*)

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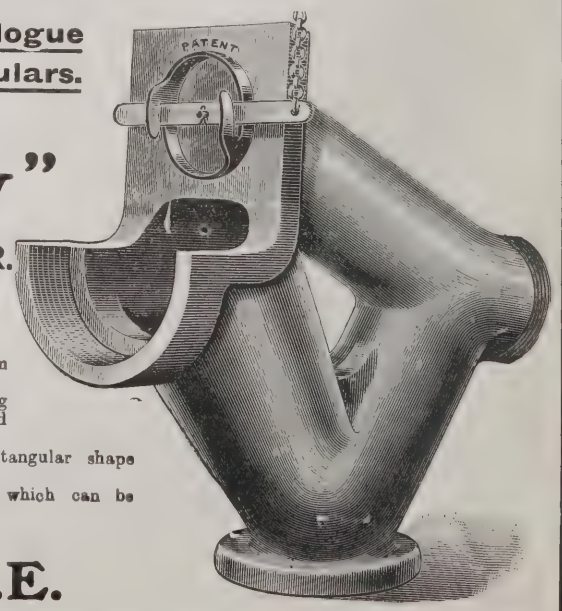
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The illustration shows the inspection socket fitted with brass patent lever stopper, which can be released from top of manhole.

H.D 27. **LAMBETH, LONDON, S.E.**

March 29. **FAILSWORTH.**—Supply of materials to be delivered at such times and in such quantities as the Council may require during the period ending March 31, 1911, for the U.D.C., namely:—Lonkey and grit paving setts, flags, curbs, rubble, stone scaplings, Portland cement, earthenware pipes, bends, junctions and gullies, iron manhole and lampeye covers, iron street gullies, manhole step castings, Buxton lime, green crystal coperas. Forms of tender and full particulars may be obtained at the office of G. F. Gray, Surveyor to the Council. Tenders must be delivered to H. C. Broome, Clerk to the Council, Council Offices, Failsworth.

March 30. **HOO (Kent).**—Supply of the following materials to be delivered on the roads, for the R.D.C.:—Broken granite, unbroken Kentish ragstone, unbroken surface picked flints, unbroken pit flints and hoggin, also carting (day work), and steam road rolling and scarifying. Forms of tender may be obtained of Richard Phillott Smyth, Clerk, Strood, Kent.

March 30. **BARNET.**—Making-up of the private streets within their district known as Gladsmuir Road and Hadley Grove, for the Barnet U.D.C. Plans and specifications can be seen and all information obtained on application to W. F. Wilkins, M.S.E., Surveyor, 40, High Street, Barnet, between 9 and 10 a.m., or by appointment. Tenders should be addressed to H. W. Poole, Clerk, Barnet, and delivered at the Council's offices.

March 30. **WINDLESHAM.**—Supply of the following road materials, during the year ending March 31, 1911, for the U.D.C.:—1½in. and 2in. Leicestershire or Guernsey granite; Leicestershire granite chippings; Farnham Hungry Hill flints; Farnham gravel screenings; local screened gravel and siftings; hire of a 10-ton steam road roller, as may be required during the same period. Tender forms may be obtained of the Surveyor at the Council Offices, Bagshot, and tenders should be delivered to Edwyn T. Close, Clerk to the Council, High Street, Bagshot.

March 30. **PRESTWICH.**—Private street improvement in Edward Street, and passage between Edward Street and Clifton Road, and the supplying and laying of a sewer in Rendlesham Street, between Taylor Street and Stanley Street, within the Urban District, for the U.D.C., subject to general conditions of contract, which can be inspected at the Surveyor's Office, Chester Bank, Prestwich, any morning between the hours of 9 a.m. and 11 a.m. The plans, specifications, and quantities will be open for inspection at the office of the Surveyor, Chester Bank, between the hours above mentioned. Copies of the bill of quantities and any further information that may be required can be obtained from the Surveyor, on deposit of £1 1s. Tenders to be delivered to Lewis A. Orford, Law Clerk to the Council, Council House, Prestwich, Manchester.

March 31. **BILLINGBOROUGH.**—Supplying and laying about 400 sq. yards of two-inch flagging in Billingborough, for the Highways Committee of the Kesteven C.C. Form of tender may be obtained from W. B. Purser, County Surveyor, Grantham.

March 31. **BRANDON.**—Making-up of Railway Street and the road leading between Station Avenue and Commercial Street, Brandon Colliery, for the U.D.C. Plans may be seen and quantities obtained from Geo. G. Donkin, Surveyor, Langley Moor. Tenders to be sent to J. G. Wilson, 5, North Bailey, Durham.

March 31. **MALDON.**—Making-up of Mount Pleasant and Tenterfield Roads in the Borough for the Council. Plans and specifications may be seen and forms of tender obtained at the office of T. R. Swales, Borough Surveyor. Tenders to be sent to F. H. Bright, Town Clerk, Town Clerk's Office, High Street, Maldon.

March 31. **SUFFOLK.**—Steam rolling on 305 miles of main road during the financial year ending March 31, 1911, for the East Suffolk C.C. Specification and form of tender can be obtained on application from the Chief Surveyor, County Hall, Ipswich. Tenders to be sent to A. Townshend Cobbold, Clerk of the County Council, County Hall, Ipswich.

March 31. **BRIGG.**—Relaying of about 1,400 sq. yds. of Bigby Street with tar macadam, for the U.D.C. The successful contractor will be required to enter into a contract with two sureties in the sum of £50 each for the due performance of the contract, and must guarantee the roadway to wear satisfactorily for three years. Specifications and forms of tender can be obtained on application to G. S. Sowter, Clerk to the Council, Brigg, to whom tenders must be sent.

April 1. **FOLKESTONE.**—Levelling, paving, channelling, metalling, etc., and making good of Dudley Road, for the Corporation. Plans and specification may be seen and forms of tender obtained on application to A. E. Nichols, M.I.C.E., (Borough Engineer), Corporation Offices, Church Street, Folkestone. Tenders to be addressed to A. F. Kidson, Town Clerk, Town Clerk's Office, Folkestone.

April 1. **RAMSEY (Huntingdonshire).**—Supply of 200 tons of broken granite, size X or 2½in. gauge; 200 tons of broken granite, size XX or 1⅝in. gauge; 50 tons of broken granite, size XXX or 1in. gauge; 150 tons of tar macadam, 2½in. gauge, for the U.D.C. To be delivered to the G.N. or G.E. stations at Ramsey, Hunts., from April to December next. Tenders, accompanied by samples, to be sent (carriage paid) to the Council on or before April 1 next. No forms of tender are issued.

April 2. **SUDBURY.**—Supply and delivery of:—(1) broken granite; (3) cement, etc.; (5) stoneware pipes, for the year ending March 31, 1911, for the Corporation. Full particulars and forms of tender may be obtained on application to Wm. I. Tait, A.M.I.C.E., Borough Engineer and Surveyor, The Town Hall, Sudbury, Suffolk, to whom tenders must be sent.

April 2. **BLEAN.**—Supply and delivery of the undermentioned quantities of materials required in the following parishes during the year ensuing from April 1 next, for the R.D.C.:—Blean, 250 cub. yds. gravel, 60 cub. yds. fine gravel, 7 cub. yds. fine chalk; Chislet, E., 1,020 cub. yds. gravel, 21 cub. yds. finechalk; Chislet, W., 70 cub. yds. gravel, 12 cub. yds. fine gravel; Herne, E., 1,310 cub. yds. gravel; 60 cub. yds. chalk flints; Herne, W., 1,550 cub. yds. gravel, 230 cub. yds. fine gravel, 21 cub. yds. fine chalk, 40 cub. yds. chalk flints; Hoath, 300 cub. yds. gravel, 65 cub. yds. fine gravel; Reculver, 440 cub. yds. gravel; St. Stephen, 630 cub. yds. gravel, 80 cub. yds. fine gravel, 14 cub. yards fine chalk; St. Dunstan, 60 cub. yds. gravel, 7 cub. yds. fine gravel; Sturry, 430 cub. yds. gravel, 95 cub. yds. fine gravel, 14 cub. yds. fine chalk; Swalecliffe, 400 cub. yds. dug flints, 60 cub. yds. fine gravel, 14 cub. yds. fine chalk; Westbere 120 cub. yds. gravel, 25 cub. yds. fine gravel, 7 cub. yds. fine chalk; Whitstable-cum-Seasalter, 1,450 cub. yds. dug flints, 260 cub. yds. fine gravel, 40 cub. yds. fine chalk. Tenders are also invited for the cartage of materials, steam rolling and team labour required in the several parishes in the district during one year, from April 1 next. Tenders must be made on a form to be obtained from J. E. Burch, Clerk to the Council, and must be delivered at his office, 39, Castle Street, Canterbury. Any further information may be obtained from the Surveyor, F. A. Ward, Eddington, near Herne Bay.

April 4. **MIDDLETON.**—Supply of setts, flags, sanitary tubes, granite, macadam, etc., for the Corporation. Application for information forms of tender, etc., to be made to F. Entwistle, Town Clerk, Middleton.

April 4. **WICKHAM MARKET (Suffolk).**—Supply of about 3,000 tons of granite, broken to 1½in. gauge, delivered in trucks at the following stations, before July 31, 1910: Aldeburgh, Framlingham, Marlesford, Parham, Saxmundham, Snape, and Wickham Market, on the Great Eastern Railway, and Kenton, on the Mid-Suffolk Light Railway, and in barges alongside Orford Quay and Iken Cliff, in the River Alde, for the Plomesgate Rural District Council. Tenders, with samples, to be sent to T. Waller Read, clerk, Board Room, Wickham Market. Forms of tender may be had on application to the Clerk.

(*Continued on next page.*)

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April 4. **PLOMESGATE.**—About 3,000 tons of granite, broken to 1½ inch gauge, delivered in trucks at the following stations, before July 31, 1910:—Aldeburgh, Framlingham, Marlesford, Parham, Saxmundham, Snape, and Wickham Market, on the Great Eastern Railway, and Kenton, on the Mid-Suffolk Light Railway, and in barges alongside Orford Quay and Iken Cliff, in the River Alde. Tenders, with samples, to be sent to T. Waller Read, Clerk, at the Workhouse at Wickham Market, Suffolk. The Council reserve the right of accepting a portion of any tender to the exclusion of the remainder. Forms of tender may be had on application to T. Waller Read, Clerk, Board Room, Wickham Market.

April 6. **LYDD.**—Supply and delivery (free on rail, at Lydd Station) of road material, for the T.C.—450 tons 1⅜ gauge Rhenish columnar basalt; 20 tons 1¼in. gauge Rhenish columnar basalt; 10 tons ¾in. chippings. Material to be delivered at such time as Surveyor may direct. Tenders, also samples, must be sent to Thomas Kettle, Borough Surveyor, Lydd. No form of tender supplied.

April 6. **WANSTEAD.**—Making up the street known as Warwick Road, for the U.D.C. Copies of specification and form of tender can be obtained and contract form inspected at the Council Offices, Wanstead, N.E., (Surveyor's Department). Tenders are to be delivered at the Council Offices, Wanstead, N.E.

April 7. **EASTBOURNE.**—For the supply of road materials (stone, flints, beach, and stone chippings), and for cartage of same from railway stations, for the R.D.C. All materials will be required to be delivered before Sept. 30. Tenders to be addressed to the Chairman of the R.D.C. at the Board-room of the Eastbourne Guardians, Avenue House, Eastbourne. Forms of tender may be obtained from T. E. Varley Kirtlan, clerk, 92, Terminus Road, Eastbourne, or C. M. Carter, Mount Sorrell Hampden Park, near Eastbourne, on forwarding stamped addressed foolscap envelope.

April 11. **WANDSWORTH.** — Making up and paving of that part of Coplev Park, Streatham, which lies between Streatham Common South and Heybridge Avenue, for the Borough Council. The specification and drawings may be seen, and forms of tenders obtained at No. 56, East Hill, Wandsworth, S.W., upon payment of a deposit of £: 5s. Tenders must be delivered at the Council House, East Hill, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose. Persons tendering must in the case of all workmen employed by them pay wages at no less and observe hours of labour not greater than the rates and hours recognised by the associations of employers and employees and in practice obtained in the district where the work is to be executed.

April 11. **BRIGHOUSE.**—Repaving of a portion of Birds Royd Lane with granite setts on concrete (the setts to be provided by the Corporation). Plans and sections may be seen, and specification and bills of quantities obtained upon application to S. S. Haywood, Borough Engineer and Surveyor, Municipal Offices, Brighouse. Tenders, accompanied by the priced bill of quantities, to be sent or delivered to Jas. H. Rothwell, Town Clerk, Town Clerk's Office, Municipal Offices, Brighouse.

April 11. **BECKENHAM.**—Making-up of Faversham and Shaftesbury Roads, for the U.D.C. The works comprise the following:—130 cubic yards, flint, 1900 lin. ft. second-hand channelling, 735 super. yds., Burgess Hill paving (bricks supplied), together with the remodelling of about 1,500 super. yds. of roadway. Plans and sections may be seen, and bills of quantities, specifications, and forms of tender obtained, on application to John A. Angell, Surveyor, on the production of a receipt from the collector (who attends his office daily from nine to ten a.m. only, except on Tuesdays, when his hours are from nine a.m. to one p.m.), for a deposit of £2. A clause will be inserted in the contract providing that the contractor shall (1) pay to the employees the wages generally accepted as current for workmen engaged on similar work in the town where the work is executed, and (2) to the extent of 75 per cent. at least of the staff required in the execution of such works give preference to and engage such competent workmen of the class required as may be bona-fide residents in the parish of Beckenham, and may offer themselves for employment. Payment under the contract will not be made until six months after the completion of the works. Tenders to be sent to F. Stevens, Clerk to the Council.

April 14. **WESTMINSTER.**—Paving work within the jurisdiction of the City Council. Conditions of contract, specification, schedule, and tender can be obtained on application at the Town Clerk's Office, Westminster City Hall, Charing Cross Road, W.C. The contractors will be bound by the contract in the case of all workmen employed by them, to pay wages at rates not less and observe hours of labour not greater than the rates and hours recognised by the Associations of Employers and Employees, and in practice obtained in the district where the work is to be executed. The contractors are prohibited from directly or indirectly canvassing members or officials of the Council in reference to any tender, and the tender of any contractor who does so canvass will be rejected. The contract deeds will be prepared at the expense of the Council, and the contractors will be required, together with two sureties, to enter into bonds for the due fulfilment of their contracts, or, in the alternative, to agree to the retention by the Council, during the period mentioned in the form of tender, of certain moneys. Each tender to be addressed to "The Town Clerk, Westminster City Hall, Charing Cross Road, W.C." Tenders may be placed by, or on behalf of, tenderers in a locked box at the City Hall, provided for the purpose.

No date. **BATH.**—Supply of best basalt granite, black rock mountain lime, and other approved hard stone, and in the hauling of the same on to the various roads in the district, and for the supply of workmen's tools and other materials as set out in the forms of tender, for the R.D.C. Forms of tender may be obtained from R. H. Whittington, 5, Old King Street, Bath.

MISCELLANEOUS.

March 30. **BELFAST.**—Supply of about 270 pieces of Riga timber, for the Belfast Harbour Commissioners. Particulars may be obtained from the harbour engineer, W. Redfern Kelly, M.I.C.E., to whose entire satisfaction the timber is to be supplied. Tenders to be addressed to W. A. Currie, Secretary, Harbour Office, Belfast.

March 30. **LEIGH.**—Supply of 5,658 square yards or thereabouts of perforated earthenware floor tiles, for the bottoms of six percolating filters, to be constructed at works off Mather Lane, Leigh, Lancashire, for the Sewerage Board. Conditions, specification, and form of tender can be obtained from Banks, Fairclough and Stephen, A.M.I.C.E., Leigh. Tenders to be delivered to D. Schofield, Clerk, Town Hall, Atherton, near Manchester.

March 31. **DELPH.**—Provision of two folding partitions at Delph Council School, for the Education Committee. Specifications may be had from Edgar T. Woodhead, Divisional Clerk, Huddersfield.

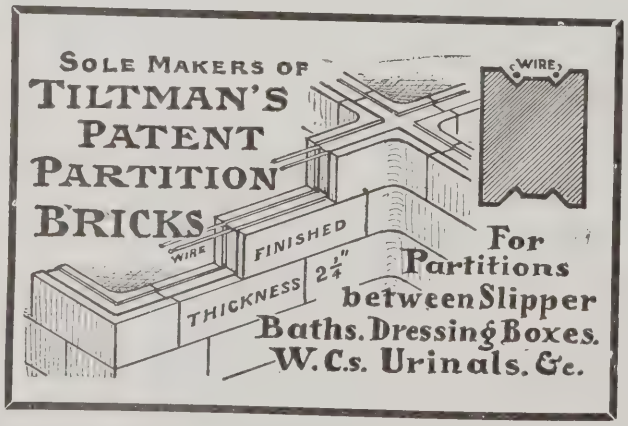
March 31. **LINTHWAITE.**—Asphalting the girls' and infants' playground at Linthwaite Central School, for the Colne Valley Education Committee. Specification may be had from Edgar T. Woodhead, Divisional Clerk, Huddersfield.

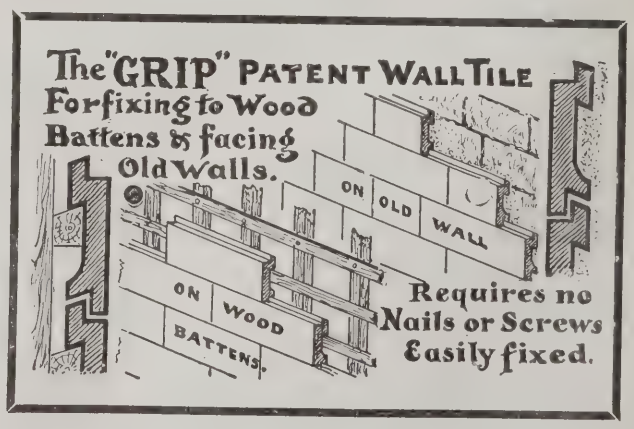
March 31. **WIMBLEDON.**—Repairs to and reglazing of the roof of the reading room, for the Wimbledon Public Library Committee. Specifications and plans can be seen on application at the library. Tenders to be delivered to Henry Wm. Bull, librarian.

April 1. **HOYLAKE.**—Supply and delivery for the period ending March 31, 1911, of:—Kerbs, channels, setts, cement concrete flags, macadam, chippings, Portland cement, and stoneware sewer pipes, for the U.D.C. Specifications and forms of tender may be obtained upon written application to the engineer and surveyor to the Council, District Council Offices, Hoylake. Tenders to be delivered at the office of Roderick Williams, Clerk to the Council, District Council Offices, Hoylake.

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How the State Encourages Architecture.

Those who cherish the charming idea that we are becoming a nation of art-lovers should be prepared to suffer many rebuffs. They could hardly have recovered from the shock of the announcement that the New Gallery had gone the way of the Grosvenor—the latter having but a dubious immortality in Gilbert's rhyme about "A greenery-gallery Grosvenor Gallery foot-in-the-grave young man"—when their optimism received another severe assault—if (which is perhaps more than doubtful) they read the Parliamentary intelligence, in which it is recorded that Lord Claud Hamilton asked the First Commissioner of Works whether he would consider the expediency of removing the painted wood hoarding which had for so many years disfigured the stone screen facing the entrance to the Admiralty at Whitehall, and whether he could hold out any hopes of the completion of the towers of the Home Office in Whitehall in accordance with the design of the architect. Mr. Harcourt *had* considered the expediency; also the expense which, he said, "will be considerable, and I am not prepared at this moment to incur it." It seems rather a pity that, for the moment, he did not happen to have the money about him; but one would have thought that, with the Government of the richest country in the world at his back, his credit for a comparatively insignificant sum would have held good. The same pestiferous impecuniosity dictated his answer to the other part of the question: "I much regret," he said, "that financial exigencies will not permit me to undertake the completion of the towers at present." As Mr. Harcourt puts the matter so personally, it is rather difficult to get rid of the illusion that an exacting nation expects him to disburse these trifles out of his own pocket, and that, official salaries being somewhat precarious at the present juncture, he has run rather short of small change. But is this notion one whit more farcical than the plain fact that the great British Government cannot raise the wherewithal to complete its Home Office, nor even to take down a disfiguring wooden hoarding? The attitude of the British Government—of any British Government—towards architecture has seldom or never been otherwise than mean and contemptible. Mr. Harcourt, who is certainly one of the most sympathetic First Commissioners we have ever had, and who, moreover, is blessed with a very keen sense of humour, no doubt realises the absurdity and humiliation of the position quite as keenly as the most caustic of his critics, and we are very sorry for him; but we are still more sorry for the almost complete indifference with which his extraordinary confession was received. The whole thing is only too typical, we fear, of the national apathy towards art and architecture. Could such a shameful revelation of utter ineptitude have been made in any other country of first-rate importance without exciting a storm of righteous indignation?

Merulius lacrymans.

Some time ago, in commenting upon a law case in which a builder and an architect were cast in heavy damages because they were held to be responsible for the ravages of dry-rot in a building upon which they had been engaged, we commented upon the absolute helplessness of the victims, and we suggested that steps ought to be taken to protect architects against liability for circumstances over which they have no control. We thought that, as a first step towards this very necessary measure of justice, the R.I.B.A. would do well to institute a searching scientific and practical inquiry into the natural history of dry-rot, so as to place itself in a position to make an authoritative pronouncement on the subject, which should serve to fortify the architect against the immediate causes as well as against the remote consequences of this insidious plague. The Institute has at length issued a circular upon the subject, which we have reproduced in another part of the present issue. We regret that the Institute has not seen fit to deal with the matter more thoroughly. Instead of conducting or instigating an exhaustive investigation, the Institute contents itself with publishing a few extracts from a leaflet issued by the Board of Agriculture and Fisheries in October, 1909 (which was dealt with at the time at considerable length in this Journal), with the addition of a few more or less colourless and anæmic observations, which merely leave the question as it was found. Nothing is added to the architect's knowledge of the subject; and the deduction from the data, that "these are conditions over which architects have obviously no control," is but little likely to strengthen his hands in defending an action for damages. The gist of the whole matter is that when dry-rot causes injury to property the aggrieved client has not much difficulty, in the present state of knowledge or of ignorance in the matter, in convincing the judge and jury that, since he has suffered material injury, he is entitled to compensation. Yet the parties who are called upon—possibly to their own ruin—to pay him that compensation—are as innocent of the cause, and as helpless against its operation, as he is himself. We had looked to the R.I.B.A. for strong insistence on the architect's point of view, and for a consequent amelioration of his present unfortunate position in the eye of the law, and we must confess to considerable disappointment at the Institute's feeble statement of his case and half-hearted championship of his cause.

The Aggressive Cemetery.

The architectural amenities of Edinburgh are threatened. The Dean Cemetery is to be extended northwards to the Queensferry Road, "that old thoroughfare of traffic to and from the North," which is to be faced with a length of wall 10ft. high. The Dean of Guild Court has consented to the scheme, merely stipulating that the wall shall not be of the prison or barracks type, but shall possess "architectural features." These, no matter how artistically they may be designed, will not compensate for the view which the wall will shut out. As a writer in the "Scotsman" comments, "It does not appear at all probable that any available architectural treatment can to an important extent mitigate the essential objections to a structure that must, in defiance to all the canons of taste, shut out light and destroy the sense of proportion and perspective belonging to an admired city vista and promenade." It is, by the way, one of the ingenious theories of those who like to "account for things" that because any kind of building certainly shuts out light and air and perhaps obliterates a vista, its builder is under a moral obligation to make what compensation he can afford by making his structure goodly to look upon. It is suggested that, instead of the proposed boundary wall, ornamental railings backed by trees and shrubbery should be substituted. This were to choose between two evils; and there must be many persons who would prefer to have the often æsthetically hideous intimations of mortality—tombstones and more aggressive memorials—quite effectually screened off from the public gaze. The cemetery difficulty is one

that is going to give the town-planner a great deal of trouble, because it is very inconveniently entangled with strong sentiment. It is mainly sentiment that, from the days of Sir Thomas Browne's eloquent advocacy of "Urn Burial," has prevented the general adoption of the only rational and sanitary system of disposal of the dead. In the present case, however, sentiment is as yet on the æsthetic side of the argument, and perhaps it would be possible to make an effective use of the Town Planning Act in preventing the undesirable encroachment.

Ensemble and Detail.

The town-planning spirit is being infused into writers in the newspapers. For example, an annotator of "Current Topics," dealing with projected developments in Fitzalan Square, Sheffield, does not "think the matter ought to be treated" in a "haphazard, piecemeal, penny-number fashion. Let us consider first," he says, "whether we want statues at all. Then whether one, six, or a dozen would best fit in with the general scheme. . . We want the thing to be treated from the point of view of the Square first. If we leave it to the fantastic imagination of our councillors, we shall have it resembling the work-yard of a monumental mason." This writer, for all that his language is so ruggedly picturesque, evidently has (to adopt the courtly phrase of Henry the Eighth) "the right sow by the ear." He cares more for the ensemble than for the detail, and thereby manifests that he is of the rapidly growing band in whom the leaven is beginning to work. A statue may, and it will, be a separate ecstasy, but at any rate it must bear itself modestly in conformity with a general scheme. One need not go all the way with Ruskin in his saying, with all the emphasis of italics, that "*a great architect must be a great sculptor & painter,*" which is as extravagant as his further engaging proposition that "in modern days we have no architects"; but it is clear that the decision as to whether a statue, or a dozen statues, should or should not be put up in a square should not rest with a town council, but with a committee of taste, on which both architects and sculptors should be adequately represented. It is probably some such idea as this which the Sheffield writer intends to convey. It is encouraging to find that writers of his stamp are popularising the subject of town planning.

Conditions of Contract.

The conditions of contract relating to proposed new council schools at Waterloo, Liverpool, having been considered unsatisfactory, the Lancashire, Cheshire, and North Wales Federation of Building Trades Employers issued a circular strongly advising members not to tender for the work. Upon this subject we are now in receipt of a copy of a further letter, from which it will be seen that the matter is in a fair way towards settlement. The letter is as follows:—

"*Lancashire County Council.*

Council Schools, Waterloo, Liverpool.

Conditions of Contract.

"Referring to my circular letter of the 14th inst., in which, at the request of the Federation, you were asked not to tender for the above, I have pleasure in informing you that Mr. Henry Littler, the County Architect, invited the Liverpool Association to send a deputation to Preston to meet Mr. Harcourt E. Clare, the Clerk to the County Council, and himself, to discuss the objectionable clauses. The deputation attended at Preston and were successful in practically getting all the objectionable clauses removed. Mr. Clare is going to redraft the conditions of contract, and submit same to this association for consideration. With regard to the particular job at Waterloo, Mr. Clare has written to the Education Authority at Waterloo advising them not to open any tenders that may have been sent in, and to advertise for tenders later on, after the conditions of contract have been drawn up and agreed to by this association. I may say that Mr. Littler informed us that the local Education Authority had already agreed not to open any tenders that may have been received. You will see from the above that the result of the action taken by the Liverpool Association is highly satisfactory." Here, once more, we have very gratifying proof of the efficacy of sweet reasonableness when supported by prompt and energetic corporate action. Observation convinces us that many corporations, in issuing unsatisfactory conditions of contract, are merely following a precedent which has been allowed to become established through the former lack of the means of organised representation among builders; and that, in most instances, all that is required is a temperate but firm statement of the grounds of objection. Architects will note with interest "the sincerest form of flattery" implied in this application of a method which their Institute has often employed with similar signal success.

Gothic and Stained Glass.

The colour question being specially topical just now, it is interesting to glance at a fascinating phase of it which is dealt with by "L. March Phillipps" in an article on "Stained Glass Windows" contributed to the current "Contemporary Review." The writer delves fairly deeply into the origin of things. What, it is asked, are the motives which underline mediæval strenuousness? And the answer is supplied that the chief and common motive is an extraordinarily vivid consciousness of the significance of materialism. Hence mediæval or Gothic art is remarkable for its extraordinarily vivid representation of the life it proceeded from. The soaring lines and needle-like spires, with their impulse of actual ascent, are an emphatic expression of literal-minded piety. Similarly significant is the "note of strange, deep colour, solemn and dreamy," of the Gothic interior. "No one can submit to the influence of one of the great French interiors without perceiving that its total emotional effect was the end aimed at and steadily kept in view." By way of Venice, the East "darted into the heart of Europe a motive that was to produce great effects in European art," and that motive was "the recognition of colours as in itself a sufficing artistic ideal." This is the secret of Venetian colour—it is used in an Eastern way, not to define form, but for its own sake. The writer thinks, therefore, that between stained glass and Gothic architecture there is a certain incongruousness of idea, which is precisely the same in character as that which seemed to exist in mediæval life itself—"between its strenuously active impulses and the mystical contemplative instinct which so strangely haunted it." Altogether the article is a feast of fine things, and should not be missed by the architect who does not disdain an occasional stimulus to his æsthetic emotions.

IMPORTANT ANNOUNCEMENT.

Next week's issue of the Journal will be the first number of a new series, under the title of "The Architects' and Builders' Journal." As we have already announced, Mr. H. H. Statham, F.R.I.B.A., who is certainly the *doyen* of architectural editors, will henceforth be associated with the editorial conduct of the Journal, which will regularly include contributions from his pen. The number of pages will be greatly increased, there will be more illustrations, the paper will be of better quality, and the typographical arrangement and general appearance of the Journal will be greatly improved. We believe that this forward movement will indisputably establish our claim that the "Architects' and Builders' Journal" is the most enterprising class periodical in existence, and that it is the leading organ of the architectural profession and the building trades. Indeed, our ability to take this important step in advance should speak eloquently of the position of influence to which the Journal has attained. To maintain and improve that position, neither pains nor expense will be spared. The high esteem in which the Journal is everywhere held is our incentive to further strenuous endeavour, and we feel every confidence that the new departure will be crowned with still greater success.

NOTES AND NEWS.

Mr. E. T. Hall.

The Presidents, Vice-Presidents and Council of the R.I.B.A. have entertained Mr. E. T. Hall at a complimentary dinner as a mark of appreciation of his services to the Institute. Mr. Hall has been a strenuous worker in connection with the arduous labours of the new Royal Charter. The new by-laws, made under it, will, ere this appears, have probably received the assent of the Privy Council.

* * *

Paisley Abbey.

At a recent meeting of the Paisley Town Council a letter was read which had been received from Mr. James H. Dunn, The Mound, Castlehead, with reference to the improvement of Paisley Abbey surroundings. In the letter Mr. Dunn stated that the improvements carried out in Paisley during recent years had been most noteworthy. There was, however, another of some importance in prospect—he referred to the demolition of the old buildings which obstruct the view and mar the grandeur of the Abbey. He understood the Council desired to acquire the property in Smithhills which alone remained to enable them to open up the entire Abbey frontage to the street, and he had therefore pleasure in offering the Council the sum required to meet the purchase price (£600), so that this part of the scheme at least might be proceeded with in the course of next year.

* * *

Reinforced Concrete Sleepers.

The reinforced concrete railway ties invented by Mr. L. J. Riegler, of Pittsburg, placed on a section of the Pennsylvania lines, where the traffic is heavy and the trains are run at high speed have in two years shown no signs of deterioration. The tie is a concrete block internally reinforced with two 1½in. rods extending throughout its length, one near the top and one near the bottom. The sides are encased with ⅜in. steel, bent in channel shape, and lapping over on the top and bottom of the tie about 1½in. Prongs projecting from the laps are turned into the concrete, and the steel sides are further secured by three flat straps across the top and bottom, bolted to the sides to prevent

them from spreading. To take the wear of the rails, plates are set in the top face of the tie. These are formed with recesses to receive the base of the rail, which is secured with two 1in. bolts. Where the rails are used for signal circuits, or where for other reasons it is desired to have them insulated from the ground, the lap of the side pieces is cut off beneath the tie plates and bent into the body of the concrete. The ties are 8½ft. long, 12in. wide, and 7in. thick, and owing to their larger bearing area, 15 of them suffice where 18 standard wooden ties would be required.

* * *

New A.R.S.A.'s. Two new Associates of the Royal Scottish Academy were elected recently to the Associate class:—Mr. Fiddes Watt and Mr. John Duncan, both painters, of Edinburgh. Mr. Watt, a portrait painter, is a native of Aberdeen, and studied at the Academy in Edinburgh. He is at present engaged on two presentation portraits, those of Professor Ogston, of Aberdeen University, and of the Rt. Hon. R. B. Haldane, M.P., for the Benchers of Lincoln's Inn. Mr. Duncan comes from Carnoustie, Dundee, and studied in Germany, being afterwards engaged in an educational position in Chicago. His work has been mainly in mural decoration.

* * *

The Flora Bust. A further stage has been reached in the controversy over the supposed Leonardo da Vinci bust purchased by Dr. Bode for Berlin. An analysis made by Dr. George Pinkus of a sample of wax from the interior of the bust shows that the wax is a composition of lac, spermaceti, and beeswax. This composition, Dr. Pinkus points out, is identical with that used by Richard Cockle Lucas in busts that are his undoubted work; and from this he concludes that the Flora bust is the work of Lucas and not Leonardo da Vinci, more particularly as spermaceti was not known before the year 1700. It is needless to say that Dr. Bode does not admit the accuracy of this analysis, or even that the wax analysed by Dr. Pinkus came from the Flora bust, though from the particulars given there seems no doubt as to its authenticity. The statement that spermaceti was not know before 1700 is, however, disputed in several quarters, and would seem difficult to uphold. This controversy has had its uses, perhaps, in exposing much of the hollowness of modern art criticism, which is more concerned with names than with merit. It is not denied now that the "Flora" bust is a great work of art; but only the chance attribution of the work to one of the Great Masters has proclaimed the fact.

* * *

The Roman Villa at Northfleet. The excavation of the Roman remains of Ebbsfleet Pleasure Ground in Northfleet, which has been interrupted by the winter to some extent, has resulted in some important discoveries. It has been found that about 2ft. below the foundations another building exists. Although nearly 400ft. of the foundation walls of the upper building has been uncovered, nothing can yet be said regarding the nature of the structure existing below it. When the work was first undertaken it was not thought that it would prove so extensive. The discoveries, however, although they have greatly increased the labour and the cost, which is being borne by the Associated Portland Cement Manufacturers (Limited), under the supervision of Mr. W. H. Steadman, have immeasurably raised the value of the antiquarian knowledge to be derived from the work. A valuable "find" is a large kiln built entirely of blocks of chalk lined with red clay, burnt through the process of firing to red brick. Buildings erected wholly or partly of blocks of chalk are to be found in the chalk district dating back to the Norman period, or even earlier, and Roman kilns built partly of chalk are comparatively common. This new kiln is uncommon, on account of both its material and its size. Coins, iron, and pottery ware have also been found.

Building on Forecourts. Correspondence in a London newspaper calls attention to the progressive uglification of London by the practice of building on forecourts, by which, it is complained, many London streets have been narrowed and spoilt. Some contend that if these forecourts are to disappear, it would be better to "take them in" by widening the roads.

* * *

The Late Sir Thomas Drew. As an addition to the short note we published recently we are enabled to give, by the courtesy of "The Irish Builder," a list of the Sir Thomas Drew's principal works:—The new Cathedral, Belfast; the Ulster Bank, College Green; Messrs. Atkinson's premises adjoining the bank; the graceful church of St. Kevin, South Circular Road; Messrs. Robert Smyth and Co.'s premises in Stephen's Green; Clontarf Presbyterian Church; the beautiful new church of Maralin, Co. Down; the restoration and practical reconstruction of Waterford Cathedral; the Trinity College Graduates' Tercentenary Memorial Building; alterations to the Library and Reading Room of Trinity College; the spiral staircase to the organ chamber of St. Patrick's Cathedral, erected in 1901 at a cost of £11,000; the fine Law Library of Ireland at the Four Courts, Dublin, for the Honourable the Benchers of the King's Inns; the Rathmines Town Hall; restoration of Coleraine Church; improvements at St. Nicholas' Church, Galway; very large additions to Lough Rynn, Dromod, Co. Leitrim, for the Hon. Colonel Clements, D.L.; additions to Coolarigan, Kilcock, for Mr. R. M. Wilson; additions to Currygrane, for the late Mr. James Mackey Wilson, D.L.; additions to Killagree, Co. Kildare, for Colonel St. Leger-Moore, C.B.; additions to Knockrobin, near Tullamore, for Colonel Biddulph, D.L.; additions to Castle Archdale, Co. Fermanagh, and a host of other works, large and small, on all of which he brought to bear great skill and refinement, and an intensely painstaking measure of care.



Photo: E. Dockree.

HUNGER HILL, COOLHAM, SUSSEX: THE DRAWING-ROOM FIREPLACE. E. TURNER POWELL, F.R.I.B.A., ARCHITECT.

The Zona Monumentale.

The answer given by the Minister of Public Instruction to an Interrogation on the subject of the Zona Monumentale shows that there is little hope of any help from that quarter. Signor Daneo airily dismissed all the criticisms offered to the work of the Commission. They were the outcome, he said, of a false spirit of æstheticism and snobbishness. Italian ideas should be more manly and better balanced. It is difficult to understand why the preservation of ancient monuments of Rome is snobbish or that it is more manly and better balanced to sweep them away. Perhaps modern Italy is tired of its illustrious past and its illustrious art.

* * *

Greater Berlin.

Plans for a "Greater Berlin" have just been worked out as the result of a prize competition between leading architects, builders, and town planners. Prizes of £1,250 each have been awarded for schemes which provide for three generations into the future and contemplate the Berlin that will be in the year 2000, which is fixed as the period when the capital will teem with a population of 10,000,000. It is proposed to avert the evils of such an immense population by a far-sighted plan to regulate the construction of street buildings and parks so carefully that overcrowding will be practically impossible.

* * *

Gourock and Greenock.

The workers in the Woolwich Torpedo Factory who are to be transferred to the new factory at Greenock are by no means satisfied with the housing accommodation to be found there. A deputation of the men has just paid a visit of a week's duration to the Greenock district. The delegates said the state of things in the Greenock district, compared with their Woolwich and Plumstead surroundings, almost appalled the delegates. Many of the so-called houses offered to the men were unfit for habitation, and one delegate considered that they should be ruled out of the consideration of Arsenal workmen. The bare-footed and bare-headed children in the streets were a pitiful sight. Staircases and "closes" in common occupation were objectionable. There was practically, so it is alleged, no housing accommodation in Greenock within walking distance of the factory. With regard to Gourock, the suburb of Greenock—the town was much cleaner, but there was no housing accommodation at present. The deputation felt that none of the Woolwich people would care to live in any of the houses at Greenock that were to let for less than 8s. per week. Strong objection was taken to the "holes in the wall" recesses in the living rooms, in which Scottish children sleep. The deputation viewed with serious alarm the proposals of the Admiralty to take the men down in large batches, and strongly urged that all possible means should be adopted to ensure that the rate of transfer shall never exceed the new accommodation which is to be provided by local garden city associations and builders.

* * *

The Sensitive Lawyer.

The curious sensitiveness of the modern lawyer to draughts and noises is the subject of comment by the "Newcastle Chronicle," which wonders "whether it is the architects who have lost their skill or the big-wigs who are becoming unduly sensitive." "Though," says our contemporary, "they possess buildings of far greater magnificence than any that were known to their fore-elders, yet they grumble about draughts and noises as though our splendid apartments were veritable caves of the wind. The judges have had many hard things to say about vagrant currents in the law courts, and even bishops are inconvenienced by 'cauld blasts' in the middle of their backs. At the Old Bailey, however, we get a boomerang echo. According to Mr. Marshall Hall, it not only 'returns and strikes you on the head,' but also mocks you like a laughing jackass.' Now that the High Courts of Justice is being extended, one hopes the similar evils may be avoided." Yet it is not so long ago that judges were complaining about the stuffiness of their courts, and ordering all the windows to be opened, to the evident discomfort of the other occupants. One judge, if our memory does not play us false, even went so far as to break a window which could not easily be opened. The explanation will be found, we think, to be a matter of personal predilection. Observation has shown us two classes of brain-workers and deep thinkers, those who do their best work amid a free play of air-currents; in fact, under the stimulus of draught; and those who cannot settle down to work comfortably unless they are quite warm, and the surfounding conditions are, to put it mildly, sultry to a degree. We have come into contact with a great many men in each class, and whether contrary to accepted medical opinion or not, we are prepared to vouch for the accuracy of our statement. But the lot of the poor architect who has to design buildings which may be used by men of either class is indeed a hard one.

* * *

Putney Vale.

As the result of a deputation to the Lord Mayor, a meeting will be held at the Mansion House on April 26, to secure financial support for the scheme for the extension of Wimbledon and Putney Commons. The land it is desired to purchase extends from Putney Vale to Coombe Bridge, and through the greater part of it runs the picturesque Beverley Brook. It was stated by a member of the deputation that there was a scheme for the erection of some 10,000 houses to the south of the vale.

* * *

The Forth Bridge.

Rumours have recently been in circulation in regard to the Forth Bridge. The statements were to the effect that under the strain of the large Atlantic type of engines, which the North British Company built four years ago plates in the bridge were starting, that in other places it was exhibiting unexpected signs of decay, and also that it was swaying more than it did for many years after its completion. At the recent meeting of the North British Railway Company an authoritative statement was made by Lord Dalkeith, the chairman, who said that any statements about the insecurity of the Forth Bridge were purely imaginary. The bridge was in as perfect a state as it was possible for anything to be in. A speed limit had been fixed for crossing the bridge, but there was nothing wrong with the structure. There was no engineering structure in the world in a more perfect condition.

* * *

Vanstead Flats.

People who visit Wanstead Flats during every season of the year will find that a welcome transformation has been made in the appearance of that huge playground. For months past large gangs of men have been hard at work in converting the barren surface into turf-land, and the result will prove a great boon not only to cricketers and others, but also to the general public. Some dozens of acres have been treated and scores of men have been found employment. The work has been undertaken by the local Distress Committees, with the assistance of the Local Government Board.

* * *

Land at Salisbury Plain.

Mr. H. M. Cobb, F.S.I., sat as arbitrator in the case of Holloway v. the Secretary of State for War, a claim for compensation in respect to 913 acres of land at West Lavington, compulsorily acquired. A valuation of £24,617 was advanced on behalf of the claimant, taking land at £15 per acre, with 25 per cent. for compulsory sale and consequential damage at £7,498, including £2,000 in respect of the Manor House, which had been enlarged and improved by the owner, and would be prejudiced by bringing the firing point of the artillery ranges within 55 chains of it. The case was adjourned.

* * *

The Attractive dwelling.

A correspondent, with the coming holiday season evidently in mind, sends to "The Welsh Coast Pioneer" a suggestion which, while exhibiting the harmlessness of the dove, shows not a little of the wisdom of the serpent. Briefly his idea is that the holiday maker is attracted to the houses which have a nice little flower garden; *ergo* those householders who desire to let their rooms will do well to first cultivate their gardens. He quotes the late Henry Ward Beecher on the point. "But no matter how rude the cabin, or rough the surroundings, if we saw that the window held a little trough or box for flowers, and that some vines or climbing plants twined about strings let down from the eaves, or verandah, we were confident that there was some taste and carefulness in the log cabin. A patch of flowers came to signify to us, kind people, clean beds, and good bread."

SKATING RINK, FINSBURY PARK, N.

This building is erected on the site of the old tram sheds and stables, and leased from the London County Council. The site was cleared in two weeks, and the whole of the building erected in 8 weeks time, two weeks less than contract time. The buildings are of a permanent character, and finished in quite a different manner to those usually erected for skating purposes. The building externally is in yellow stocks with red quoins and plaster enrichments. Internally the main rink annex is finished with fibrous plaster, Georgian in character, all modelled to the architect's design. The floor of the rink is in rock maple upon felt and joists, and the space outside the rink and also to galleries finished in special paving, which allows the skaters to patronise all parts of the building on their skates. The whole of the lavatories and sanitary fittings are specially selected for the purpose required. The lighting has been specially considered, and the large electroliers are so designed to allow of an interval arc lamp being used, and are all worked in series. Special limelight stands have been arranged for display purposes. The main entrance has marble floor and Fassio marble wall pavelling in Sienna and Pavanatso with enriched frieze and ceiling. The internal wood-work is in oak and American whitewood, stained and polished. Messrs. F. M. Thompson and Sons, of Nottingham and Louth, were the general contractors, and the following are some of the contractors and specialists employed upon the building:—Bricklaying, mason, plumber, slater, plastering and glazing, Messrs. Jones and Andrews, Beckenham; ornamental plasterwork, Messrs. DeJong and Co., Camden Town, London; ironwork and roofing, Messrs. Richard Moreland and Co., Goswell Road, E.C.; the glazing has been done on the special system of Messrs. Helliwell and Co., Brighouse; marble work, Messrs. Fassio, Ltd., 59, Chancery Lane, W.C.; sanitary fittings, Messrs. Doulton and Co., Lambeth; electrical work, Messrs. Golding, Hackney; electrical fittings, Messrs. Evered and Co., Drury Lane, W.C.; the whole of the arrangements for warming, Messrs. J. F. Phillips and Son, 21, Victoria Street, London. The general foremen were, Messrs. Ward, Williams and Rabbits, and the clerk of works, Mr. Lewis. The architects are Messrs. Fair and Myer, A.R.I.B.A., 39, Furnival Street, London, who have carried out various other rinks in London and in the provinces.

CASTLES IN THE AIR.

By C. F. A. VOYSEY.

Mr. Voysey at the outset of his lecture at the Carpenters' Hall informed his hearers that he would give them something which was entirely dependent on their mental vision. Many a time, he said, have been urged from this hall the possibilities and limitations of materials to craftsmanship. Possibilities and limitations both physical and spiritual must be as interesting, and underlie our understanding of everything. Has it not been man's law of beauty and fitness which has ever acted as his lodestar, guiding him onwards and upwards? All we can say or do, to help to stimulate beauty, helps the advance of mankind. Shall we bewail our position; blame the government—anathematise the machine, and dukes—shall we rouse ourselves into passionate antagonism against what we believe to be our "monster"? We think the world would be a paradise if our particular monster were beheaded. It is a mercy that men can never be able to think alike. The world would never make any progress if they did. All artists must feel that their great vocation is to create sensibility. Without sensibility we cannot feel refinement. Countless petty annoyances let us see that it is our attitude towards evil which makes it a blessing or a curse to ourselves. We are speaking of our troubles as affecting ourselves and not others. Has ever any craftsman derived pleasure from any work without there was some difficulty in it to be overcome? Difficulties are not members of the same family as troubles. It is more helpful to be able to see a good principle in pain than to run away from it. The craftsman begins by training his hand. Do we not say, when we seen a fine piece of work, "See the master's hand!" By this, do we not mean that he has trained his hand to perfection?

Beauty.

Towards the building our of castles in the air have we not advanced in one condition—the subjection of the material to the spiritual—the power of the soul over matter? We must not lose heart because of difficulties, the measure of our work is taken by the overcoming them. Thought and feeling then must be the mortar with which we bond in course by course the walls of our castles in the air. The study of history teaches us that there is no finality to the development of the human mind. We are all charged with the duty of self-culture or castle building.

Beauty is to be held up for admiration, not forced down our throats. A man must keep up a longing for beauty in all its forms, and so add to the building of castles in the air. They are castles in the air that we can pull down and rebuild as we like, they require no money. Pleasure is only a consequence of goodness; when sought for itself it is a poison. So beauty when sought not for love or religion, but for itself, is a failure. If to please were the sole claim of all art we should not feel the need of greater sensibility, for sensibility is pain. When people are thoroughly abandoned to self and pleasure they lose their sense of beauty. The pursuit of pleasure and a life of ease lead to a sense of mind not suitable to beauty. Ornamentation of architecture like verbosity of literature is a poisonous excrescence. We want moral qualities which are as old as the hills, and never change. These qualities bring forth good fruit under any conditions. These moral qualities are precious materials, and the only ones for our castles in the air. Only what is true can survive time. We have to be looking everywhere for beautiful new materials. Every portion of our castle must be the best of its kind, and then will bear visible record of invisible things. It is the artist's business to find out what makes for law and order. Until we come to realise the blessedness of toil, and the beneficent power behind it, then only shall we see that it is a blessing in disguise and search in it for good. The more sensible we are, the more we shall meet with troubles. Let us not deceive ourselves by going forth as artists, when our main object is to make money, and degrade our art. We must more and more learn to sacrifice body to soul and value giving more than getting. The close attention which we give to the Orders of Architecture and other foreign symbols are in the end useless if we are not castle building all along.

Shun the Ugly and Impure.

We must believe that building castles in the air will lead us to shun all that is ugly and impure. There is a tendency nowadays to specialise in our use of material. This may increase our capacity in the direction which we choose, but it may hinder our mental activity. We cannot be craftsmen until we instil into our homes those mental qualities of Castle Building, and also introduce them into the Beelzebub of business. Corporations are doing their best to turn men into machines, but some companies, notably the Carpenters' Company, are doing their best to encourage those qualities which we are discussing to-night. May we not take encouragement that when history compares us with the craftsmen of the 13th century—those men who always loved their crafts—were all familiar with beautiful legends and angels, as familiar with them as we are with policemen; will it not be considered more credit to us to have battled with the odds than those of the 13th century? The past is too often held up to make us ashamed—instead, we want encouragement to make us do better.



Photo: Topical.

FINSBURY PARK PAVILION AND SKATING RINK: VIEW OF LARGE RINK LOOKING TOWARDS THE ROYAL BOX. FAIR & MYER, A.R.I.B.A., ARCHITECTS.

Roller skating appears now to have become something more than a passing craze, a fact attributable, no doubt, to improvements both in the floors and in the skates. The majority of the skating rinks recently erected have few pretensions to architectural effect. The one illustrated above, however, is one of the latest and most luxurious.

The True and Beautiful.

We are drawn towards our fellow creatures by every atom that is beautiful. Some kind friends will say that our actions fall far short of our castle building, but shall we be better for never building them at all? Some of us spend most of our time on work for others which we hate and detest. Let us remember that it is no shame and disgrace to be doing this. In this, castle building may come as a help. To bemoan and chafe with our lot will help us not, but by determination to see the beautiful and true you will gain strength. We are surrounded by museums full of a heterogeneous mass of objects supposed to help us in our education. How little of it is really beautiful, and how have we gone back from that which is. Is it not because we have served idols and ignored the mental qualities which were necessary to produce them? Castles can be built by those who have never passed out of our country. All the material that is needed for them can be found in hearts and brains, and any nature can undertake them. The material for our Castles in the Air can come to us free—subject to no trades and tariffs. The many troubles which arise out of our daily occupation are the walls of our building. Colour and form and texture seldom appeal to the same mind in an equal degree. Several artists are discouraged when their work is finished because they find that it appeals to one faculty only. The machine has turned our thoughts to material things. We need castle building to help us to revive the spiritual side of our nature, and we believe that the artist while creating the beautiful must breathe into his creation the spiritual nature which will save our nation. As craftsmen we have to study convention. By convention I mean that blind following of customs, but even these sometimes have a practical meaning which cannot be ignored. If we can show that a vermiculated surface can express qualities that are not base, we will admit them for our castle walls, otherwise we will cast them out. We shall not regulate our requirements by money matters. There are many things that it is a pleasure to go without.

SOCIETIES' REPORTS.

Northern Architectural Association.

At a meeting on the 9th inst., Mr. G. T. Brown, F.R.I.B.A., president, presided over a large attendance. Mr. James Forbes, Middlesbrough, and Mr. C. D. James, South Shields, were both elected members. A selection from the prize designs and drawings submitted in the Royal Institute of British Architects' prize competition were on view. In connection with the competitions open to students of the association the assessor's award was read, and it was found on opening the sealed envelopes that the following gentlemen had been successful: — For measured drawings of existing work: Under 21 years, G. E. Charleswood; under 25 years, W. W. Nimmo. Architectural sketches: Under 21 years, G. E. Charleswood; under 25 years, W. W. Nimmo. For the best set of testimonials of study required for the Royal Institute's final examination, Wilfrid Lawson; and for similar drawings for the intermediate examination, Joseph Hill and S. W. Milburn were bracketed together. The Glover studentship, which, subject to certain conditions being fulfilled, carries with it the Glover Medal and a prize of ten guineas, was awarded to Joseph Hill. The annual meetings of the Students' Classes Club and Sketching Club were held, the annual reports adopted, and committees chosen for the ensuing session.

Leeds and Yorkshire Architectural Society.

At a general meeting held on Thursday, March 17th, Mr. Percy Robinson, F.R.I.B.A., occupying the chair, the election of the officers for the forthcoming session took place, the following gentlemen being appointed to the several offices:—As president, Mr. S. D. Kitson, M.A.; vice-presidents, Mr. R. P. Oglesby, and Mr. A. E. Kirk, A.R.I.B.A.; hon. treasurer, Mr. R. Fielding Farrar, A.R.I.B.A.; hon. librarian, Mr. Fredk. Musto, A.R.I.B.A.; hon. secretary, Mr. R. W. Thorp, A.R.I.B.A. To the Council, Mr. C. B. Howdill, A.R.I.B.A., Mr. J. F. Walsh, Mr. G. F. Bowman, Mr. H. A. Chapman, F.R.I.B.A., Mr. J. C. Proctor, A.R.I.B.A., and as associate member, Mr. W. Whitehead, A.R.I.B.A.

In proposing the election, Mr. W. H. Thorpe, F.R.I.B.A., acknowledged the society's indebtedness to Mr. Percy Robinson, the retiring president, who, he said, had done yeoman service on its behalf, and whose untiring efforts towards the furtherance of its aims were appreciated by every member, sentiments which were endorsed by Mr. H. S. Chorley, M.A., who seconded the proposal. Mr. Kitson then read his paper on the life and work of "Carr, of York," an architect who flourished during the eighteenth century, and to whose hand so many of the Yorkshire Georgian mansions owe their stolid simplicity. He is perhaps best known as responsible for the erection of Harewood House, where he came in contact with the brothers Adam, a circumstance which considerably affected his subsequent work. Commencing life as a mason, with the traditions of several generations of mason forbears, he was one of the last links with the mediæval past when the draftsman development.

THE MEDIÆVAL HOUSE.

By J. A. GOTCH, F.R.I.B.A.*

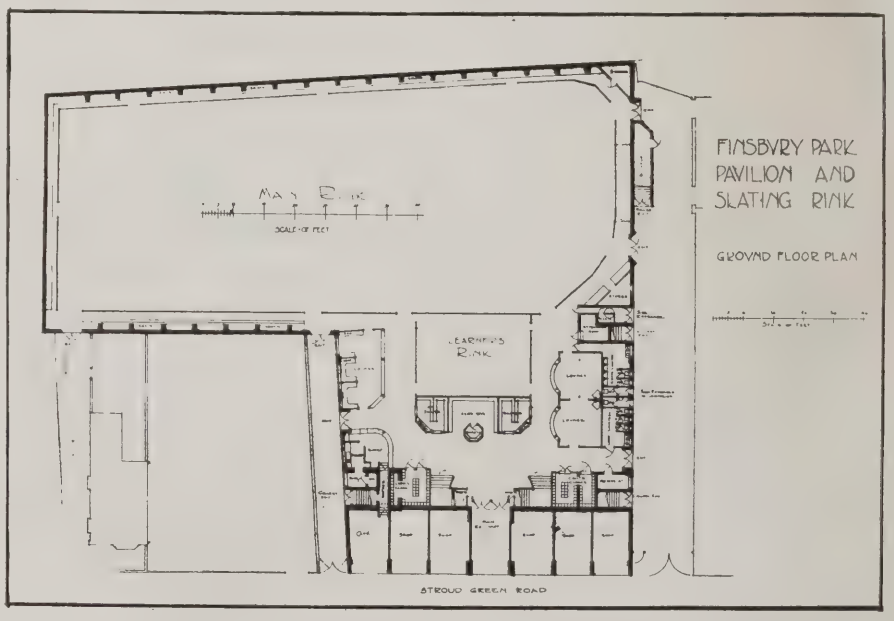
Mr. Gotch created an atmosphere for his subject by a prefatory recapitulation of the story of Gamelyn and his brother, from the pages of Chaucer.

The interest of that tale lay in the picture which it incidentally portrays of a mediæval house; how the house had to be planned to resist violent attacks, and how jealously its narrow entrance had to be guarded. We see the courtyard with its well. We see the hall and its screen with the pantry close at hand; the cellar where Gamelyn replenished his wasted strength; the turret to which his brother fled, the solar from which he emerged to upbraid the headstrong young man. Let us see how far we can substantiate this mental image from some of the mutilated houses that have come down to us.

Some Surviving Mediæval Dwellings.

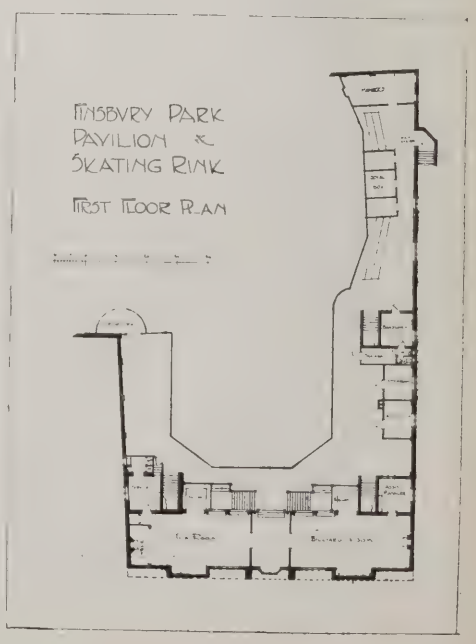
The accommodation in a mediæval house was not extensive. Haddon is not typical in this respect; it was the home of a very considerable personage, and much above the average in point of size. But imagine a smaller Haddon and you get a good idea of a mediæval house. There is the main gatehouse, inaccessible to all but people on foot or horseback; there is the courtyard, and beyond it the hall; there are turrets and

* Abstract of a paper read to the Architectural Association.



HUNGER HILL, COOLHAM, SUSSEX.

This house is built partly of local stone, that under the three gables being Sussex marble quarried from the estate. All the external woodwork is of oak, the upright framing being of oak 4½in. thick. The whole of the roofing is of old stone heeling. On the west side there is a paved walk of Sussex marble roughly quarried. Oak shingles are used over the garden entrance, and the projecting bay of the hall is built entirely of oak, the corner posts being 12in. square with heads and sills to correspond. The oak room is panelled entirely in oak, and the chimney-piece is of sandstone with oak beam over the opening, and above it a recessed panel in enriched plasterwork. The dining-room fireplace is of Sussex marble polished, the recess being formed of tiles in various patterns. The charm of the house is to a great extent due to the textures of the different materials employed. The architect is Mr. E. Turner Powell, F.R.I.B.A., 25, Queen Anne's Gate, Westminster, S.W.





View from the Lawn.



Photos: E. Dockree.

The Paved Walk.

HUNGER HILL, COOLHAM, SUSSEX. E. TURNER POWELL, F.R.I B A, ARCHITECT.

This house is built partly of local stone, that under the three gables being Sussex marble quarried on the estate. Oak shingles are used over the garden entrance, and the projecting bay of the hall is built entirely of oak, the corner posts being 12in. square with heads and sills to correspond. The paved walk is laid with Sussex marble roughly quarried.

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towers: there are the screens of the hall giving access to the pantry, the buttery, and the kitchen passage; there are several rooms which might stand for the spence; and the solar, or principal room of the lord, is represented by the quaint panelled parlour.

Stokesay Castle is perhaps nearer to Chaucer's description. The gatehouse, it is true, was rebuilt in Elizabeth's time; but restore the walls which abut against it to their ancient height and you get just such a courtyard—well and all—as that across which Gamelyn chased the porter. The hall, too, is such a one as might have been filled with the abbots and priors and men of holy church, who, full of meat and wine, mocked Gamelyn in his distress, and were so handsomely cudgelled in return. At Stokesay the fire was placed upon a hearth in the middle of the room, as it was likewise at Penshurst; at Haddon, on the other hand, the equally frequent alternative was adopted of placing it in a recessed fireplace with a proper smoke-flue.

Stokesay has no little turrets, but it has a large strong tower, where the false brother might have felt safe. It has, too, an outside staircase, up which he might well have fled to a loft; it has a solar with windows looking into the hall; and at each end of the hall is a room which might have been the spence.

The Solar Chamber.

The solar was originally the small private room of the lord—probably, in quite early houses, the only private room of the house; the hall itself being the day-room and night-room of the whole household. In Chaucer's time it had grown into a short series of similar rooms, but they were still few in number.

The Kitchen.

One important room which was to be found in every mediæval house, was the kitchen. In early times it was second in importance only to the hall; it was connected to the lower end of that apartment, while the solar was usually attached to the upper end. The kitchen was not infrequently built of wood, or of wood and plaster, a mode of construction which was adopted in the majority of houses, and which accounts for their disappearance. Only a certain proportion of those which were built in stone have survived.

But kitchens were not always built of wood; many of them were very notable buildings of stone. Of early examples there are few, if any at all. But there are several of later times, all of them independent structures connected to the main building by a corridor. Among the more notable are the kitchen of the monastery at Durham, that of the abbey at Glastonbury, that of the house at Stanton Harcourt, and that at Cowdray House. Most of these had several huge fireplaces in the walls, all of them had fine louvres, or ventilating turrets, carried on stone groining-ribs. Stanton Harcourt appears to have had an open fire on the floor, and its louvre is of wood; but the principle is the same in all cases—plenty of fire for cooking and plenty of ventilation for the smoke and smell. These examples were all attached to large establishments; in the case of smaller houses the kitchen was one among the rooms covered by the general roof. Haddon affords a good example of this kind, although it can hardly be considered a small house; circumstances, however, did not allow of a detached kitchen in this case.

The Internal Appearance.

But now, having got a more or less vague idea of the size, the accommodation and the appearance of a mediæval house built of stone, the interesting question arises: How did it look inside?

The only rooms which need detain us in this connection are the hall and the solar. The kitchen, for instance, would be clothed in its own dark livery of soot; the pantry, the buttery, the spence, and other inferior rooms would have bare walls or embellishments of a purely utilitarian character. But the family rooms received a certain amount of decoration, according to the wealth and taste of their occupants. The hall was usually a one-storey structure with lofty walls and an open-timber roof upon which the carpenters had spent their trained skill. It was lighted by windows upon which the masons had spent theirs. The mere elements of its construction, therefore, made it as handsome as a village church. But among the rich its walls were adorned in handsome fashion with beautiful hangings, some being of the most costly kind. Armour and trophies of the chase and of war hung here and there, and at night cast flickering shadows from the light of the fire and of great torches. The smoke eddied about in the upper regions, and finally made its escape through the unglazed windows or the louvre in the roof. Very few windows were glazed, but they were closed by means of wooden shutters, which were painted bright with the glowing colours of heraldry. Some few houses had their windows glazed in part, and Henry III. gave orders for the glazing of some of his with painted glass representing well-known stories, his favourite subject being the parable of Dives and Lazarus.



Photo: Topical.

THE FINSBURY PARK PAVILION AND SKATING RINK: THE LEARNERS' RINK, LOOKING TOWARDS THE ENTRANCE. FAIR AND MYER, A.R.I.B.A., ARCHITECTS.

The Finish of Walls.

The walls were very frequently plastered; and plastering was much more common in houses and churches than the restorers of twenty and thirty years ago seem to have been aware of. The plaster was not laid on thickly and brought to a beautiful even surface; on the contrary, it was quite thin, and showed the wavy surface of the wall. On the plaster were frequently drawn thin lines of colour, as though to represent the joints of stones. In the prior's chamber at Abingdon

Abbey, now a dark hayloft, the enterprising inquirer can still see the original plastering of six and a half centuries ago, marked out with just such lines.

Panelling was another method of covering the walls, or, as it was then called, "seeling." Orders were given by the King in one case to "seel" both the walls and the roof of one of his halls for a certain number of bays, in order to lessen the draughts as he sat on the daïs. Whether the panelling was framed together or merely consisted of boards it is difficult to say; but the examples of XIIIth century panelling are few, if any. The "seeling"—whichever form it took—was painted green and powdered with gold stars.

Prevention of Draughts.

There can be no doubt that Henry III., in the XIIIth century, strove to make his houses more comfortable than he found them. Even in those hardy times it was felt desirable to do something to lessen the draughts, to circumvent the weather, and to warm and decorate the rooms. The King possessed innumerable houses, large and small, in the southern and midland counties; and the orders given in respect of them are of great interest. Chimneys were built to many rooms to warm the inner air; porches and corridors were built to check the incoming of the outer air. At Evereswell a porch was made before the door of the Queen's chamber; at Oxford a fair and decent porch was ordered to the south door of the hall, another at Clarendon, and again at Marlborough and Kennington. At Westminster, in the year 1245, Edward Fitz-Otho was commanded to build a porch such as might become so great a palace so that the King might dismount from his palfrey in it at a handsome front. At Woodstock an aisle was made between the Queen's chapel and her chamber so that she might go to and return from that chapel with a dry foot.

In 1238 orders were given to glaze a window of one of the rooms at Westminster so that that chamber might not be so windy as it used to be. In another case two windows were inserted with white glass casements to open and shut; and at Northampton a glass window, which might be closed and opened, was made in the hall opposite the King's daïs, and painted with the figures of Lazarus and Dives.

There are several orders for louvres—one for the great hall at Woodstock in 1244; another, four years later, over a hearth of freestone, high and good, in the chamber above the wine cellar of the same house; and yet another in the hall at Winchester, to carry off the smoke.

Decoration.

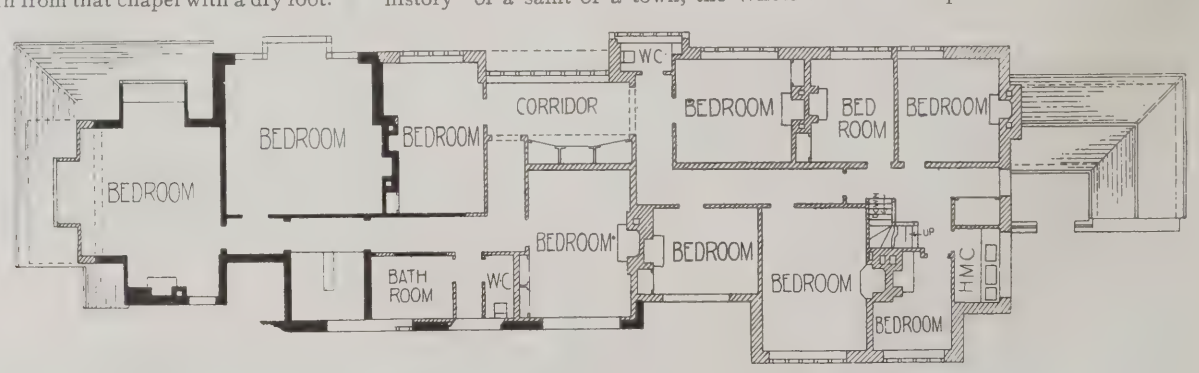
There are also many orders for decorating the various rooms, one of the most frequent being for the application of whitewash. The tower of Corfe Castle was ordered to be whitewashed externally; the new tower at Winchester to be whitewashed inside and out; the great hall at Clarendon, the tower at Guildford, the hall of the same house, within and without, were to be treated in a similar fashion. The Queen's chamber at London was to be thoroughly whitened internally and painted with roses; a chamber, chapel, and wardrobe at Nottingham were to be whitewashed and pointed lineally—like the prior's room at Abingdon. The favourite method of internal decoration, however, was to paint the walls green, spotted or scintillated with gold. Occasionally pillars were to be painted of a marble colour—so the decorators of twenty years ago had an august precedent for what we consider their enormities. Figure subjects were frequently painted on the walls or on the chimney; the "history" of a saint or a town, the Wheel of Fortune, the four Evangelists, or, once more, Dives and Lazarus. On the chimney of the Queen's chamber at Westminster was depicted a figure of Winter, which, as well by its sad countenance as by other miserable distortions of the body, might be deservedly likened to winter itself. On the wall at Winchester a map of the world was painted.

What would we not give to find some of these things now?

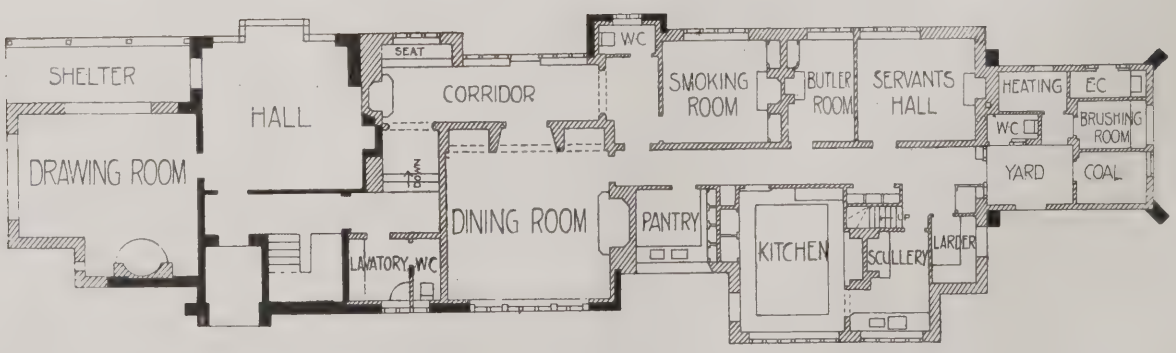
The Discussion.

Mr. Gerald C. Horsley was very much interested in the description of wall painting. It was a matter for regret so few examples remained. Beside the example at Abingdon Abbey he remembered another at the Castle of Coucy in France, where the underside of the stone steps in the circular keep had the joints suggested in coloured plaster with a double line, as against the single line at Abingdon. There still remained a few Saxon towers in England with old plaster on, as at Oakley, in Bedfordshire. He presumed that the practice of exterior plastering and whitewashing was adhered to owing to its cheapness in comparison with stone.

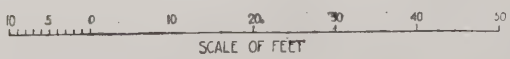
Mr. Leonard Elkington. The question of mediæval furniture was one of some interest—as, for instance, the advent and improvement of the bedstead. The inconvenience of the mediæval house was explained by its being constructed for defence. He desired to know which was the earlier type of chimney—the hooded or the recessed. He believed it to be the latter. The hangings used in these houses were considered an invaluable asset, and were greatly prized by the owners. They were often moved about to grace a gathering, or lent upon the occasion of some festivity.



FIRST FLOOR PLAN



GROUND FLOOR PLAN



HUNGER HILL, COOLHAM, SUSSEX. E. TURNER POWELL, F.R.I.B.A., ARCHITECT.

Mr. H. W. Brittan commented on the resemblance of the mediæval house to the scholastic establishments of the period. Dwellings were often damp; this being, probably, the reason that the solar room was found upon higher ground.

Mr. F. Dare Clapham mentioned that the lecturer had said nothing about site and aspect; but he concluded that houses were usually placed on a hill. In the examples shown the exterior stairs appeared to be roofed in; and he wondered if this was always the case.

The Chairman. Mr. Henry Tanner thanked Mr. Gotch for his excellent paper; and having asked whether the lecturer could give any information as to when wheeled traffic first commenced, made reference to the external whitewashing and wondered if by this white painting was meant.

THE DECAY OF WOOD CARVING.

BY JOSEPH ARMITAGE.

[These extracts from Mr. Armitage's lecture to the Leicester and Leicestershire Society of Architects directly bear on the craft about which he was speaking. But his paper was in the main a racy and interesting re-statement of art principles, in the course of which he put in an eloquent plea for colour architecture, and attacked certain contentions of Professor Blomfield in "The Mistress Art."]

The range of expression open to the art of the wood-carver pure and simple is, of course, limited. His material is perishable and liable to fire. The wood-carver must, from the beginning, realise that he is dealing with a humble material, he must be content to be the architect's poor relation, happy if he can produce what Ruskin called a "pleasing roughness." The great characteristic of wood is the grain. Whether it be straight or twisted into fantastic knots, it puts difficulties in the way of perfectly smooth and accurate finish. Looking at most modern work one feels that the grain spoils the effect, or, to put it in another way, one feels that the work would look better in a perfectly homogeneous substance, such as cheese. One wonders why a man should attempt to produce such marvels of accuracy and smoothness in such a stubborn and wayward material. In mediæval work, on the contrary, one feels that the carver has conquered his material by kindness and judicious give and take, giving it a beauty that is almost human in its blending of imperfections into a harmonious whole.

Wood is distinctly the wrong material for subtleties of expression. But if the carver has something to say and is not merely roughing wood for a living, he can make us feel his delight in nature and in life, or amuse us with his jokes. Only by the crudest symbols can he tell us of the deeper things of life, and only then if he is of the *élite*. His beauty will grow around a core of symbolism, and will be so much the better if it is only a by-product.

But how far is the carver justified in imitating nature? If he is to make us feel his delight in nature, ought he to stop short of exact imitation, give us not only the texture and colour but the smell of the flowers, if he can? What prevented the mediæval worker, with all his delight in nature, making his work naturalistic? Why is it that in all the great periods, side by side with great technical skill, there is a strict convention? The teaching of the tool is the text-book explanation, but the tool would lead one to damnation if one would let it. There is a constant temptation to greater and greater finish and skill in pure craftsmanship, the desire to excel as an executant. Again and again in history we see it struggling with some other power. Norman work developed towards naturalism until checked by the Cistercian reformation, which led to the weird convention of the thirteenth century, through which the naturalism of Decorated work gradually breaks, which again gradually hardens through Perpendicular to the convention of late Perpendicular and the early Renaissance, then to naturalism of Grinling Gibbons, back to convention of the eighteenth century, and so to the Anarchy of to-day. Through it all there was a definite standard or tradition, development was fairly even, and behind it all there was the ideal, towards which it continually returned—the ideal of architectural fitness, the true sense of which was lost with the severance of the craftsman and the architect from the actual building. Now, when the parts of the work are executed in different parts of the country, in separate workshops, it is difficult to keep the units in proper relation, and our work suffers. The architect must paint his picture with ready mixed paint, or he must carefully mix his complete palette before starting the work. There can be little adjustment of values, and therefore less unity.



Photo: E. Dockree.

HUNGER HILL, COOLHAM, SUSSEX: THE DINING-ROOM FIREPLACE. E. TURNER POWELL, F.R.I.B.A., ARCHITECT.

The Lecturer replies. Mr. Gotch observed that walls were coloured white; but he was unable to say exactly with what material. With regard to furniture it was too large a subject to introduce in that paper. He had seen in a châlet in Switzerland a large bed for parents, with drawers under to contain the children. The earliest examples of chimneys were of the recessed type; hoods were added later to assist the smoke to escape. Wall hangings were considered of much importance, and references could be found so late as the times of Shakespeare. He appreciated the remark about the similarity of these houses to schools; they formed a sort of community. The external staircase to the solar room was not at all infrequent. The proximity of water was a strong factor in the selection of a site; but aspect was, he thought, less regarded, though it was desirable to select a prospect that gave a clear view of approaching visitors. He could not say when wheeled traffic commenced, but at the period of the mediæval dwelling it was the custom to carry on pack-horses.

R.I.B.A. AND "DRY ROT" IN TIMBER.

The attention of the Council of the Royal Institute has been drawn to the issue in October, 1909, of a leaflet by the Board of Agriculture and Fisheries referring to the increasing prevalence of the disease known as "dry rot" in timber used in the erection of buildings, and, having taken the matter into consideration, the Council deem it to be in the interests of the public generally to issue some observations thereon.

From the official leaflet the following extracts are taken: —

"Infection with the dry-rot fungus sometimes takes place in the forest when felled timber remains stored there for some time. The first evidence of such infection is indicated by the presence of red stripes in the sawn wood. If such wood is thoroughly seasoned the mycelium present in the red stripes is killed. If the seasoning be neglected or imperfectly done, the mycelium, which possesses the power of remaining in a latent condition for some time, commences active growth when the wood is used in any part of a building where it is exposed to dampness, and this in some cases is unavoidable, as when the ends of joists are built into a wall.

"Under such circumstances dry rot eventually appears.

"On the other hand, the fungus is by no means rare on old beams and boards stored in woodyards, etc., and it is mainly from such sources that spores or portions of the spreading mycelium are introduced into buildings by new wood which has become infected.

"The fruit of the dry-rot fungus presents the appearance of irregularly shaped, flattened, or undulating patches of variable size, adhering by their entire under-surface to the substance on which they are growing. When mature the central portion of the patch is covered with an irregular network formed by slightly raised anastomosing ribs, and is of a rich brown colour due to the enormous quantity of spores which are deposited on surrounding objects under the form of snuff-coloured powder. These spores are diffused by currents of air, or by rats, mice, and insects.

"The margin of the fruiting-patch is surrounded by a snow-white fringe of mycelium which spreads in every direction over surrounding objects, creeping up walls and passing through crevices, the advancing mycelium being supplied with food and moisture from the parent plant growing on wood.

"This food is conducted through cord-like strands which form behind the thin advancing margin of mycelium.

"Owing to this supply of food from a central source the mycelium can extend over stones and other substances not containing food, and thus spread from the basement to the top of a house. Each time the migrating mycelium comes in contact with wood the latter is attacked and a new centre of food-supply is established, from which strands spread in search of other sources of food. The mycelium often forms felt-like sheets of large size that can readily be removed intact. These sheets are white at first but soon change to a pale grey colour—a character by which dry rot can be readily distinguished from another wood-destroying fungus, *Polyporus fomentarius*, even in the absence of fruit, the felted mycelium of the latter remaining permanently white.

"The specific name of *lacrymans*, or 'weeping,' alludes to the power of the fungus to attract moisture from the atmosphere. Under certain conditions moisture is absorbed to such an extent that it hangs in drops, or even drips from the surface of the fungus. This moisture assists very materially in rotting the timber, which afterwards becomes quite dry and friable. Hence the popular name, 'dry rot,' which alludes to the last and most frequently observed stage of decay."

Upon these extracts the Council of the R.I.B.A. comment as follows:—

The depletion of the more matured forest trees resulting in the importation of immature wood is said to be one of the contributory causes of the spread of the disease.

Spores may exist in the earth arising from the roots of trees or other source.

The rapid completion of a house before the materials of which its carcase is constructed have had time to dry thoroughly conduces to the germination of dry rot.

A warm, damp atmosphere surrounding the wood, such as exists under a floor immediately over the ground and in unventilated cellars, is another condition conducing to the spread of the disease.

Although, as above remarked, immature or imperfectly seasoned timber is said to be a cause of the spread of the disease, yet thoroughly matured and sound timber in a warm, moist atmosphere will readily fall a prey if attacked by the mycelium of dry rot, once a spore has been introduced.

It has been proved that the spores of the disease can be carried from house to house on the clothes or tools of workmen, and that wood can be infected from a spore on a carpenter's saw.

From the foregoing it will be seen that the disease may have been introduced (*a*) in the timber, (*b*) from the adjacent earth, and (*c*) accidentally by the importation of a spore. These are conditions over which architects have obviously no control.

NOTES ON COMPETITIONS.

Schools, Kimberworth, Rotherham.

The assessor, Mr. E. R. Robson, has made his award in the limited competition for the proposed higher standard schools and infants' schools to be erected at Kimberworth. Rotherham, for the Borough of Rotherham Education Committee. The design of Mr. J. E. Knight has been placed first, and the design of Messrs. Fredk. Willey and David B. Jenkinson, A.R.I.B.A., joint architects, second; and the premiums allotted accordingly. The higher standard school provides for an accommodation of 300 boys and 300 girls in separate departments, and the infants' school accommodates 500 children. The site contains two acres, and the cost of the buildings was limited to £17,000.

Wigan Elementary School.

In the note under this heading in our issue of March 16th, the name of Mr. H. D. Holland was inadvertently given as Mr. J. B. Holland.

LIST OF COMPETITIONS OPEN.

MAR. 31. SHEFFIELD ENDCLIFFE PARK CHURCH. Particulars given in our issue of March 16th.

APRIL 23. COUNTY OFFICES, NAVAN. Particulars given in our issue of March 16th.

MAY 31. MUNICIPAL OFFICES, KARACHI. Particulars given in our issue of March 16th.

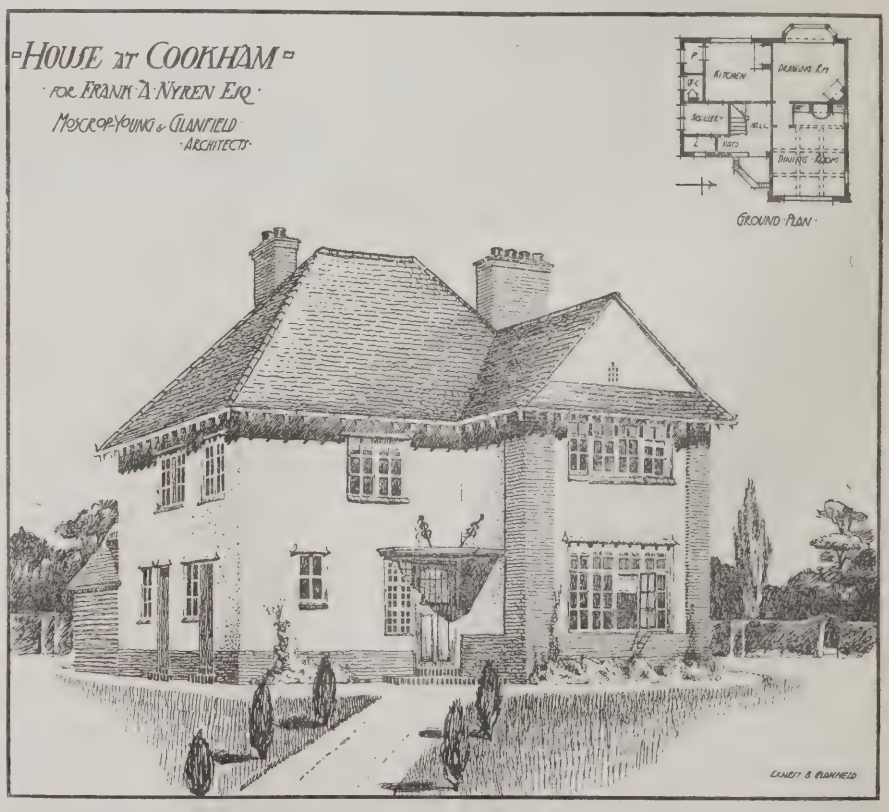
JUNE 15. ELEMENTARY SCHOOLS, ACTON. Particulars given in our issue of March 16th.

NO DATE. NEW ELEMENTARY SCHOOL and ENLARGEMENT OF ANOTHER, COVENTRY. Particulars in our issue of March 16th.

NO DATE. ELEMENTARY SCHOOL, BLOXWICH. Particulars given in our issue of March 16th.

OBITUARY.

The death is announced of one of the old standards of the building trade of Sunderland, Mr. Robert Stafford, who died at his residence, 20, Salem Street, at the end of February. Mr. Stafford, who was in his 73rd year, was at one time an inspector in connection with the highways of the town. Leaving this occupation to turn his attention to building, he founded a business in conjunction with his son Arthur, under the style of Robert Stafford and Son, and was responsible for the erection of a large number of important buildings in the district, including schools under the Durham County Council. Latterly, owing to Mr. Stafford's advanced age, he had taken no active personal part in the business.



This house is to be built of stock bricks for general walling, covered with white cement roughcast, and plinth of red and purple bricks, flush pointed. The roof is of dark red hand made sand faced tiles. All exterior wood work is painted green—interior white. On the first floor are three good bedrooms, bathroom, w.c., and linen closet, while provision is made in the roof for a bedroom to be added at a future date. The cost, which includes cesspool drainage, is £410. The builder is Mr. Bloomfield of Maidenhead and Hitchin, and the architects are Messrs. Moscrop-Young & Glanfield, of Brook St., Bond St., W.

CONCRETE AND STEEL SECTION

(MONTHLY.)

Mr. Butler and His Critics.

Mr. D. B. Butler's conclusions on the boiling test for cement came in for some rather spirited criticism at the recent meeting of the Concrete Institute. The fact that such widely opposite views should exist on such an important question as the testing of cement is evidence of the value of inaugurating such a society as the Concrete Institute, to band together men for the purpose of mutual investigation into, and discussion of, these and other problems. It is apparent that Le Chatelier test is generally, accepted by the majority of manufacturers and engineers as thoroughly satisfactory; but Mr. Butler condemns it for an indiscriminate condemnation of both sound and unsound cements. If Mr. Butler's contention is right in fact, his conclusion would appear to be an obvious one. The discussion at the Cement Institute is hardly conclusive. Mr. Cooper sounded a note of distrust, and Mr. Judd was not ready to give definite views about the matter. Further investigation by one of the Institute's Research Committees is obviously the reasonable course. The methods of conducting the same test may, in the hands of different people, differ greatly though not apparently. The contention of Mr. Cooper that cement, whether slow or quick setting, should not be boiled for an arbitrary period is only one indication of variation in treatment.

Concrete and Gun Fire.

The resistance of concrete to gun fire was tested practically to some extent at Port Arthur, and different opinions have been expressed regarding the lessons to be drawn from the results there. In a general way, the objections to concrete have been based mainly on the claim that the effect of the impact against it was to crack such a large mass of material that the integrity of the structure was much weakened even beyond the immediate vicinity of the point of impact. Reinforced concrete has been suggested a number of times as a substitute for mass concrete in military works, in order to meet this objection, and some tests were recently conducted at Sandy Hook for the purpose of determining to what extent the reinforcement would limit the effect of the projectile. The results are of a confidential character, but it is understood that the success of the reinforcing rods in confining the shattering of the concrete to the immediate neighbourhood of the pathway of the shot through the mass was marked. While the steel did not appear to reduce greatly the absolute depth of penetration of the projectile, it localised the damage very satisfactorily, so long as the shells did not detonate after penetrating.

Crushed Rock.

The widespread use of concrete for all kinds of purposes has created a demand for so many kinds of crushed stone that any builder or quarry owner who fails to endeavour to meet this demand is missing a great opportunity. The larger sizes of crushed stone are still in demand, but in addition there is a ready sale for "screenings" to dust of all degrees of fineness, and it is precisely this finer part, which was formerly considered useless, which is most profitable to-day. The chief requisite is an ample screening plant, so that any grade of material can be supplied, and the particles be of practically one size, or at any rate within very narrow limits. For this purpose it is becoming increasingly necessary to use two screens (or sets of screens), one to keep out the large pieces of material and the other to remove the particles which are too fine for the purpose required. A little effort will soon show how large is the opportunity for doing an increased business, for those who already have facilities for crushing stone, and whilst different localities must have their needs met in different ways, it will generally be found that the two simplest and best methods are (a) to supply the material carefully graded according to specified sizes of particles, or (b) to take a more portable form of crushing and screening plant to some locality where the crushed rock required for a particular job is found in the immediate vicinity of the place where it will be used. For obvious reasons the latter method is less profitable than the former, but, properly arranged, it can be made to yield a good return. Incidentally we may mention that a good way to be "on the trail for business" of this kind is to keep a close look-out for contracts or other work where concrete is likely to be needed, and to "get in" for the supply of aggregate or crushed rock, using the invincible argument that your rock is carefully graded so as to secure the best possible results and backing this argument up with actual demonstrative tests where they appear to be desirable.

How to Select Rolled Steel Joists.

The zig-zag line in the table of safe loads carried by rolled steel joists is a source of great annoyance to the man who, not having made a study of architectural engineering, occasionally has to select a section of joist to carry a floor or a wall. One man has a hazy sort of idea that the depth of his beam should be from one-twelfth to one-twentieth of the span, and even with a very light load he would not dare to go beyond the zig-zag line, but pays—or makes his client pay—for a heavier section. Another man ignores the mysterious warning line and loads his 12in. ×6in. ×54lbs. rolled steel joist with 10 tons over a span of 30ft., because reliable catalogues tabulate this as the safe load. Then he wonders why his plaster ceiling cracks.

The following notes show how to deal with light loads over long spans, and should make the calculation of deflection a simple matter.

The deflection formula for beams of uniform section throughout their length under a distributed load—

$$D=\frac{5Wl^3}{384EI}$$

applies to rolled steel joists, and can be reduced to a very simple equation by cancelling out terms which are constant.

The bending moment equals the moment of resistance, which in turn equals the section modulus (Z), multiplied by the permissible stress per square inch (f). We have therefore for a distributed load —

$$\frac{Wl}{8}=fZ$$

$$=f\frac{I}{y}$$

but in the case of a rolled steel joist, $y=\frac{d}{2}$,

$$\therefore \frac{Wl}{8}=\frac{2fI}{d}$$

and

$$W=\frac{16fI}{dl}$$

The coefficient of elasticity may be taken at 12,000 tons, and inserting this value in the deflection formula along with the value now found for W, we get,

$$D=\frac{5Wl^3}{384EI}$$

$$=\frac{5\times 16fI\times l^3}{384\times dl\times 12000I}$$

$$=\frac{fl^2}{576000d}$$

The limiting stress for architectural work is usually 7.5 tons per square inch; "f" may therefore be taken out of the formula, giving

$$D=\frac{7{\cdot}5l^2}{576000d}$$

$$=\frac{l^2}{7680d}$$

$$=\frac{144L^2}{7680d}$$

$$=\frac{3L^2}{160d}$$

This will be found to agree exactly with the formula from which the deflection co-efficients in Dorman, Long and Co.'s tables have been drawn up. Take, for example, one of the 12in. joists,

$$D=\frac{3L^2}{160d}=\frac{3L^2}{160\times 12}$$

$$=\cdot 001562L^2$$

and ·001562 is the co-efficient given in their list. The more complicated formulæ given in Redpath, Brown and Co.'s and other lists will also be found to agree with this.

Our formula now gives the actual deflection in inches, but it usually matters little to the designer whether his beam deflects ½in. or 1½ins., so long as it keeps within a certain ratio in terms of the length of the span. This ratio can be arrived at in one operation, without finding the actual deflection in inches, by further simplifying the formula.

$$\text{Let } \Delta=\frac{\text{deflection in inches}}{\text{span in inches}}$$

$$\text{then } \Delta=\frac{3L^2}{160d\times 12L}$$

$$\Delta=\frac{L}{640d}$$

Example: A rolled steel joist, 12ins. × 6ins. ×54lbs., loaded with a distributed load to the permissible stress (7.5 tons) over a span of 16ft., will show a deflection of

$$\Delta=\frac{L}{640d}=\frac{16}{640\times 12}$$

$$=\tfrac{1}{480}\text{th of the span.}$$

From this very simple formula we can find the maximum length of span for which any section can be used, fully loaded, so as not to exceed any given ratio of deflection. Assuming that $\frac{1}{480}$ is the maximum deflection that should be allowed to avoid the cracking of plaster, we find that

$$\frac{L}{640d}=\frac{1}{480}$$

$$\therefore L=\frac{640d}{480}$$

$$=\frac{4d}{3}=\frac{4\times 12D}{3}$$

$$=16D$$

This means that any section, fully loaded, over a span greater than 16 times the depth, will deflect more than $\frac{1}{480}$. If it be desired to use the same section for a longer span without increasing the ratio of deflection, a lower permissible flange stress (f) must be adopted. Therefore, reintroducing 7.5 tons into our formula,

$$f = \frac{640d \times 7{\cdot}5}{L \times 480}$$
$$= \frac{10d}{L} \text{ for long spans.}$$

Example: Spanning a 30ft. opening with a 12in. × 6in. × 45lb. rolled steel joist, what is the permissible stress to give deflection not exceeding $\frac{1}{480}$ under a distributed load?

$$f = \frac{10d}{L} = \frac{10 \times 12}{30}$$
$$= 4 \text{ tons per square inch.}$$

The load would then be about 5½ tons instead of 10 tons, as given in the tables.

If it be required to find what factor of safety should be employed,

$$\text{factor of safety} = \frac{\text{ultimate stress}}{\text{safe stress}} \left(= \frac{}{f}\right)$$
$$= 30 \div \frac{10d}{L}$$
$$= \frac{3L}{d}$$

or reducing the span to inches we get

$$\text{factor of safety} = \frac{1}{d} \times {\cdot}25$$

This differs slightly from the formula for long spans $\left(F = \frac{1}{d} \times {\cdot}287\right)$ given in Professor Adams's "Designing Ironwork," 2nd Series, Part IV.

For a deflection ratio of $\frac{1}{360}$, it can be found in the same way that the limit of span if fully loaded (distributed) is $21\frac{1}{6}$ times the depth, and

$$\text{permissible stress for long spans} = \frac{40d}{3L}$$
$$\text{and factor of safety for do.} = \frac{9L}{4d}$$
$$= \frac{1}{d} \times {\cdot}1875$$

It would make an interesting study to work out simplified formulæ on the same lines for various methods of loading, but for irregular loading it is usually near enough for ordinary purposes to calculate the deflection as if the load were distributed. It is handy to remember that a beam fully stressed will always deflect further under a distributed than under a central load (which gives less deflection than any other loading). The centrally loaded beam deflects ·8 of an inch for every inch in the case of a distributed load; therefore, a joist deflecting $\frac{1}{480}$ under a distributed load will only show $\frac{1}{480} \times \frac{8}{10} = \frac{1}{600}$ under a full permissible central load.

A REINFORCED CONCRETE CHURCH ROOF.

The illustrations show an interesting innovation in Ecclesiastical Architecture, the reinforced concrete roof to the R.C. Church of St. Aloysius, Glasgow, of which Mr. C. J. Menart, 241, West George Street, Glasgow, is the architect. The church, which is cruciform in shape, has walls faced with red freestone, and the reinforced concrete roof rises from the main walls. Over the nave, transepts, and apse, the roof is in semi-circular arches, and the roof of the nave has a clear span of 44½ft. and a length of 65ft. This roof is supported on arched ribs which are reinforced to take the whole of the thrust. The ribs carry a 4½in. slab forming the roof covering, which slab is reinforced with expanded steel. In this roof are two four-light cupolas, which also act as ventilators. The transept and apse roofs are of similar construction but of smaller span. Three brick main arches carry a large central dome, which is 44ft. by 34ft. 3in., and has a radius for the first part of 29ft. 6in., and for the upper portion or dome of 21ft. In this dome are eight large lights. The concrete in the dome is 9in. thick, and is reinforced with expanded steel and with circumferential round rings. The roof was carried out by the Expanded Metal Company.

THE BOILING TEST OF PORTLAND CEMENT.

By D. B. BUTLER, A.M.Inst.C.E., F.C.S.

This paper was delivered by Mr. Butler at the eighth ordinary general meeting of the Concrete Institute, held on the 17th inst., when Mr. Bertram Blount, F.I.C., presided. The chairman aunounced that the membership was now 866. Messrs. C. A. Reed of Clapham and Mr. W. S. Hobart Norton, B.A., B.E., A.M.Inst.C.E. of the P.W.D., India, were elected members.

The soundness of Portland cement, i.e., its freedom from expansion ("invariabilité de volume" or "volumenbeständigkeit," to give its French and German equivalents respectively), the author thought, was its most essential property, and should be always the first thing to be determined in estimating the constructive value of a sample. It was obvious that, notwithstanding other highly desirable qualities which a cement might possess, such as great strength or large sand-carrying capacity, if it was unsound, and contained certain elements which subsequently caused expansion, with, in extreme cases, disintegration and crumbling, it was not only of no use as a constructive material, but was at once converted into a destructive material. Although with the improved methods of manufacture obtaining of recent years these extreme cases of disintegration had become more and more rare, expansion of a more or less dangerous nature was not infrequently met with.

The original test for soundness, the author explained, was based more or less on working conditions, i.e., pats or cakes of neat cement, plunged into cold water when set, or after 24 hours in air, and examined at intervals; if at the end of a month they showed no signs of cracking or distortion, and adhered firmly to the glass plate on which they were made, the cement was considered satisfactory as regards soundness. This test laboured under the obvious disadvantage that 28 days had to elapse before a definite opinion could be pronounced, and the cement finally accepted for use, a delay that was frequently impossible in practice, although it might be argued that the generally specified 28 days' tensile tests laboured under the same disadvantage.

To obviate this long delay, several accelerated tests for soundness have been evolved from time to time. About thirty years ago the late Henry Faija introduced a test for soundness, consisting in subjecting cement pats to 7 hours in moist air of 110 deg. F., followed by 17 hours in warm water of 120 deg. F., which enabled an opinion to be formed in 24 hours instead of having to wait 28 days as formerly.

The next accelerated test was that of M. Deval, brought out about ten years later; after 24 hours in air or under a damp cloth at ordinary testing-room temperature, and 2 days in water of 176 deg. F., the strength developed was supposed to be comparable with that of 1 day air + 6 days in ordinary cold water; while after a further 4 days in hot water, i.e., 1 day in air and 6 days in hot water, the strength developed was supposed to be comparable with 1 day air+27 days' cold water.

The Boiling Test.

From the 176 deg. F. of the Deval test it was but a step to the boiling test now in vogue, and having regard to the difficulty of always maintaining an equable temperature of 176 deg. F., the boiling test is certainly considerably simpler; the ordinary qualitative boiling test consisted of allowing a pat to set 24 hours in a damp box of 60 deg. F., and then placing it in cold water, which was gradually raised to boiling and maintained at that temperature for 6 hours, after which treatment the pat should show no signs of warping or cracking; it was sometimes further specified that the edges of the pat should also break off with a sharp crisp ring, which was a very sure indication that it was free from cracks or flaws of any kind.

tive order, and depended more or less on the personal experience of the operator, as to whether the results obtained were seriously defective or not.

Bauschinger Apparatus.

The most accurate quantitative method of measuring expansion or contraction, whether in air, cold water, or by the various accelerated tests, was the Bauschinger micrometer calliper apparatus, in which the test pieces consisted of prisms or square bars 100 mm. long and 22 mm. by 22 mm. cross-section; the delicacy of the instrument was such that variations in the length of the bar to within $\frac{1}{200}$ mm., or 0.005 per cent., could be deter-



THE R.C. CHURCH OF ST. ALOYSIUS, GLASGOW: GENERAL VIEW OF THE BUILDING SHOWING THE ROOF. C. J. MENART, ARCHITECT.



THE R.C. CHURCH OF ST. ALOYSIUS, GLASGOW: VIEW OF TRANSEPT. C. J. MENART, ARCHITECT.

mined with certainty. It, however, required very careful expert handling, and was somewhat expensive, the equipment, including moulds, costing about £12.

The Le Chatelier Test.

The only other quantitative method of note for determining expansion was that devised by M. Le Chatelier, which was adopted by the British Standards Committee in 1904 as the standard method of determining the soundness of cement. The description and method of working, taken from the revised British Standard Specification of 1907, was as follows:—

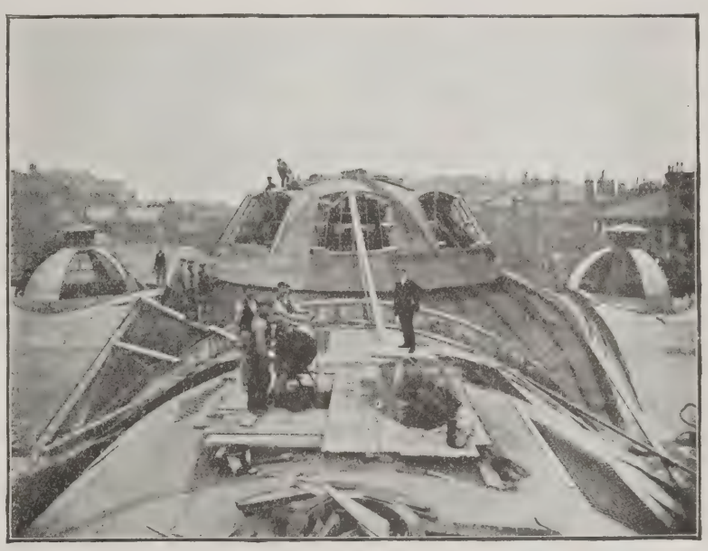
"The cement shall be tested by the Le Chatelier method, and shall in no case show a greater expansion than 10 millimetres after 24 hours' aeration and 5 millimetres after 7 days' aeration.

"The apparatus for conducting the Le Chatelier test consists of a small split cylinder of spring brass or other suitable metal of 0.5 millimetre (0.0197 inch) in thickness, forming a mould 30 millimetres (1 3-16 inches) internal diameter and 30 millimetres high. On either side of the split are attached two indicators with pointed ends, the distance from these ends to the centre of the cylinder being 165 millimetres (6½ inches).

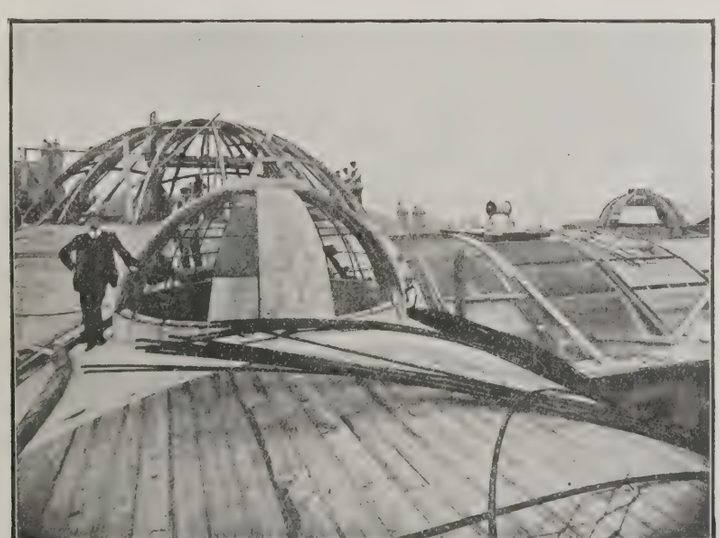
"In conducting the test, the mould is to be placed upon a small piece of glass and filled with cement gauged in the usual way, care being taken to keep the edges of the mould gently together while this operation is being performed. The mould is then to be covered with another glass plate, a small weight is to be placed on this, and the mould is then to be immediately placed in water at a temperature of 58 to 64 degrees Fahrenheit, and left there for 24 hours.

"The distance separating the indicator points is then to be measured, and the mould placed in cold water, which is to be brought to boiling-point in 15 to 30 minutes, and kept boiling for six hours. After cooling, the distance between the points is again to be measured; the difference between the two measurements represents the expansion of the cement, which must not exceed the limits laid down in this specification."

It certainly had this advantage over the Bauschinger apparatus, that it was cheap and simple, and involved no costly apparatus, but whether it was equally accurate was quite open to discussion. In the course of ordinary professional testing work, the author stated he had had to carry out many thousands of tests for soundness by the Le Chatelier method, and the conflicting results



THE R.C. CHURCH OF ST. ALOYSIUS, GLASGOW: VIEW OF CENTRE DOME IN COURSE OF CONSTRUCTION. C. J. MENART, ARCHITECT.



THE R.C. CHURCH OF ST. ALOYSIUS, GLASGOW: REINFORCED CONCRETE ROOF IN COURSE OF CONSTRUCTION. C. J. MENART, ARCHITECT

he had sometimes obtained had led him to the conclusion that where the condemnation of a cement for unsoundness was concerned, the results given by the Le Chatelier test should not be too rigidly interpreted.

The author then quoted series of experiments to show the variable results which might be obtained by different operators, and even by the same operator working under exactly the same conditions.

In order to ascertain if differences in the elasticity of the moulds were in any way responsible for the variable results obtained, the author devised a special apparatus. The variation given by different moulds was considerable. However, the results did not definitely point to differences in the elasticity of the mould as being responsible for the variable results obtained, since No. 10, which was an extremely weak mould, gave the least expansion in two cases out of three.

It was thought possible that the position of the test pieces in the boiling bath, whether in the centre or round the outside, might have had something to do with the variations found, and tests were therefore made to ascertain if this were so, but the results suggested that this was not the case. Nor did variations in time of cooling after boiling appear to affect the result in any way.

Differences Due to Aeration.

Another curious feature about the Le Chatelier test was that instances were very frequently met with in which the expansion was considerably greater after 6 days' aeration of the sample than when first received, or after only 24 hours' aeration. From the point of view of a test for soundness this was an obvious absurdity, since it was a well-known and thoroughly acknowledged fact that cement improved with aeration as regards soundness; it therefore very strongly suggested that the increased expansion of such samples upon boiling was due to causes altogether outside the question of soundness as it was generally understood, i.e., the presence of disruptive agencies within the cement itself, which would eventually cause expansion under ordinary working conditions.

Less Expansion on Boiling than in Cold Water.

In a paper read before the Concrete Institute in May last on the setting properties, etc., of Portland cement, Mr. H. K. G. Bamber referred at considerable length to the Le Chatelier boiling test, and raised one or two very interesting points. He first of all drew attention to the fact that the expansion of the specimen during the preliminary 24 hours' immersion in cold water was altogether ignored, only the subsequent expansion during boiling being taken into account, and pointed out that instances frequently occurred in which the expansion in cold water was considerable, whereas that resulting on boiling was negligible. The author of the present paper said he could fully bear out that statement, for it was the custom in his testing-room to record in every case the expansion caused by previous immersion in cold water, as well as after boiling, and in many cases, more especially with slow-setting cement, the expansion in cold water was very much more serious than that due to boiling.

Surely it was more important to record the expansion under actual working conditions in cold water than that produced by boiling, for whatever the value of boiling as an accelerated test for soundness, cement was rarely, if ever, subjected to boiling water in practice.

Slowly Hardening Cements.

Mr. Bamber also referred to the somewhat arbitrary condition of only allowing the cement 24 hours to harden under water, before being subjected to the boiling water, and suggested that failure was frequently due to the cement, more especially the slowly hardening varieties, not having had time to sufficiently harden in that brief period to withstand boiling water.

Expansion of Coarse Particles.

Referring once more to Mr. Bamber's paper, he gave as one reason of cement sometimes failing to pass the Le Chatelier test, the inability of the coarse particles, or unpulverised clinker, to withstand boiling water without expansion, and expressed the opinion that "it has yet to be proved" that because such unpulverised material caused expansion when submitted to boiling water, that it would also cause expansion under ordinary working conditions in cold water. With this the author quite agreed, and quoted experiments which showed that there was something in the contention.

Author's Conclusions.

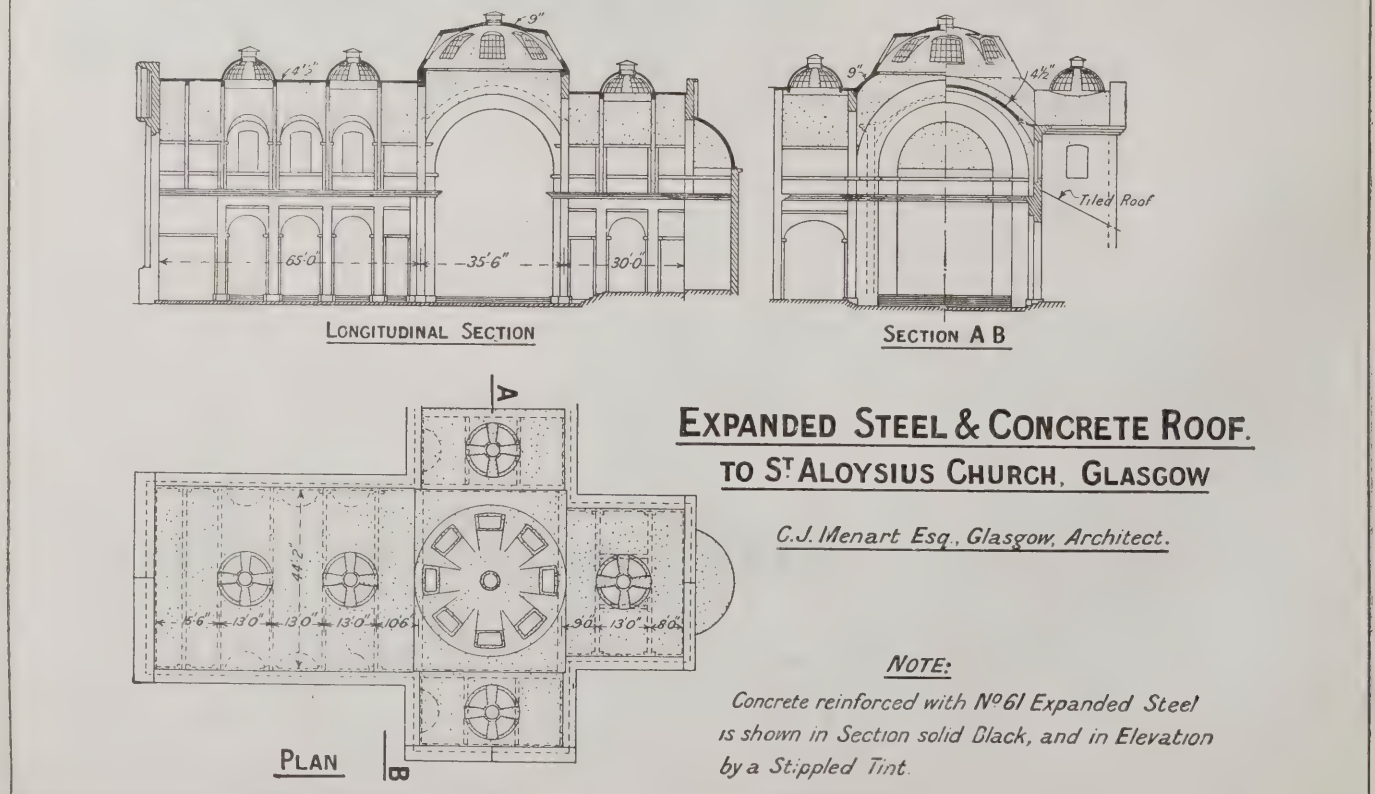
The experiments embodied in the paper, taken as a whole, appeared, the author suggested, to justify his remark at the commencement, that where the condemnation of a cement for unsoundness was concerned, the results given by the Le Chatelier boiling test should not be too rigidly interpreted. Apart from the mass of anomalies and conflicting results continually met with, it was quite an open question whether a cement should be condemned as unsound because it would not withstand boiling water 24 hours after gauging, whether that 24 hours' preliminary hardening was in cold water or in air.

Whatever excellent reasons there might be for or against accelerated tests, the author could vouch from personal experience for the fact that considerably less than twenty years ago not 10 per cent. of the Portland cement manufactured in England or elsewhere would withstand boiling water under the foregoing conditions; the obvious inference, therefore, was that if such was a true test for soundness, 90 per cent. of the cement used twenty years ago was unsound. This, in view of the hundreds of thousands of tons used for important engineering work throughout the world, was rather a startling proposition; and, having regard to the excellent condition of such work at the present time, was one that could scarcely be seriously maintained.

Discussion.

The Chairman. Mr. Bertram Blount having thanked the lecturer on behalf of the Institute for his lucid paper, said he would like—not as chairman but as a private member, to comment very briefly on the author's conclusions. It appeared to him that Mr. Butler thought because certain countries, such as Germany and America, had failed to prepare cement of the admirable quality obtainable here, that we should retrogress, and put the clock back twenty years. He thoroughly disagreed with him.

Mr. H. K. G. Bamber said Mr. Butler had dealt with his subject from the comparative point of view in so far as he described the various tests. The Faija test had been put first and foremost, whether because of its importance or because of its antiquity he did not know. At any rate, the Faija test was little used by manufacturers, because they knew that if any cement failed to pass this test it was thoroughly bad. Mr. Butler then took the Deval test, which the speaker had always looked upon as one of the most important and most satisfactory which a manufacturer could employ. His own experience had led him to believe that if any cement for which he was responsible passed this test there was no ground either for anxiety or for the sleepless nights of which the lecturer had spoken. Mr. Butler, in dealing with boiling tests, and with those of Erdmanger and Heinzel, omitted all reference to the boiled balls test, though he had described the roasted balls test. Why this was so he was unable to conjecture; but presumed the lecturer had not come into contact with it. It was a test, no doubt, that involved considerable inconvenience. He was glad to hear Mr. Butler describe the Le Chatelier test as cheap and simple, but he did not think the results of it should be too rigidly interpreted. Where the manufacturer, the expert, and the engineer had an opportunity of discussing the matter together, the engineer was always ready to waive any distinct line, whether as to accept-



ance or rejection. The cement which expanded in cold water was certainly more dangerous than the cement which only expanded when boiled. If the Le Chatelier test was one to be complied with, it was more a question for the cement manufacturer. The engineer, whatever his views as to the severity of the test, must come to the conclusion that it was better for him to have a cement which had passed a more severe test. He thought the Le Chatelier test had been of more value to this country than any test that had been brought before them. Like the chairman, he would be sorry to see the clock put back twenty years.

Mr. Davidson, being called upon by the Chairman, said that the Le Chatelier was in general use in France.

Mr. W. J. Cooper said, as far as the effects of the test was concerned, from investigations he had made, he was quite prepared to grant that in the vast majority of cases cement which complied with it satisfactorily was sound. There were cases in which, though there was practically little or no expansion, it had failed. If the cement failed to comply with the test he could not say that it was evidence that the cement was unsound. Cement, whether quick-setting or slow-setting, should not be boiled for an arbitrary period.

The Engineer, Aberdeen Harbour Board, Mr. Gordon Nichol said that if there was to the engineer one essential feature in cement, it was that of soundness. Aberdeen had, perhaps, a rather unenviable reputation for failures in cement, but he thought it was due probably to other causes than unsoundness in the cement. To the engineer testing for soundness was a *sine qua non,* and he must have some assurance that the material would not fail after proper treatment. He had great faith in the boiling test; but after Mr. Butler's paper, he felt his anchors dragging a little. For 16 years he had carried out the boiling tests very rigidly. He had used the Chatelier test for some time, but only for British standard specification. He was sure Mr. Butler did not mean to suggest the abandonment of the boiling test without any good reason. They must have cement which would satisfy the user as to its soundness.

Mr. F. J. Tristram spoke on the question of the elasticity of moulds. He had a mould which was extremely useful; but his experiments had been more in trying to find out the action of boiling water on cement which subsequently caused expansion.

Mr. J. W. Plaister, as a manufacturer, said he had always thought that the Le Chatelier test was most satisfactory. The vagaries of the test, to which Mr. Butler had referred, were, he thought, capable of explanation. The manufacturers were perfectly contented with the Le Chatelier test, as conducted by experts, but undoubtedly it was somewhat dangerous in the hands of amateurs. He had seen some extraordinary results where boiling had been conducted in all sorts of extraordinary ways.

Mr. Laurence Ladd, called upon to give his views as a chemist, said he was not prepared to do so. He could only say that he had been using the Le Chatelier boiling test since January, 1904. His experience was that the expansion in cold water was due to the presence of gypsum or sulphate of lime.

The Lecturer. Mr. Butler thanked the meeting for the cordial reception of his paper. Replying to criticisms, he said he wanted a test for soundness which would detect unsoundness. The test which condemned both the sound and the unsound, indiscriminately, was of no value. In spite of the unkind things which had been said by Mr. Bamber concerning the Faija test, he still believed it was the very best for finding soundness in a material which did not show it.

DESIGN OF T-BEAMS.

BY JOHN C. GAMMON, B.Sc. (LOND.) A.C.G.I.

Concluded from page 175, No 787.

Double Reinforcement.

When double reinforcement has to be used, the second series of curves must be used in conjunction with those already described. In finding "W_T" the same method of procedure as that before described is followed, with the exception that the choice of "h" is not restricted by the value which can be given to B. It will be noticed that the curves for the steel are straight lines, and consequently for a value of M exceeding the limits of the curve, W_T can be found by taking twice the amount required for half the given bending moment. Thus the value of W_T for a given value of "h" and "t" for M=6,000,000 in. lbs. is twice that required for M=3,000,000 in. lbs.. and so on.

Thus the value of W_T is obtained. Next the maximum bending moment which can be taken by the concrete is found by obtaining the value of M corresponding to the given values of "B and h." This value is deducted from the actual bending moment. The result of this subtraction sum gives the bending moment which has to be taken by the steel to be placed in compression, "W_C." The value of W_C is readily found by using the curves given; these curves being drawn for given values of "A." In general practice, "A" will be somewhere between 1½ inches and 2½ inches. Curves are drawn for A=1½inches, A=2 inches, and A=2½ inches.

Having fixed values of M, B, h and t: the design of a T beam with double reinforcement is thus resolved into a subtraction sum, the areas of steel required in tension and compression being at once obtained by using the curves.

The following is an example worked out:—

Example:—

M=5,000,000 in. lbs.
B=50 inches.
t=5 inches.

In the first place it will be necessary to fix the depth of the beam. It will be most economical, generally, to have the greatest possible depth of beam in order to reduce the amount of steel in compression, which is always uneconomically stressed. It will be assumed that 34 inches is the greatest possible effective depth.

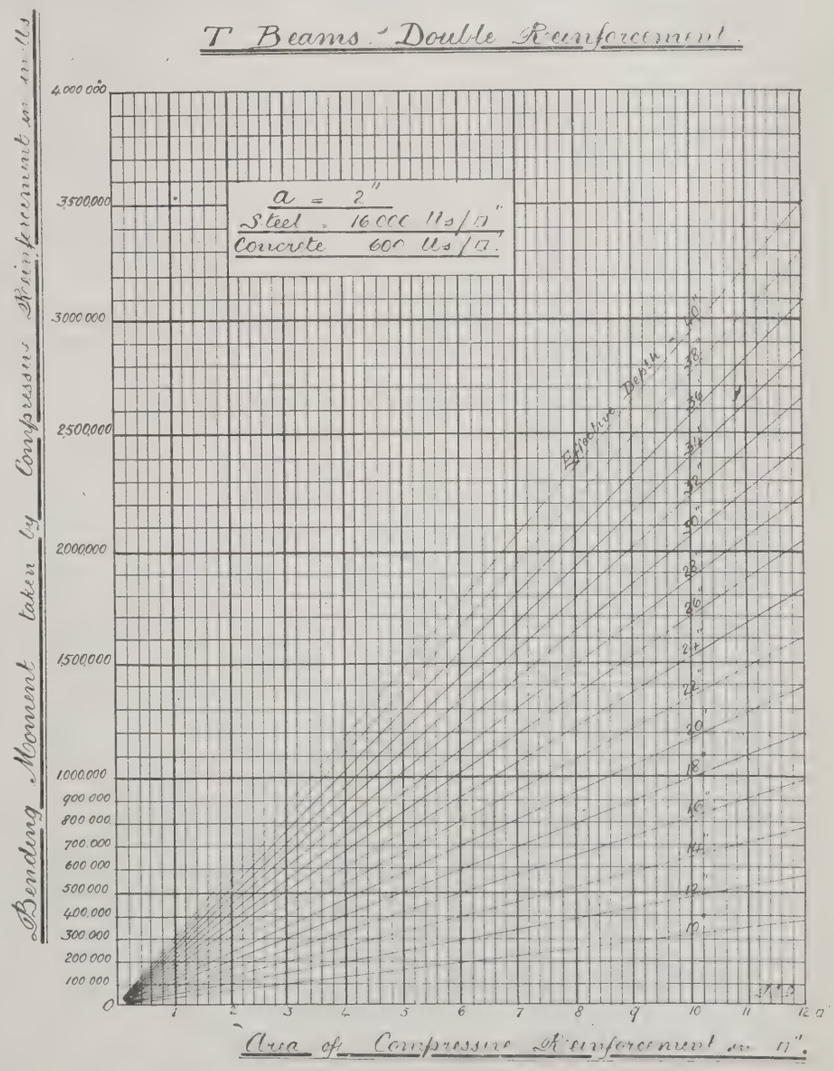
From the curves drawn for t=5 inches, it is seen that W_T =9·95 sq. inches for a value of M=5,000,000 in. lbs., and of h=34 inches.

From the same curve it will be seen that the bending moment taken by a 50-inch breadth of slab with an effective depth of 34 inches is 3,780,000 in. lbs.

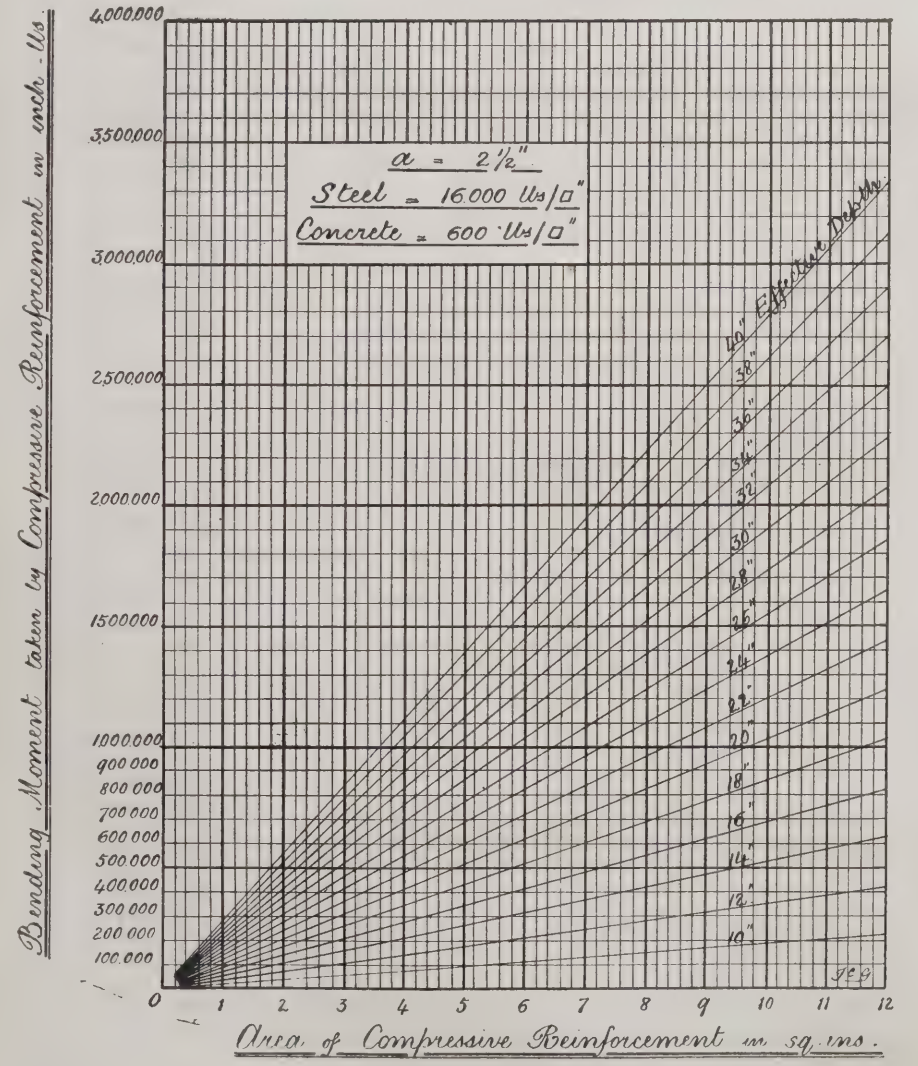
This leaves a bending moment of (5,000,000 −3,780,000) in lbs. to be taken by W_C. Placing this steel at a distance of 2 inches from the top of the slab; from the curves corresponding to a value of A=2 inches, it is found that the steel required in compression for a bending moment of 1,220,000 in. lbs. is 5.08 sq. inches.

Thus W_C and W_T are found.

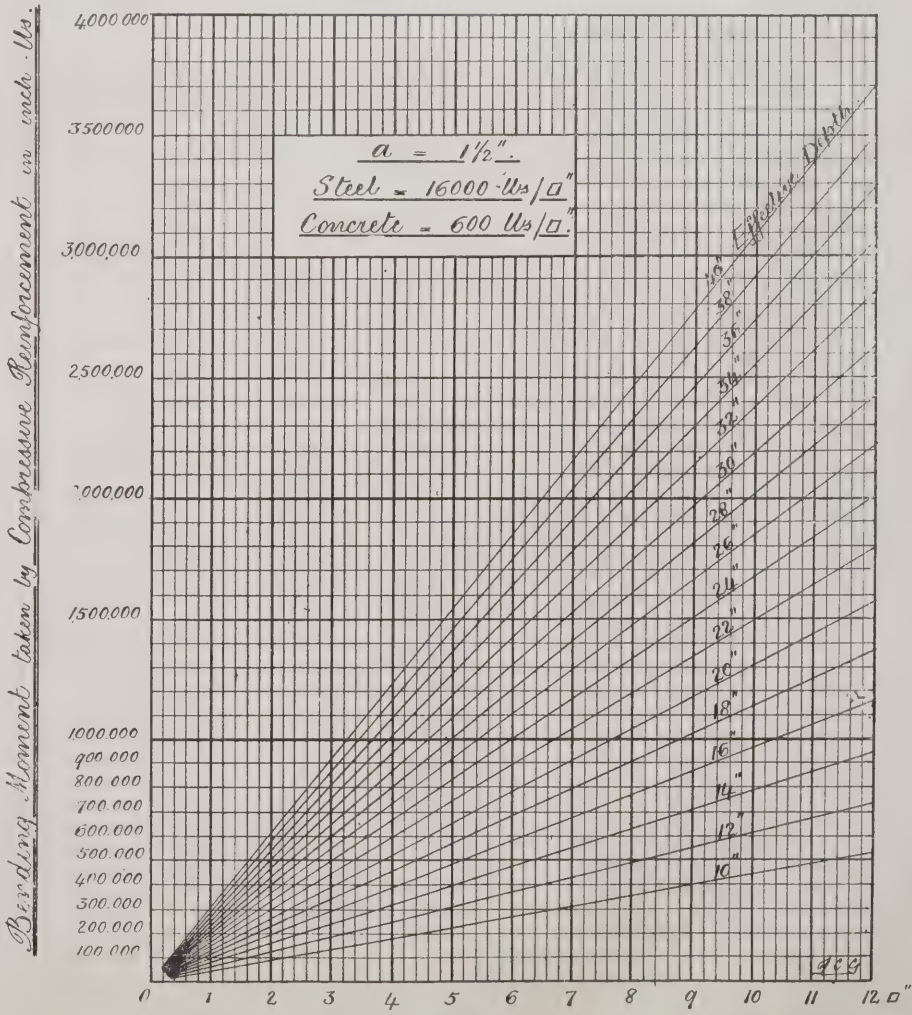
The following formulæ are usually recommended for checking the design of T beams with double reinforcements, and the above example is submitted to this check in order to prove the accuracy of the methods recommended above:—



T Beams. Double Reinforcement



T Beams Double Reinforcement



DIAGRAMS FOR ARTICLE ON THE DESIGN OF T. BEAMS. BY JOHN C. GAMMON.

$$(1.)\quad u = \frac{B.t^2}{2} + 15\left(W_T \times h + W_c \times a\right) \Big/ B \times t + 15\left(W_T + W_c\right)$$

substituting the values assumed and found above.

$$u = \frac{50 \times 25}{2} + 25\left(9{\cdot}95 \times 34 + 5{\cdot}08 \times 2\right) \Big/ 50 \times 5 + 15\left(9{\cdot}95 + 5{\cdot}08\right)$$

$$= 12{\cdot}3 \text{ inches.}$$

$$(2.)\quad y = u - \frac{t}{2} + \frac{t^2}{6\left(2u - t\right)}$$

$$= 12{\cdot}3 - 2{\cdot}5 + \frac{25}{6\left(2 \times 12{\cdot}3 - 5\right)}$$

$$= 10{\cdot}0 \text{ inches.}$$

$$(3.)\quad M = \frac{c}{u}\left[\frac{B \times y \times t \times (2u - t)}{2} + 15\left(W_c \times (u-a)^2 - W_t \times (n-u)^2\right)\right]$$

$$= \frac{600}{12{\cdot}3}\left[\frac{10 \times 50 \times 5 \times 19{\cdot}6}{2} + 15\left\{5{\cdot}08 \times (10{\cdot}3)^2 + 9{\cdot}95 \times (21{\cdot}7)^2\right\}\right]$$

$$= 5{,}000{,}000 \text{ in lbs. (very nearly).}$$

In using the first series of curves for finding the value of W_T when Double Reinforcement is required, the possible difference in length of its leverage arm, due to the disposition of the steel in compression, is neglected. Any error, however, caused by this, is quite inappreciable, as the test of the above exact formulæ will show.

A DEFENCE OF REINFORCED CONCRETE.

In a long letter to "The Times" to correct some misapprehensions on the subject of reinforced concrete, Mr. G. C. Workman, of Messrs. Edmond Coignet, Ltd., says that though it may not be ten years ago since its use was advocated here, owing, amongst other things, to the inelastic and unprogressive nature of our Building Acts, we must not forget that other countries were using this material for expensive works many years before it was introduced into England. As to statements to the effect that steel and concrete are very different materials as regards expansion and contraction, and that the bars, being tightly embedded in the concrete, might cause the latter to crack for variations of temperature between 32 deg. F. and 120 deg. F., he states:—"As a matter of fact, the properties of expansion and contraction of steel and concrete for normal temperatures are practically the same. It is only when the heat increases very considerably and is allowed to reach the steel that there may be danger of cracks. We must remember, however, that in a structure in reinforced concrete the bars are of a very small diameter and very well protected against variations of temperature by the mass of the concrete, which is a very bad conducdtor of heat and cold. In this respect reinforced concrete offers a very great advantage over steel construction, because in a conflagration the small steel bars cannot possibly have the destructive effect which steel girders and stanchions possess to a high degree, even when cased with some more or less fire-resisting material. Another argument which is constantly put forth is the question of the rusting of the steel bars in the concrete. It is a well-known fact that concrete acts as a preservative from rust, and it has been proved that, when steel bars covered with rust are embedded in concrete, the process of oxidization is chemically stopped.

ENQUIRIES ANSWERED.

Correspondents are particularly requested to be as brief as possible. The querist's name and address must always be given not necessarily for publication.

The Editor is willing to answer enquiries from readers who require information on architectural, constructional, or legal matters. Such information must be regarded as the gratuitous advice or information of a friend, and not as the professional opinion of one who holds himself out as possessing expert knowledge on the subject in question. The Editor, will, however, avail himself of the assistance of a large staff of experts in the matters above mentioned, but the enquiries sent must be on the express understanding that he is not to be held responsible for any delays, mistakes, inaccuracies, or negligences which may occur.

Enquirers whose questions involve possible legal proceedings are strongly urged to consul their solicitors before taking definite steps in regard thereto.

Answers by post will be sent if the enquiry is accompanied by a postal order for 1s., made payable to Technical Journals, Ltd. and crossed, and stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

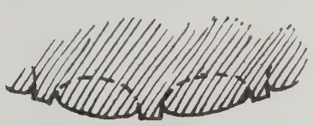
This fee of 1s. required for answers by post is in no case to be regarded as payment for the answer given, but merely as a registration fee to meet the extra clerical and other expenses incurred in dealing with these special replies.

The Editor also reserves the right of refusing to reply to any question that he may deem to be unreasonable or unsuitable, and it must be understood that both question and reply will, as a rule, be published in these columns.

Fluting Ionic Columns.

"YOUNG ARCHITECT" (CALCUTTA) writes: "Can you inform me if I am correct in putting flutes on the lower half (only) of an Ionic column? I have seen many examples showing the upper portion fluted, but cannot find one with the flutes on the lower portion."

—Your proposal cannot be regarded as a good one. Flutes have a logical purpose—to express the supporting function of columns—to make them live, as it were, by emphasising an appearance of vertical thrust. Incidentally, they serve to rob the surface of the column of a baldness which it might



CABLING

have in contrast with other parts of a richly decorated structure, and to accentuate the play of light on its curved contour. There is no sense in starting or stopping such expression halfway. The custom of fluting the upper part of columns only arose out of the system of cabling—a method by which the lower third of flutes was filled by a torus, probably originally with the idea of preventing the delicate arrises from being damaged where they are within reach.

G.

Swelling of a Tiled Floor.

"PERPLEXED" (NORTHAMPTON) writes: "The body of a church is paved with 4-in. square tiles laid on a floated bed of cement and sand in equal parts ¾in. in thickness, with a 6-in. bed of lias lime concrete underneath. The ground below the concrete is clay. The floor has been laid about twenty years.

"A few days ago the congregation were disturbed by loud cracking reports lasting about two minutes, and upon these ceasing it was discovered that near the centre of the church, a portion of the floor about a yard square had risen in a convex form, the rise at the centre being about two inches.

"Upon examination it was found that the tiles had risen, the cement bed and concrete remaining as originally laid, except that there was seen an old crack on one side.

"There are no vaults under the church, nor any heating flues sufficiently near to suggest a cause.

"Upon examining the rest of the floor the tiles were found only to have risen slightly in several places, as they sounded quite hollow when tapped.

"With the exception of an old settlement in one of the walls there does not appear to have been any recent movement in them."

—It is well known that unless the cement contracts at the same rate as the tiles settle in a paved floor the latter will be damaged, and it frequently happens that unsuitable mixtures of cement and sand, which are too rich in cement, will cause the tiles to rise and overlap one another, or to form a somewhat dome-shaped piece in the floor. In the last mentioned case, if the room becomes heated too rapidly for the air to escape, the pressure set up by this expansion has been known in several instances to cause explosions.

Very accurate measurements of the contraction of cement set in air and of that set under water show that in the former case the contraction increases very rapidly some time after use, and is nearly double the contraction of cement set under water.

The contraction is much greater with cement than with a mixture of cement and sand, and it is seldom that a mixture containing more than one-quarter of its volume of cement can be used satisfactorily.

If the tiles are well soaked in water before being used the cement will expand in setting so long as the tiles remain saturated with moisture, but will contract and "buckle" as the tiles dry. If the sub-floor has a rigid surface to which the cement bed can adhere the contraction-strains set up may be a long time before they show themselves, and in some cases no appreciable damage is done.

The only curious part about the tiles in the church in question is that they have taken so many years to reach such a state of strain, though similar effects are known in several instances of tiles laid for 10 or 12 years, which were put down in a dry state instead of being thoroughly soaked before use. The absence of heating-flues in the neighbourhood of the most prominently defective part of the floor is inconclusive evidence, as two cases (if not more) are known in which the mixture was drawn by capillary attraction through a length of 90ft. The real cause of defect in this case, however, as far as can be judged from the evidence supplied, is the use of a cement-mixture too rich in cement in the first instance and, probably, to the tiles not having been sufficiently soaked to enable them to "grow" to the cement.

A.B.S.

Storage of Rainwater.

X. Y. Z. (NORTHANTS) writes: "Owing to a difficulty in being able to procure water for drinking purposes in a country district, I find it necessary to make provision for utilising the rain water for this purpose, and I shall be glad if you can give me any information as to the best method of storing and filtering or otherwise purifying a supply of water for a fairly large establishment. I shall be glad to know also of one or two first-class text-books on this subject, but particularly desire to hear of something that has been successfully carried out in actual practice."

—We doubt your finding a special text-book on this subject, though pamphlets and articles in various periodicals and magazines are certainly to be had (see the "World's Work" of three or four years ago for an article in one month's issue). In text-books on water supply written 15 or 20 years ago you will find allusions to methods and installations, as the method was then in vogue.

The difficulties in the way of this method of obtaining water are the need of separating the earlier part of a rain shower, all of which is fouled by dust and soot on the roof, leaves in the gutters, etc., from the clean water of the succeeding part; and the need of cleaning the eaves gutters periodically, especially in spring and autumn, when bud covers and leaves accumulate quickly. In other seasons the cleaning need not be done as often; every

week when leaves fall, and every month or six weeks in other seasons, according to local circumstances, should meet the needs. If your client will do this, he will obtain a clear water supply; the same man, or a regular man attending to the separator also.

An absolutely automatic separator has yet to be made, but one that will separate the first fall and store the rest or half the rest can be had, but after every rain it needs to be set to tip the foul water to the sewer, which it thus flushes.

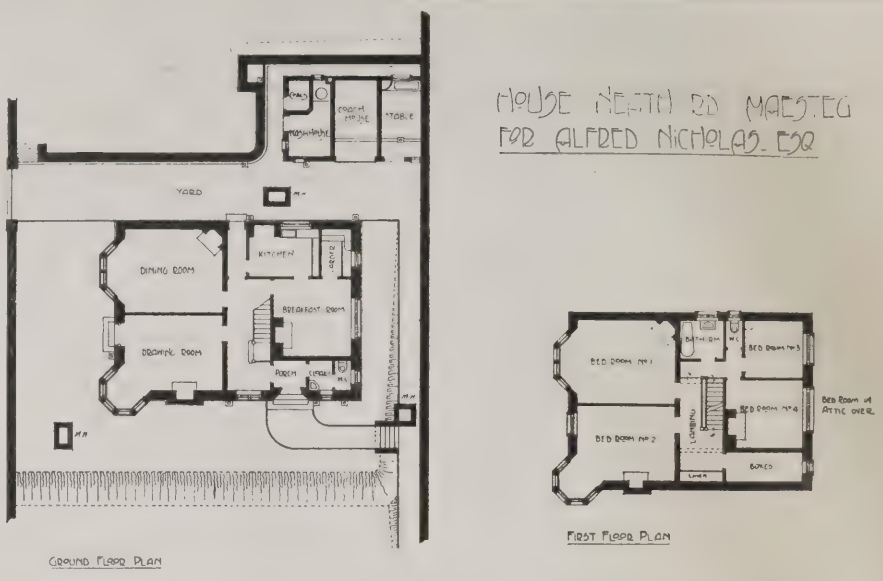
Filtration can be satisfactorily done by a gravel and sand bed, or even small gravel only. Two filters, for alternate use and cleansing, are, of course, needed. But filtration alone will not remove the taste of accumulated soot, bird-droppings, and dead leaves in eaves gutters, so these must be cleaned out at regular intervals.

In reckoning the rainfall, it is not the area of the roof on the slope, but the area of the site on the level that has to be measured. A 36-in. rainfall means one cubic yard per square yard.

1 inch of rain per square yard = 0·75 oubic feet.
= 4·69 gallons.
= 0·028 cubic yards.
= 48 pounds.

9 cubic yards of water will supply 6 people with 16 gallons each a day for a fortnight.

Drinking and cooking water only is amply allowed for at 4 gallons to 3 people a day; baths and washing also will need up to twelve times this amount.



GROUND FLOOR PLAN FIRST FLOOR PLAN

E. WHITFIELD BURNETT, M.S.A., ARCHITECT.

The roof tiles should be non-absorbent. If they be not, a vegetable growth soon comes on the shady parts. The spores of fir trees will stick to slates, and turn them greeny black, and if such trees be near they may have to be felled.

INGENIOR.



HOUSE AT MAESTEG. E. WHITFIELD BURNETT, M.S.A., ARCHITECT.

This house has been erected on an elevated site overlooking the whole of the town and outlying districts of Maesteg. The facings up to string-course are of orange-red Cattybrook bricks, and above the string-course the walls are rough-casted in cement. The whole of the dressings are of Bath stone. The roofs are covered with hand-made and sand-faced Wrotham medium red tiles. The woodwork is of red deal throughout, and painted white. The plans show the general arrangements.

Practical Notes.

"A REGULAR SUBSCRIBER" (LEEDS) writes: "Please state in what issues of the 'Builders' Journal, 'Practical Notes for Architectural Draughtsmen,' by A. W. S. Cross, and Alan E. Munby, were published."

—The series extended over the following issues: Sept. 19th, 22nd, Oct. 23rd, 24th, Nov. 7th, 21st, Dec. 12th, 1906, Jan. 16th, Feb. 6th, 20th, and March 27th, 1907, and have since been republished in a complete form at 12s. net., post free.

Composition for External Application.

DETAILS (DUBLIN) writes: "Additions have been made to a country house which is covered with old lime stucco, in good condition, but slightly discoloured. It is lined out to imitate ashlar. The additions are cement plastered (3 to 1), finished with hand float. It is desired to treat old and new work with some composition (not oil paint) to get a uniform appearance (Portland stone colour). What is the most suitable mixture for this work? Should it be applied with a brush or with a spraying machine? Should the new work receive any extra treatment or is it possible to coat the old work only, to match the new?"

—We suggest the use of "Coatostone," which can be supplied by the Coatostone Decoration Co., 77, Mortimer Street, Regent Street, London, W. The firm will be able to furnish instructions with regard to application.

Obstruction in a Drain.

T. W. R. (MAIDA VALE) writes: "Two terrace houses with lessees A and B have a combined system of drainage entering the public sewer from B's land.

(1) Can B make A pay half the cost of searching for and removing an obstruction in the interceptor when A's drains were first proved to be clear?

(2) The obstruction caused a nuisance in both houses. On any such future occasion could B lawfully ask A to agree to pay half the cost before remedying the defect? (In the present instance B did not consult A before ordering the work.)

(3) On what grounds can the sanitary authority enter premises and test drains?

(4) Can the sanitary authority order A to disconnect his drains from B's; (1) if A's drains are efficient and (2) if inefficient?"

—As to (1), it is important to consider whether the pipe, at the point where there is an interceptor, is a "drain" or a "sewer." The significance of this lies in the fact that if it is a "sewer" it is repairable, and must be kept in order by the local authority (Public Health Act, 1875, ss. 4, 13). Upon the facts as stated, the "sewer" appears to

begin behind the interceptor: for a pipe may be a drain for a certain distance and then commence to be sewer from the point where it is joined by the drain from another curtilage (*Beckenham Urban District Council v Wood*, 60 J.P., 490). There have been many other cases to the like effect. In these circumstances it would seem that B has gone to the expense of doing work which he might have called upon the local authority to do. He cannot therefore seek to charge A with any part of it. As to (2), this is answered by the reply to (1). B could have called upon the local authority to remedy the defect in the sewer, and it is difficult to see how A could have been brought into the matter. The liability of the local authority is clear. But if the "interceptor" lies in the course of a "single private drain" within the meaning of that term as used in the Public Health Act, 1890, s. 19, the proper course for B would have been to give notice to the local authority pursuant to s. 41 of the Public Health Act, 1875, to the effect that there is a nuisance. On receiving that notice the local authority (if the Act of 1890 has been adopted for the district) may do the work necessary to abate the nuisance, and recover the cost from the two occupiers in proper proportions. As to (3), the local authority have power to enter premises and test drains on the written complaint of any person that a drain is a nuisance or injurious to health, or where, on the report in writing of their surveyor or inspector of nuisances, the local authority have reason to suspect that any such drain is a nuisance or injurious to health (Public Health Act, 1875, s. 41, as amended by Public Health Act, 1907, s. 34). As to (4), there is nothing in the Acts (so far as is known) which gives the local authority any such power.

The Housing of Bicycles.

"SEPIA" (HERTS) writes: "Kindly advise me as to the most compact and economical method of arranging for the housing of, say, 100 bicycles, for a large day school."

—The average bicycle is 6ft. long, 18in across handlebars, and 16in. across pedals. The handlebars are 2ft 6in. back and 8in. deep. In arranging storage for a school it is necessary to provide for impatient and careless withdrawals, and perhaps the best arrangement is an open shed, closed on both sides by roller shutters, and with racks so

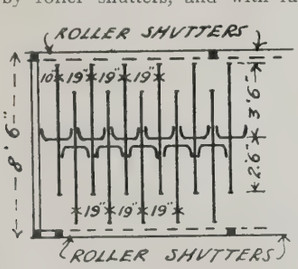


FIG. 1.

placed (as in Fig. 1) that bicycles are inserted from both sides, front wheel foremost. By this means the cranks do not clash, and any cycle can be withdrawn independently of others. Where access on both sides is impossible, an arrangement as in Fig. 2 may be adopted, but is not so good, as bicycles in the second row would be difficult to withdraw without removing those in front. By either method a length of about 80ft. would be necessary to store 100 cycles. Folding doors may be fitted instead of roller shutters, but the latter are preferable as they are out of the way when open. G.

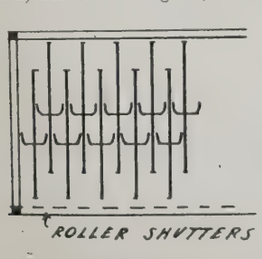


FIG. 2.

Cleaning Rough Plate Glass.

W. B. (NORWOOD) writes: "A certain public building has a large quantity of glazed roofing. This glass is mostly rough plate and has been in position about 20 years. It has, however, become very black on the outside, and keeps out a great deal of light. Most of the ordinary methods of cleaning have been tried (spirit of salts, soda water, etc.), but they have had no effect. Can any reader acquaint me with any reliable method of cleaning the glass?

Defects in Limestone Work.

J. B. (DUBLIN) writes: "I shall be much obliged if any of your readers who carry on work in limestone districts can give me any information as to difficulty having arisen in limestone set in fine cement mortar. The position where I have carried out works which have developed defects in joints of limestone work is very exposed—practically on the Atlantic—and no care in the renewal of pointing, etc., seems to make it staunch. In a gale the moisture sweats through at the joints and weeps down inside. The work is mostly composed of dressings to windows in 2ft. masonry wall, metal casements. There is also an octagon bay window, one storey, with crenallated top, all dressed limestone 12in. thick."

[Perhaps readers with experience of this kind will correspond.—Ed. "B.J."]

Glazed Partitions not Sound Proof.

"SOUNDLESS" (NOTTINGHAM) writes: Some months ago I put up some partitions in a warehouse, and my client has recently called me in to say that anyone in one sale room can hear anybody in the adjoining rooms. The partitions are all glazed above the height of 4ft., as it is essential to get the light as little obstructed as possible. Can you suggest any method of preventing conversation in one room being overheard by anyone in the next?

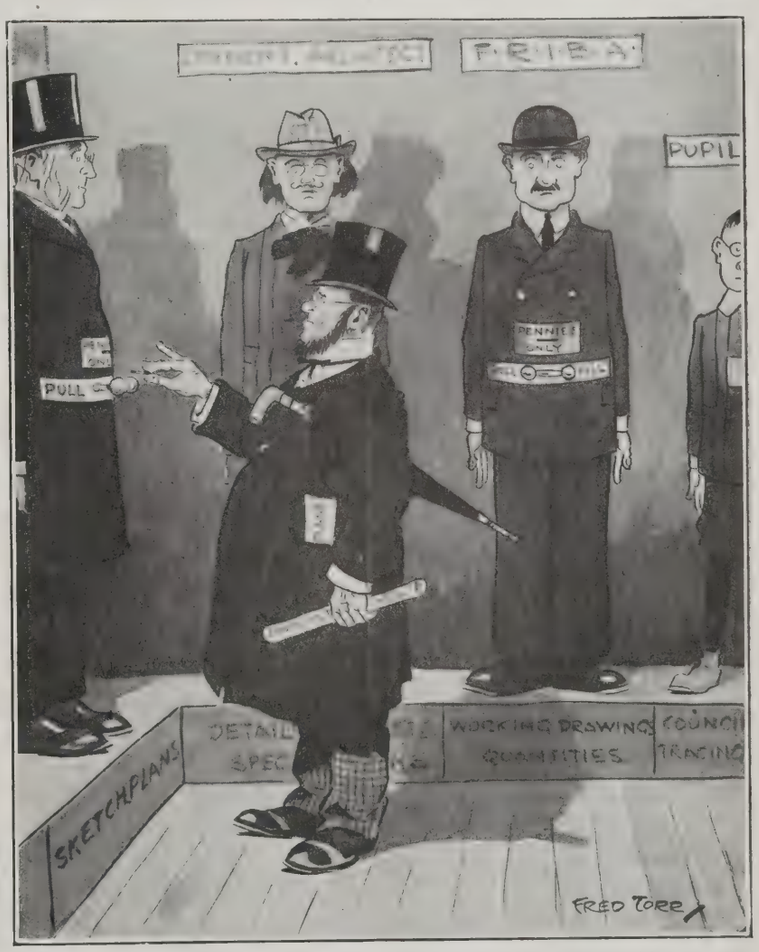
—In all probability the difficulty arises chiefly from the place being too quiet; if there were more general noise individual conversations would not so readily obtrude themselves. Glazed partitions are extremely common in large offices, and so convenient that any slight objection should be overlooked. Double glazing, with as much air space between as possible, would no doubt reduce the passage of sound in the simplest way, but some would still pass from the vibration of the wood panels. HENRY ADAMS.

Heating Small Country Houses by Warm Air.

G. L. (INVERNESS) writes: "Will you let me know the name of any firm or firms who do the heating of small country houses with warm air?"

—G. N. Haden and Sons, 4, Albert Square, Manchester; John Grundy, 393a, City Road, London, E.C. Messrs. Haden also have a London address. It is the case of cleaning the heating surface, and the actual cleaning of it once or twice a season that ensures the continued success of this method. When comparing prices, the arrangements for cleaning the chamber and air pipes under floors or up walls should be considered, and the relative sizes, surfaces, and weights.

INGENIOR.



PENNY-IN-THE-SLOT ARCHITECTURE.

A vision of the future, when the present advertised offers to supply sketch plans and designs free on receipt of a penny stamp, become general. The Chairman of our District Council procures designs for the New Town Hall.

TRADE AND CRAFT.

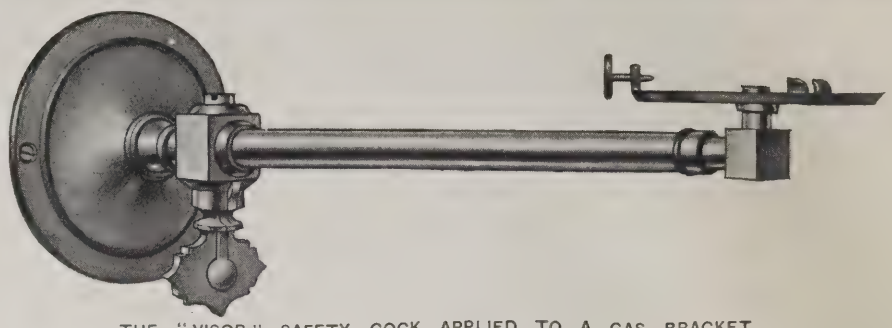
A Vanished Abbey and a Varnish Factory.

The Cistercian Abbey of Stratford Langthorne, commonly known as West Ham Abbey, is briefly recalled in a quaintly devised pamphlet that has been issued by Messrs. Robert Ingham, Clark and Co., Ltd., whose varnish works are "built on the site thereof." Several fragments of the Abbey-arches, walls, etc., were in existence fifty years ago, but now almost all that remains is an arch or window opening which is built into an outer wall of Messrs. Clark's premises. Several interesting illustrations of details of the old Abbey, as well as a small view and a plan of the entire building, are given; but the main purpose of the pamphlet is to describe and illustrate the firm's extensive varnish works, which were first erected on this site about forty years ago. Since that time, many additions have been made, and the area now occupied is about six acres, so that the firm claim that theirs is the largest manufactory in England devoted exclusively to varnish. They are contractors to the Governments of many countries. The various buildings—the counting-house and general offices, the leviathan tanks for the storage of turpentine and of oils and varnishes, the oil refinery, the three vast oil varnish factories, the thinning house, the maturing stores, the black japan factory, the spirit varnish factory, the turpentine varnish factory, the dispatch stores, the contract inspection warehouse, the testing rooms, the museum, the Pearline and Britannia Composition factories, the workshops and forges—are described and illustrated in this booklet, which is got up in the fashion of an ancient document, of which the parchment cover is stained and discoloured in imitation of the ravages of time. The pamphlet therefore is quaintly artistic, as well as decidedly interesting and useful.

Sash-fasteners, Door-bolts and Safety Cocks

A sash-fastener and door-bolt combining the maximum of strength, with absolute security against outside tampering, and which are, moreover, of very neat design, and moderate in price, are a very welcome addition to the department of door and window fittings. The "Visor" sash-fastener is so constructed that the action of fastening pulls the sashes together and holds them tightly at two points, thus reducing to the utmost limit the window-rattling nuisance. The two arms of the fastener then automatically lock themselves together in such a manner that it is impossible to open them from the outside; yet from the inside the lock is instantly released by the simple action of pushing back the fastener. The patent "Visor" door-bolt also locks and unlocks automatically on the simple action of pushing or drawing the bolt, the head being fitted with a perpendicular lever which springs into a hole provided in the base-plate when the bolt is shot, so that it cannot possibly be released or opened from the outside. The mere natural pressure put on the thumb-piece, however, when drawing the bolt is all that is required to unlock it from the inside.

The lever locking device, as applied to the "Visor" cock, consists of a pair of levers pivoted within a recess in the plug upon a single pin or bearing. A small helical spring, placed between the thumb-pieces at the top extremity of the levers, and within the thickness of the handle, serves to force the upper extremities of the levers apart and its lower parts together, with the result that when the thumb-pieces are pressed against the action of the spring, the lower extremities are raised up and out of the two notches or grooves provided in the crown of the body of the cock (into which they engage themselves automatically when turned off), thus releasing the plug from the lock and allowing it to be turned in the ordinary way. As the recess or slot in the plug does not extend below the crown of the cock, the gas-tightness of the cock is in no way jeopardised.



THE "VISOR" SAFETY COCK APPLIED TO A GAS BRACKET.

In each case, the locking device is actuated by the simple action of seizing in the ordinary way the knob of the bolt or sash, or the handle of the cock, the normal pressure of thumb and forefinger being sufficient to move the levers of the locking mechanism. It is pointed out that the numerous accidental deaths from asphyxiation, are nearly all caused by the inadvertent turning-on of gas-cocks, especially in bedrooms, where, on retiring to rest, a person may easily, without knowing it, turn on the gas after putting out the light, the ordinary cock affording no very certain indication of whether it is on or off, and being, in the dark, easily turned on by an accidental and unconscious touch from the hand or finger. Again, the unprotected floor-cock commonly fitted to gas fires is particularly liable to accidents. The "Visor" cock, however, can only be turned on by deliberate intention. An accidental kick or knock cannot turn it on, as both levers have to be pressed before this can occur. This safety principle, of course, admits of almost limitless applications, and is adapted for spirit vails, urns, wine and beer vessels, and for various uses on motor cars. The manufacturers are the Autolock Safety Cock and Bolt Co., Ltd., 317, High Holborn, W.C.

Messrs. Colledge and Bridgen, Midland Lock Works, Wolverhampton, announce that they have opened a London office at 34, Queen Anne's Chambers, Westminster, S.W. Their London manager, Mr. Wilson Aldwinckle (late of the firm of Messrs. Thos. W. Aldwinckle and Son), is in charge of the London office.

* * *

It is announced that the business of Messrs. C. Chancellor and Co., Ltd., manufacturers of paints, enamels, varnishes, stains, etc., including "Velure," "Stripso," and other specialities, has been converted into a private limited company, and that it will be continued as C. Chancellor and Co., Limited, but under the same management and proprietorship as before. We believe that Mr. H. G. Chancellor, M.P., who won a seat at Haggerston at the recent election, is a member of the firm.

COMING EVENTS.

Wednesday, March 30.

CARPENTERS' HALL LECTURES. — Mr. F. W. Pomeroy, A.R.A., on "Sculpture as applied to Buildings," 7.30 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION. —Mr. J. B. Stoughton Holborn on "The Spirit of Mediæval Art," 8 p.m.

Friday, April 1.

ROYAL SANITARY INSTITUTE. — Mr. W. C. Tyndale, on "House Drainage," 7 p.m.

LEICESTER AND LEICESTERSHIRE SOCIETY OF ARCHITECTS.—Students evening, 8 p.m. Mr. B. J. Fletcher, on "A Sketching Tour in Normandy." Mr. S. J. Wearing, on "A Sketching tour in Brittany." Mr. D. W. Day. on "Osmaston Hall, Derby."

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS (Southampton Row).—Mr. G. H. Palmer, on "The Influence of Illuminated MSS., on the Type and Decoration of Early Printed Books." 6 p.m.

Monday, April 4.

ROYAL SANITARY INSTITUTE. — Mr. J. E. Worth, on "Sewerage." 7 p.m.

R.I.B.A.—Mr. George Hubbard on "Architecture on the Eastern side of the Adriatic." 8 p.m.

Monday, April 4.

SOCIETY OF ENGINEERS (Room 18, Caxton Hall, Westminster).—Mr. Percy G. Scott, on "Moulmein Waterworks." 7.30 p.m.

Tuesday, April 5.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.—Annual dinner, King's Hall, Holborn Restaurant, 6 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Mr. D. A. Matheson on "The New Clyde Bridge of the Caledonian Railway at Glasgow"; Mr. F. C. Buscarlet on "The Queen Alexandra Bridge over the River Wear, Sunderland." 8 p.m.

Wednesday, April 6.

CARPENTERS' HALL LECTURES. — Mr. Thackeray Turner, F.S.A., on "The Craft of Repairing Buildings," 7.30 p.m.

ROYAL SANITARY INSTITUTE.—Dr. A. J. Martin on "Sanitary Aspects of Floods and Measures to be taken to prevent epidemics arising therefrom." 5 p.m. Mr. C. Chambers Smith on "Sewage Disposal." 7 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Mr. A. B. Ogden on "The Cleansing of filtering media and materials for constructional work." 8 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION. —Associates' Business Meeting.

Friday, April 8.

ROYAL SANITARY INSTITUTE.—Professor H. R. Kenwood on "Water—Composition, Pollution and Purification." 7 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Students' meeting. Messrs. G. H. Hodson and H. M. Gell on the reconstruction and extension of Egremont Ferry Pier. 8 p.m.

ROYAL SANITARY INSTITUTE.—Provincial Sessional meeting at Plymouth (Western Law Courts, the Guildhall). Mr. J. Paton on "The Removal of Town Filth." Dr. O. Hall on "The relative value of disinfectants in the control of Disease." 7.30 p.m.

Saturday, April 9.

EDINBURGH ARCHITECTURAL ASSOCIATION. —Visit to the New Markets and Slaughter-houses, Gorgie.

R.I.B.A.—Publication of names of applicants for candidature. Election on June 6th.

ROYAL SANITARY INSTITUTE.—Provincial sessional meeting at Plymouth. Visits.

Monday, April 11.

ROYAL SANITARY INSTITUTE. — Mr. Percy Griffiths on "Water Supply; Sources of Supply and Distribution." 7 p.m.

ROYAL SOCIETY OF ARTS (Cantor Lectures).—Mr. A. B. Searle's first lecture on "Modern Methods of Brickmaking." 8 p.m.

SURVEYORS' INSTITUTION.—Mr. T. A. Dickson on "The Report of the Royal Commission on the Poor Laws." 8 p.m.

Tuesday, April 12.

R.I.B.A.—Finance Committee meets.

Wednesday, April 13.

ROYAL SANITARY INSTITUTE. — Mr. H. Percy Boulnois on "Scavenging; Disposal of House Refuse." 7 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION. —Annual Business Meeting. President's Valedictory Address. 8 p.m.

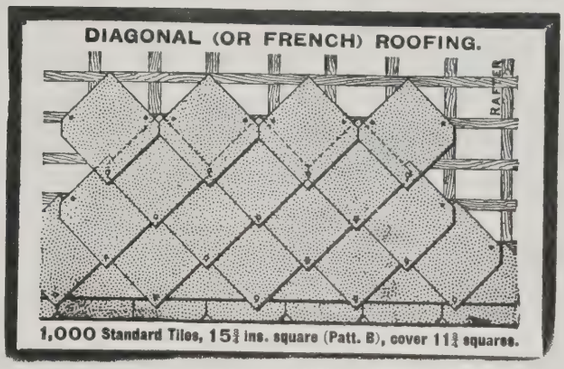
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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, *Caxton House, Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Belfast.—For internal plumbing work in connection with the Purdysburn Villa Colony Asylum, No. 3 contract, for the Asylum Committee.

Wm. Coates and Son, Ltd., Fountain Street	£7,739
A. Higginbotham and Sons, Idle, near Bradford	4,450
J. Lowden and Co., Ann Street	4,397
R. Patterson and Co., High Street	4,111
H. McCloy, Talbot Street	4,087
J. Dowling and Sons,* Queen Street	3,900

Rest of Belfast.

*Accepted.

East Kirkby.—For two pairs of houses, Welbeck Street, East Kirkby, for the Kirkby-in-Ashfield Co-op Society, Ltd. Walter H. Woods, M.R.S.I., architect, Central Chambers, High Street, Long Eaton, near Nottingham. Quantities by the architect.

Tate and Son, Annesley Woodhouse	£919 10 0
Coleman, East Kirkby	900 0 0
A. W. Hoole, Kirkby-in-Ashfield	869 0 0
W. Bains,* East Kirkby	850 0 0

*Accepted price after deductions.

East Kirkby.—For three houses, Diamond Avenue, East Kirkby, for the Kirkby-in-Ashfield Co-op. Society, Ltd. Walter H. Woods, M.R.S.I., architect, Central Chambers, High Street, Long Eaton, near Nottingham. Quantities by the architect.

Tate and Son, Annesley, Woodhouse	£759 10 0
Coleman, East Kirkby	755 0 0
Bains, East Kirkby	741 0 0
A. W. Hoole,* East Kirkby	680 0 0

*Accepted price after deductions.

Long Eaton.—For a house and shop, New Street, Long Eaton, for Mrs. E. A. Burton. Walter H. Woods, M.R.S.I., architect, Central Chambers, High Street, Long Eaton, near Nottingham. Quantities by the architect.

R. J. Warren, Long Eaton	£567
J. Bull, Long Eaton	554
T. W. Youngman, Long Eaton	554
Brown and Son, Long Eaton	538
E. E. Stevens, Long Eaton	534
Messrs. Perks and Son,* Long Eaton	529

*Accepted.

Oldham. — For erection and completion of 24 houses, Hillside Avenue, Clarksfield, for the Oldham Equitable Co-operative Society, Ltd. Mr. F. Thorpe, Architect, 7, Clegg Street, Oldham.

Kent and Newton, Royton	£5,509
Thomas Bros., Chadderton	5,470
J. Stump	5,300
B. and J. Smith	5,300
W. Whittaker and Co.,	5,290
S. and J. Smethurst	5,217
J. Bawley	5,130
W. Foster and Son,* Oldham and Greenfield	5,036

Rest of Oldham.

*Accepted.

Orpington (Kent).—For erection of banking premises for the London County and Westminster Banking Company, Ltd. Mr. St. Pierre Harris, architect, Lawrence Pountney Hill, E.C., and Orpington, Kent. Quantities by Messrs. Stoner and Sons, 63, New Broad Street, E.C.

T. Howard	£4,443
Durtnell and Son	4,385
Jones and Andrews	4,222
Pearce Bros.	4,200
T. D. Graty	4,149
Wiltshire and Son	4,098
Crossley and Sons	4,088
F. W. Green	4,079
R. Large	4,000
Arnaud and Son	3,996
Treasure Bros.	3,850
W. Blay, Ltd.	3,829
Somerford and Son*	3,757

* Accepted.

Shrewsbury.—Recommended for acceptance for erection of a secondary school at Shrewsbury, for the Shropshire Education Committee:—

Barnsley and Sons, Ryland Street, Birmingham, £14,444.

Stirchley (King's Norton).—For erection of public baths at the corner of Hazelwell Street, and Bournville Lane, Stirchley, for the King's Norton and Northfield U.D.C. Mr. J. P. Osborne, architect, 95, Colmore Row, Birmingham. Mr. C. T. Bond, consulting engineer.

W. Sapcote and Sons	£8,439
W. Pattinson and Sons, Ltd.	7,987
W. H. Gibbs	7,983
W. and J. Webb	7,955
T. Loud and Sons	7,935
B. Whitehouse and Sons	7,860
J. Webb	7,859
W. Wilkinson	7,846
J. Dallow and Sons	7,580
F. H. Smith	7,495
E. Crowder, Birmingham*	6,977

*Accepted for buildings only; engineering works not included.

Wakefield.—Accepted for erection of a lodge on the St. John's estate, for the Governors of the Wakefield Charities. Mr. W. Wrigley, A.R.I.B.A., architect, 2, King Street, Wakefield.

A. Turner, builder	£179 10 10
W. Loyd, joiner	125 16 1
J. Woodhead, plumber	45 5 11
S. Atkinson, tiler	24 17 0
H. Sanderson, Ossett, plasterer	40 19 7
C. Turner and Sons, painters	7 5 0

Insurance.

Free £500 Accident Insurance Coupons have this week been sent to the following:—

W. H. W. (Bristol), F. A. T. (Scarborough), W. B. (York), T. R. (Sheffield), F. N. (Sheffield), J. M. (Manchester), G. W. S. (Manchester), W. F. (Manchester), J. T. (Longsight), D. R. (Manchester), H. J. P. (Worcester), W. P. (Worcester), A. N. (Shepherd's Bush), J. R. (Bradford), W. L. M. (Halifax), W. G. C. (Leicester), W. E. B. (York), A. A. B. (Birmingham), J. C. (Bayswater), G. E. S. (West Worthing), J. S. (Acock's Green), C. G. (Glasgow), H. J. W. (Elstree), O. C. W. (London, W.C.), G. H. G. (Bexhill), C. G. H. (Redditch), D. W. W. (Sidcup), H. J. C. (Northampton), F. G. (Worthing), G. W. H. (Wimbledon Park), W. H. B. (Manchester), J. W. G. (Coventry), W. S. W. (Great Grimsby), D. F. S. (Kirkcaldy) G. W. H. (Willesden Green), F. R. S. (Retford), T. A. W. (Killmallock), R. H. H. (Hastings), F. F. A. (Orpington), H. W. O.'R. (Devizes).

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COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about five days or longer after the date of this issue. Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders. The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

March 29—April 12. **FOREST HALL (Northumberland).**—Erection of a new Council school, to accommodate 370 scholars, at Forest Hall, for the Northumberland Education Committee. Contractors desirous of tendering should forward particulars of name and address to C. Williams, secretary to the Education Committee, The Moothall, Newcastle-on-Tyne, not later than March 29, with a deposit of £2 2s. for specification and bills of quantities. Plans for the work may be inspected at the office of Hope and Tasker ,Architects, Trinity Buildings, New Bridge Street, Newcastle-on-Tyne, and tenders must be forwarded to the Secretary.

April 2-13. **HERNE BAY.**—Construction of a pier pavilion on their new Pier extension at Herne Bay, for the U.D.C. Plans and specifications of the work can be seen and forms of tender obtained by appointment, at the office of the architects, Percy J. Waldram, F.S.I., and Moscrop-Young and Glanfield, 12, Buckingham Street, Charing Cross, W.C. Application for bills of quantities and general conditions should be made to Joseph Jub, clerk, Town Hall, Herne Bay, not later than April 2, accompanied by £1 1s. as a deposit. In the event of a tender being withdrawn, the deposit will be forfeited. Tenders are to be delivered to the Clerk.

April 4. **ABERCARN (Mon.).**—Erection of stores for the Abercarn U.D.C. Plans and specifications may be seen at the Council Offices, Abercarn, at any time by appointment. Tenders to be sent to J. Williams, Engineer and Surveyor.

April 4. **SMALLEY (Derby).**—Erection of proposed new infant school for 90 children, for the Governors of Richardson's School Foundation. Plans and complete specifications may be inspected on application to H. H. Dix, Clerk to the Governors, Smalley, Derby, to whom tenders must be sent.

April 4. **HALIFAX.**—Various works required in connection with additions to "Ashfield," Burnley Road. Plans and specifications may be seen and bills of quantities obtained at the office of Clement Williams and Sons, Architects, Post Office Buildings, Commercial Street, Halifax, from March 30. Tenders must be sent to the architects.

April 4. **CAMBERWELL.**—Construction of a new quay wall, at their Depot, Peckham Park Road, Old Kent Road, S.E., for the Borough Council, in accordance with the plans and specification prepared by the Borough Engineer. Specification and forms of tender can be obtained from the Borough Engineer's Office, Town Hall, Camberwell, S.E.

April 4. **NEWPORT (I.O.W.).**—Execution of a new drill Hall at Newport, Isle of Wight, for the County Territorial Force Association. Plans and specifications can be seen at the office of the architect, Percy M. Du Feu, Ventnor, from whom copies of same and form of tender can be obtained on deposit of £1 1s. Tenders to be sent to the office of the association, 32, Queen's Terrace, Southampton.

April 4. **HAMILTON.**—Alterations at Hamilton Post Office, for the Commissioners of H.M. Works and Public Buildings. Tenders are required for the whole work, and not for separate trades. Drawings, specification, conditions and form of contract may be seen on application at the Post Office, Hamilton. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, 3, Parliament Square, Edinburgh, on deposit of £1 1s. Tenders must be delivered to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

April 5. **WALTHAM.**—Alterations and repairs required to be carried out at Waltham Council school, for the Committee. Specifications and plans can be seen at the house of the correspondent, C. J. Wanley Croft, Bridge, Canterbury. Tenders must be forwarded to the above-named correspondent.

April 5. **CLAYTON (Bradford).**—Masons', joiners', slaters', plasterers', plumbers', and ironmongers' trades required in the alterations and additions to Paddock Dyeworks, Pasture Lane. Plans, etc., may be seen and quantities obtained at the office of Sam Spencer, Architect, Old Bank Chambers, Great Horton, Bradford, from Wednesday, March 30, to Tuesday, April 5.

April 5. **SOUTH REDDISH (near Stockport).**—Erection of new branch premises at South Reddish, for the Stockport Industrial and Equitable Co-operative Society, Ltd. Copies of quantities may be had from Sagar Taylor, general secretary, on deposit of £1 1s. Tenders must be addressed to the Chairman. The drawings may be seen upon application to the Architect's Dept., Co-operative Wholesale Society, Ltd., Balloon Street, Manchester. Rate of wages, etc., clause to be observed.

April 5. **BIRMINGHAM.**—Alterations to Birmingham head post office, for H.M. Commissioners of Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to H.M. Office of Works, Birmingham. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on payment of £1 1s. Tenders must be delivered, addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

April 5. **MARGATE.**—(a) The construction of steps leading from Hodges Flagstaff to Palm Bay, Margate, and (b) the construction of a brick wall on the face of the cliff behind the iron staircase leading from the Oval to the sands, for the Corporation, in accordance with the plans and specification prepared by the Borough Surveyor. Plans and specification can be seen and all further particulars obtained on application to Ernest A. Borg, Borough Surveyor, 13, Grosvenor Place, Margate. Tenders to be sent to Edward Brooke, Town Clerk, Town Clerk's Office, Margate.

April 5. **MOUNTAIN ASH.**—Erection of an infants' school, with offices, etc., at Clarence Street, for the Education Committee. Plans and specifications may be seen, and forms of tender and bills of quantities obtained, on application to the Architect, W. H. Williams, Town Hall, Mountain Ash, upon the deposit of £2 2s. The committee undertake to open only the bills of quantities sent in by the contractor whose tender will be accepted, and to return all the other bills of quantities unopened. Tenders and bills of quantities to be sent to A. Morgan, Director of Education, Town Hall, Mountain Ash.

April 6. **BOVEY TRACEY.**—New elementary school for 200 children, and a cookery and manual training centre, etc., for the Devon County Education Authority. Bills of quantities will be available on payment of £1 1s. Contractors desiring to tender must apply to the County Architect (Education), 1, Richmond Road, Exeter, not later than Friday, March 11, 1910, enclosing a crossed cheque drawn in favour of the County Treasurer. Quantities will be issued about March 22, and tenders must be delivered at the architect's office.

April 6. **EDENBRIDGE.**—Erection of a new Council school to accommodate 200 children, for the Kent Education Committee. Plans and specification, and form of contract, may be inspected at the offices of the Committee, until the time appointed for the delivery of the tenders. Any person desiring to tender and to receive a copy of bills of quantities must send in his name to Fras. W. Crook, Secretary, Caxton House, Westminster, S.W., accompanied by a deposit of £1, not later than noon on March 10, 1910. Tenders must be delivered to the School Correspondent, Chas. Sheal, High Street, Edenbridge, Kent.

April 7. **SWANSEA.**—Extension of the Victoria warehouse for a distance of 67ft. with four floors, and erecting two additional floors on the old building, for the Harbour Trust. Plans, specification and quantities can be seen and forms of tender obtained on application to A. O. Schenk, M.InstC.E., at the Harbour Offices, Swansea. Tenders should be delivered to Talfourd Strick, Clerk, Harbour Offices, Swansea.

April 7. **LONDON (Walworth).**—Reconstruction of part of drainage and alterations to and addition of new w.c.'s on the women's side of Newington workhouse, Westmoreland Road, Walworth, S.E., for the Southwark Guardians. A copy of the specification, plan, and form of tender may be obtained from A. W. Tribe, Architect, 120, Clapham Road, S.W., on the deposit of £2 2s. Tenders to be sent to Sydney Wood, Clerk, Union Offices, Ufford Street, Blackfriars Road, S.E.

April 8. **COVENTRY.**—Erection of proposed new building, Hill Top, Coventry, for the Triumph Cycle Co., Ltd., in accordance with plan and specification prepared by Herbert W. Chattaway, Architect, Trinity Churchyard, Coventry, at whose office plans and specification may be seen, and all particulars obtained, and to whom tenders must be sent.

April 8. **WREXHAM.**—For carrying out certain works at the Victoria School conveniences, for the Education Committee. Plan and specification may be seen, and form of tender obtained at the Borough Engineer's Office, Willow Road. Tenders to be delivered to Lawson Taylor, Clerk, Guildhall, Wrexham.

April 8. **BARNSLEY.**—Persons desirous of submitting tenders for the whole or various works required in the erection of forty-one houses, situated in Cranbrook Street, and Holgate Avenue, Barnsley, must submit their names to W. T. Turner, Architect, etc, Market Hill, Barnsley (not later than March 30), where plans may be seen on application, and quantities will be sent after the above date.

April 9. **TINSLEY.**—Erection of a boarded fence dividing the cricket ground from the recreation ground, for the Parish Council. Specification and quantities can be obtained on receipt of stamped addressed foolscap envelope, from J. L. Winkley, Clerk to the Council, 15, Harrowden Road, Tinsley, Sheffield, to whom tenders must be sent.

April 11. **SHOTLEY BRIDGE (Gateshead).**—Erecting new hospital for consumptive patients on the Whinney House Estate. Persons desirous of tendering are requested to send their names to George Craighill, Union Clerk, Poor Law Union Offices, Gateshead, to whom tenders must be sent. Quantities and further information will be forwarded in due course. Plans, etc., may be seen at the offices of the architects, Newcombe and Newcombe, 89, Pilgrim Street, Newcastle-on-Tyne. Names must be sent in by March 25.

April 11. **LINCOLN.**—Construction of a brick and stone tower, 108ft. high to T.W.L., to support a spherical bottomed steel tank, containing over 300,000 gallons of water, and subsidiary works at Westgate, Lincoln, for the Corporation. Drawings may be seen now, and specification, bill of quantities and form of tender obtained at the office of the Engineer, Mr. Neil McK. Barron, Waterworks Engineer, Lincoln upon production of a receipt from the City Accountant for the sum of £5 5s. Tenders, addressed to the Chairman of the Waterworks Committee, to be delivered at the office of W. T. Page, Deputy Town Clerk, Bank Street, Lincoln.

April 11. **YORKSHIRE (East Riding).**—(a) The erection of a teacher's house and alterations to school at South Duffield; (b) for alterations and additions to the Council school at Pocklington; (c) for alterations and additions to the Council school at Withernwick, for the Education Committee of the C.C. Plans and specifications may be seen and forms of tender obtained on application to the building surveyor, County Hall, Beverley. For the convenience of persons desirous of tendering, a copy of the plans and specifications, together with forms of tender, will be deposited at the respective schools. Tenders to be delivered to John Bickersteth, Clerk to the East Riding Education Authority, County Hall, Beverley.

April 11. **WEST HEATH (Northfield).**—Erection of cubicles for isolation purposes at the hospital, situate at West Heath, Northfield, for the U.D.C. in accordance with plans and specifications prepared by Ambrose M. Cross, A.M.I.C.E., of 23, Valentine Road, King's Heath, the Engineer and Surveyor to the Council. Two sets of tenders are required as follows:—(1) Construction of steel glazed sashes; (2) general builder's work. Bills of quantities and forms of tender may be obtained, and plans and specifications may be seen at the office of Ambrose W. Cross as above, on payment of a deposit of £1 1s. Tenders, No. 1 or 2, as the case may be, must be sent to Edwin Docker, Clerk to the Council, 10, Newhall Street, Birmingham.

April 12. **TIERNASLIGO (Ireland).**—Erection and furnishing of National school buildings at Tiernasligo, County Donegal. Plans and specification can be seen at Londonderry (Victoria) Royal Irish Constabulary Barracks. Tenders must be sent to the Office of Works, Dublin.

April 12. **BACUP.**—Covering in of the River Irwell with masonry and brick arch, for a length of about 300 lineal yards, situate within the borough of Bacup, for the Corporation and the Lancashire C.C. Plans may be seen and copies of the specification and bill of quantities obtained at the County Bridgemaster's Offices, 8, East Cliff, Preston, to whom tenders must be delivered, addressed to the Chairman of the Main Roads and Bridges Committee.

April 12. **BATH.**—Taking down and rebuilding retaining walls and general repairs at the following bridges, for the Somerset C.C.:—(a) Nettle Bridge, at Oakhill, on the main road from Shepton Mallet to Bath; (b) East Chelwood Bridge and West Chelwood Bridge, on the main road from Bath to Weston-super-Mare, near Pensford, Bristol. Specifications and bills of quantities may be obtained from H. T. Chapman, county surveyor, Bath. Separate tenders must be addressed to the County Surveyor, Bath.

April 12. **MIDDLETON ST. GEORGE, ETC. (Durham).**—New Council schools at Middleton St. George, Hartburn and Whitton, alterations and improvements at Usworth Colliery and Littletown Council schools, and Consett cookery centre, for the Durham C.C. Sole tenders are invited. Plans, specifications and general conditions of contract may be seen, and bills of quantities obtained as follows:—Middleton St. George, Harburn and Whitton new schools, at the office of W. Rushworth, Shire Hall, Durham; alterations and improvements at Usworth Colliery, Littletown and Consett cookery centre (plans, specifications and general conditions of contract only), at the office of F. E. Coats, Shire Hall, Durham. Tenders are to be sent to A. J. Dawson, Clerk to the Education Committee, Shire Hall, Durham.

April 19. **HAZEL GROVE (Stockport).**—Erection of a new public elementary Council school on land in Chapel Street, Hazel Grove, near Stocport, to accommodate 800 children, with housewifery, laundry, and cookery centres, and caretaker's quarters, for the Cheshire Local Education Authority. Plans and specifications may be inspected and quantities obtained from the architect, C. T. Adshead, Leinster Chambers, 4, St. Ann's Square, Manchester, on payment of a deposit of £2 2s., on and after Tuesday, March 29. Tenders to be sent to J. W. Bain, Clerk, School Brow, Romiley, near Stockport.

April 21. **BUILTH WELLS.**—Erection of a new mixed and infants' school (346 places), and cookery kitchen, at Builth Wells, for the Breconshire Education Committee. Names to Charles W. Best, M.Inst.C.E., Surveyor to the Committee, County Hall, Brecon, accompanied by particulars of works recently carried out, and the names of two references relative to the quality of the work done.

ENGINEERING.

April 4. **SOUTHAMPTON.**—Construction of tramways in New Road and Northam Road, for the Corporation. Plans, specification, and conditions may be inspected, and form of tender obtained at the tramway offices, upon production of the borough treasurer's receipt for a deposit of £3 3s. Tenders must be left at the Town Clerk's office.

April 4. **GLASGOW.**—Steelwork, etc., required in widening the west side of the bridge carrying Finnieston Street over the Glasgow Central Railway, for the Corporation. Specifications and forms of tender may be obtained on application at the office of Public Works, City Chambers, 64, Cochrane Street. Tenders must be lodged with A. W. Myles, Town Clerk, City Chambers, Glasgow.

April 4. **MACCLESFIELD.**—Laying of about 1,430 yards of 9in., 7in., and 6in. stoneware and cast-iron pipe sewers, with manholes, flushing tanks, and other works incidental thereto, at Prestbury, for the R.D.C. The pipes and castings will be provided by the Council. Plans may be seen by appointment with J. Thorpe, surveyor, 19, King Edward Street, Macclesfield, from whom specification and quantities may be obtained on payment of £1 by cheque. Tenders must be delivered to Frederick May, Solicitor and Clerk to the Council, Macclesfield.

April 4. **FRIZINGTON.**—Supply and erection, complete, of gasworks plant, comprising retorts and fittings, condenser, steam engine, and exhauster, washer, scrubber, purifiers, and gasholder, with steel tank. The plans may be inspected and copies of specifications and conditions of contract obtained, on application to the Surveyor, Council Offices, Frizington, or to the Council's Consulting Engineer, Isaac Carr, M.Inst.C.E., Farnworth, Widnes, upon deposit of £2 2s. Tenders must be addressed to John Bowly, Clerk, Council Offices, Frizington.

April 4. **WELLINGTON.**—Provision laying, and jointing of about 2,350 yards of 12in., 9in., and 6in. stoneware pipe sewers, and about 650 yds. of 5in. cast-iron rising main, together with manholes and lampholes; also the construction of pump-well, engine house, workman's cottage, liquefying tanks, laying out irrigation areas, and other incidental works, for the R.D.C., in accordance with the drawings and specification prepared by the engineers. Drawings and specifications may be seen and bills of quantities and form of tender obtained at the offices of the engineers, Willcox and Raikes, 63, Temple Row, Birmingham, on payment of a deposit of £3 3s. Tenders to be delivered to Jno. Jones, Clerk to the Rural District Council, Edgbaston House, Wellington, Salop.

April 4. **KILLEENA (Queenstown).**—Supplying and laying of 4,225 yards of 12in. stoneware pipe and 326 yards of 9in. cast iron pipe, together with construction of catchwater tanks and other works for the purpose of conveying water from streams in the Townlands of Killeena and Cloneen to the existing storage reservoir at Tibbotstown, for the Queenstown U.D.C. Plans and specifications can be seen at Town Hall, Queenstown, or at the office of the Engineer, P. H. McCarthy, R.E., M.I.C.E.I., 30, Westmorland Street, Dublin. Specification, bill of quantities, and form of tender, will be supplied on depositing £2 2s. The competitor whose tender may be accepted will be required to enter into a formal indenture of contract and bond with the Council, and to find two good and substantial sureties jointly and separately to be bound under a penalty of £500 for the due performance of the contract. Tenders to be addressed to James H. Campbell, Town Clerk, Town Hall, Queenstown.

April 6. **PENWITHICK (St. Austell).**—Construction of a reservoir, near Penwithick. Drawings, specifications, and conditions of contract may be seen at the office of the engineer, H. S. Hancock, Sydney Place, St. Austell, and copies may also be seen at the office of John Stephens, Clerk to the Council, Cross Lane, St. Austell, to whom tenders must be sent.

April 6. **LONDON (for Capetown).**—Installation of a system of ventilation for the additions to the Cape Town Houses of Parliament now in course of construction. Tenders will be received by the Agent-General for the Cape Colony, 100, Victoria Street, Westminster, S.W. Descriptive notes and other information may be obtained from the office of the Agent-General for the Colony, where plans may also be seen. All proposals must give in detail the cost of the apparatus delivered in Cape Town, and also the additional cost for fixing same complete in working order in the buildings.

April 6. **NAAS (Ireland).**—Construction of pipe sewers, manholes, flush tanks, storm overflows, lamp-holes, fences, filters, septic tanks, and concrete effluent carriers, the preparation (including under drainage) of about one statute acre of land for irrigation ground and other works, for the R.D.C., in strict accordance with plans and specification prepared by the Council's Engineer, F. Bergin, B.E. Plans, etc., can be seen at the office of D. J. Purcell, Clerk of Council, Council Offices, Naas, on any day (except on Wednesdays and Saturdays), or at the office of the Council's Engineer, 36, Westmoreland Street, Dublin. Tenders, accompanied by a schedule of prices, and containing the names and addresses of two solvent sureties willing to join in a bond of £500 for the performance of the contract within the specified period, will be received by the Clerk to the Council. The contractor will be expected to give preference to local labour, as far as possible, and he must pay all expenses in connection with the preparation and execution of, and stamp duty on, contract and bond. The acceptance of any tender will be provisional upon the sanction of the treasury being obtained to the loan authorised by the Local Government Board to defray the cost of the works.

April 8. **HUCKNALL TORKARD.**—Re-laying of about 1,820 yards of 12in. and 18in. stoneware and iron pipe outfall sewers, with manholes, etc., alterations to present tanks and filters, the construction of liquefying tanks, percolating filters, storm water tanks, and other appurtenant works, for the Hucknall Torkard Urban District Council. Plans may be seen at the office of the engineers, Sands and Walker, Milton Chambers, Nottingham, and copies of conditions, specification, and quantities can be obtained on deposit of £3 3s. The successful contractor will be required to enter into a bond with approved sureties for the performance of contract. Tenders to be sent to Parker Woodward, Clerk, Council Offices, Hucknall Torkard.

April 11. **LINCOLN.**—Supply and erection of an absolutely watertight steel tank of 300,000 gallons capacity, and subsidiary works at Westgate, Lincoln, for the Corporation. Drawings, specifications and form of tender may be obtained at the office of the engineer, Neil McK. Barron, Waterworks Engineer, Lincoln, upon production of a receipt from the City Accountant for the sum of £5 5s. Tenders, addressed to the Chairman of the Waterworks Committee, to be delivered at the office of W. T. Page, Deputy Town Clerk, Bank Street, Lincoln.

April 11. **PONTEFRACT.**—Execution of a scheme of sewerage and sewage disposal, comprising the laying of about 1,000 yards of main sewers and manholes, relaying of about 1,500 yds. of existing sewers, alterations to precipitation tanks, construction of continuous bacterial and sand filters, effluent pipe, etc., at Cutsyke Sewage Disposal Works, for the R.D.C. Full particulars may be obtained from the engineers, D. Balfour and Son, Civil Engineers, 3, St. Nicholas' Buildings, Newcastle-on-Tyne, to whom applications must be made on or before March 21, and must be accompanied by a cheque for £5. Tenders must be sent to J. Dickon Smith, Clerk, Union Offices, Pontefract.

April 11. **BATH.**—Construction of the first sections of the intercepting sewers, pumping station, internal sewers, and sewage disposal works, for the City of Bath. The works for which tenders are now required are as follows:—Intercepting sewer contract:— These works will comprise about six miles of deep low level main intercepting sewers through the City, consisting chiefly of 36in. to 18in. cast-iron sewers and some stoneware pipe sewers, with manholes and appurtenances; together with five crossings under the River Avon, 2¼ miles of high level iron intercepting sewers, a deep storage tank under the pumping station to hold about 375,000 gallons, small connecting sewers, flush water mains, and various subsidiary works. Sewage disposal contract:— These works will comprise storm-water tanks, six large dortmund settling and precipitation tanks, 16 large bacterial filter beds containing 34,000 cubic yards of filtering material, two circular humus tanks, effluent culvert pipes, carriers, drains, embankments, and various works for the reception of 12,000,000 gallons a day during storms. These works will be constructed on 57 acres of corporation land at Saltford, about five miles from the City. Stone sewers, No. 1 contract:—These works will comprise the replacement of several old stone internal sewers by new brick and pipe sewers, with appurtenant works. Day-work contract:—These works will comprise the laying of several sewers, connections and other work which cannot conveniently be done by ordinary contract. Tenders will be received, especially from local and other builders, for the supply of the various materials and labour enumerated thereon. Conclusion.—Tenders for a number of contracts will be advertised for later on for the construction of the pumping station, two pairs of cottages, disposal buildings, mess rooms, several stone sewer replacements, laying of five miles of pumping main, and other works required when the first contracts are sufficiently advanced to enable these works to be started. The plans may be seen (except on the dates given below) and quantities obtained at the office of the Engineer, W. H. Radford, C.E., Albion Chambers, Nottingham, on deposit of £3 3s. for each of the first two contracts, and £1 1s. for each of the other contracts. The plans will also be on view at the Guildhall, Bath, on March 30 and 31, and April 1. Tenders to be sent to Fredk. D. Wardle, Town Clerk of Bath, Guildhall, Bath.

April 12. **BURY AND RADCLIFFE.**—Widening of Hardy's Gate (County) Bridge, which carries the main road from Bury to Radcliffe, on the border of the county borough of Bury and the township of Radcliffe, Lancashire C.C., the Corporation of Bury, and the U.D.C. of Radcliffe. Plans may be seen and copies of the specification and bill of quantities obtained at the County Bridgemaster's Office, 8, East Cliff, Preston, to whom tenders must be delivered, addressed to the Chairman of the Main Roads and Bridges Committee.

April 12. **DENTON AND HYDE.**—Widening of Broomstair (County) Bridge, situate on the main road from Denton to Hyde, half in the township of Haughton (Lancashire) and half in the borough of Hyde (Cheshire), over the river Tame, for the C.C.'s of Lancashire and Cheshire, the Corporation of Hyde, and the U.D.C. of Denton. Plans may be seen and copies of the specification and bill of quantities obtained at the County Bridgemaster's Office, 8, East Cliff, Preston, to whom tenders must be sent, addressed to the Chairman of the Main Roads and Bridges Committee.

April 14. **EGYPT.**—Sewage pumping plant, for the Egyptian Government. Copies of the conditions of tender, etc., may be obtained on application from A. L. Webb, C.M.G., Queen Anne's Chambers, Broadway, Westminster, London, S.W., and the Commercial Intelligence Branch of the Board of Trade, London. Copies of the detailed description of work, together with plans, etc., can be obtained upon payment of the sum of £5 2s. 6d. from the office of A. L. Webb.

April 16. **ROCHDALE**—Construction of a covered service reservoir (capacity two million gallons), on land belonging to the Corporation adjacent to Thornham New Road, in the Borough, and about 2¾ and 2 miles respectively from the Rochdale and Castleton railway stations of the Lancashire and Yorkshire Railway, for the Corporation. The drawings may be seen and a copy of the specification and form of tender, with schedule of quantities, may be obtained (on deposit of £5 5s.) at the offices of H. Rofe and Son, Civil Engineers, 8, Victoria Street, Westminster, S.W., and Oxford Chambers, Victoria Square, Leeds. Tenders to be sent to Wm. Henry Hickson, Town Clerk, Town Hall, Rochdale.

IRON AND STEEL.

April 4. **MANCHESTER.**—Supply of about 615 tons of cast-iron water pipes, 3, 4, 5, and 6ins. diameter, with about 100 tons of special castings, for the Waterworks Committee of the Corporation. Specifications, etc., may be obtained on application to the Secretary, Waterworks Offices, Town Hall, Manchester, on deposit of 10s.

PAINTING.

April 6. **LONDON, E.C.**—The Metropolitan Asylums Board invite separate tenders for the following works:—(1) Cleaning and painting and repairs at (a) the Grove Fever Hospital Hospital, Tooting Grove, Tooting Graveney, S.W., and at (b) the North-Western Fever Hospita., Lawn Road, Hampstead, N.W.; (2) cleaning and painting and repairs at (a) the Western Fever Hospital, Seagrave Road, Fulham, S.W.; (b) the Brook Fever Hospital, Shooter's Hill, Woolwich; (c) the South-Eastern Fever Hospital, Avonley Road, New Cross, S.E.; (3) alterations to discharge block at the North-Eastern Fever Hospital, St. Ann's Road, Tottenham, N.; (4) road repairing and tar paving work at the Western Fever Hospital, Seagrave Road, Fulham, S.W., in accordance with drawings, conditions of contract, and specification prepared by W. T. Hatch, M.I.C.E., M.I.M.E., Engineer-in-Chief. The conditions of contract, specifications, and forms of tender—also drawing in the case of the North-Eastern Hospital, and bills of quantities in the case of the Grove and North-Western Hospitals—may be inspected at the office of the Board, Embankment, E.C., and can be obtained upon payment of a deposit of £1 in respect of each work. Tenders must be delivered at the Office of the Board.

April 7. **CHELSEA.**—Painting and repairs required at Onslow Dwellings, Pond House, and Sir Thomas More Buildings, for the Borough Council, in accordance with the conditions, specification, and form of tender, copies of which ,together with information respecting the same, may be obtained at the office of the Borough Surveyor, T. W. E. Higgens, at the Town Hall. Tenders must be enclosed in the printed envelope obtainable therewith, and must be placed in the box provided for that purpose in the office of Thomas Holland, Town Clerk, Town Hall, King's Road, Chelsea, S.W.

ROADS AND CARTAGE.

April 4. **MIDDLETON.**—Supply of setts, flags, sanitary tubes, granite, macadam, etc., for the Corporation. Application for information forms of tender, etc., to be made to F. Entwistle, Town Clerk, Middleton.

April 4. **SOUTH STONHAM.**—Supply of:—Cherbourg quartzite, or British macadam and flint, for the R.D.C. The stone to be delivered at the various railway stations or wharves at such times and in such quantities as the District Surveyor may direct. Forms of tender may be obtained at the office of E. T. Westlake, Clerk, 20, Portland Street, Southampton (to whom tenders and samples must be sent), or of the District Surveyor, W. J. Potter, "Glenroy," Portswood, Southampton.

April 4. **WICKHAM MARKET (Suffolk).**—Supply of about 3,000 tons of granite, broken to 1½in. gauge, delivered in trucks at the following stations, before July 31, 1910: Aldeburgh, Framlingham, Marlesford, Parham, Saxmundham, Snape, and Wickham Market, on the Great Eastern Railway, and Kenton, on the Mid-Suffolk Light Railway, and in barges alongside Orford Quay and Iken Cliff, in the River Alde, for the Plomesgate Rural District Council. Tenders, with samples, to be sent to T. Waller Read, clerk, Board Room, Wickham Market. Forms of tender may be had on application to the Clerk.

April 4. **PLOMESGATE.**—About 3,000 tons of granite, broken to 1½ inch gauge, delivered in trucks at the following stations, before July 31, 1910:—Aldeburgh, Framlingham, Marlesford, Parham, Saxmundham, Snape, and Wickham Market, on the Great Eastern Railway, and Kenton, on the Mid-Suffolk Light Railway, and in barges alongside Orford Quay and Iken Cliff, in the River Alde. Tenders, with samples, to be sent to T. Waller Read, Clerk, at the Workhouse at Wickham Market, Suffolk. The Council reserve the right of accepting a portion of any tender to the exclusion of the remainder. Forms of tender may be had on application to T. Waller Read, Clerk, Board Room, Wickham Market.

April 6. **LYDD.**—Supply and delivery (free on rail, at Lydd Station) of road material, for the T.C. —450 tons 1½ gauge Rhenish columnar basalt; 20 tons 1¼in. gauge Rhenish columnar basalt; 10 tons ⅝in. chippings. Material to be delivered at such time as Surveyor may direct. Tenders, also samples, must be sent to Thomas Kettle, Borough Surveyor, Lydd. No form of tender supplied.

April 6. **WANSTEAD.**—Making up the street known as Warwick Road, for the U.D.C. Copies of specification and form of tender can be obtained and contract form inspected at the Council Offices, Wanstead, N.E., (Surveyor's Department). Tenders are to be delivered at the Council Offices, Wanstead, N.E.

April 7. **EASTBOURNE.**—For the supply of road materials (stone, flints, beach, and stone chippings), and for cartage of same from railway stations, for the R.D.C. All materials will be required to be delivered before Sept. 30. Tenders to be addressed to the Chairman of the R.D.C. at the Board-room of the Eastbourne Guardians, Avenue House, Eastbourne. Forms of tender may be obtained from T. E. Varley Kirtlan, clerk, 92, Terminus Road, Eastbourne, or C. M. Carter, Mount Sorrell Hampden Park, near Eastbourne, on forwarding stamped addressed foolscap envelope.

April 11. **WANDSWORTH.** — Making up and paving of that part of Copley Park, Streatham, which lies between Streatham Common South and Heybridge Avenue, for the Borough Council. The specification and drawings may be seen, and forms of tenders obtained at No. 56, East Hill, Wandsworth, S.W., upon payment of a deposit of £5 5s. Tenders must be delivered at the Council House, East Hill, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose. Persons tendering must in the case of all workmen employed by them pay wages at no less and observe hours of labour not greater than the rates and hours recognised by the associations of employers and employees and in practice obtained in the district where the work is to be executed.

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April 14. **WESTMINSTER.**—Paving work within the jurisdiction of the City Council. Conditions of contract, specification, schedule, and tender can be obtained on application at the Town Clerk's Office, Westminster City Hall, Charing Cross Road, W.C. The contractors will be bound by the contract in the case of all workmen employed by them, to pay wages at rates not less and observe hours of labour not greater than the rates and hours recognised by the Associations of Employers and Employees, and in practice obtained in the district where the work is to be executed. The contractors are prohibited from directly or indirectly canvassing members or officials of the Council in reference to any tender, and the tender of any contractor who does so canvass will be rejected. The contract deeds will be prepared at the expense of the Council, and the contractors will be required, together with two sureties, to enter into bonds for the due fulfilment of their contracts, or, in the alternative, to agree to the retention by the Council, during the period mentioned in the form of tender, of certain moneys. Each tender to be addressed to "The Town Clerk, Westminster City Hall, Charing Cross Road, W.C." Tenders may be placed by, or on behalf of, tenderers in a locked box at the City Hall, provided for the purpose.

MISCELLANEOUS.

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APRIL 6, 1910. *CAXTON HOUSE, WESTMINSTER.* VOLUME 31. No. 792

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Ex Cathedra.

FROM one who has been appointed to what, in University parlance, might be called the "chair" of consulting editor to this journal, which appears this day under a new or rather an additional title implying a wider scope, a word of greeting to its readers may not be out of place. First let me say that the change or extension of the title, from "The Builders' Journal" to "The Architects' and Builders' Journal," by which latter name this paper will henceforth be known, is one that I entirely support. The paper under the original title has attained great success as a journal particularly on the practical side of the architectural art. Without in any way giving up this practical character, it was the intention, when I was asked to assist in its counsels, that the scope of the paper should be extended so as to include a greater attention to the artistic side of architecture, and to the arts connected with that central art; and an alteration of the title, so as to express this change, would in any case have followed sooner or later. On my advice it was decided, however, to adopt at once the title which expressed the change, rather than defer it to what might, perhaps, seem the more convenient season of a new year or a new volume.

Most of those who will read these words will have known my name for a good many years in connection with another architectural journal. The circumstances which have led to the change concern no one but myself. All I need say here is that I am now free to devote my energies to working with and for those whose primary object is to render this paper the leading journal for architects. Beyond these few words, which I hope will not be considered out of place in the circumstances, my personality will not in future be intruded on the readers of this journal; but my services as a critic on architectural subjects, with whatever value has attached to them in the past, are now transferred to the columns of "The Architects' and Builders' Journal."

H. H. STATHAM.

Literature and Architecture.

THERE seems to be a spasmodic tendency, now and again, to disparage all writing about architecture as something altogether unnecessary and beside the mark. Did we not hear, only a few days ago, of a thesis started as a *point de départ* in a certain architectural debating society: "Are books on architecture of any value?" The question was perhaps framed with the express object of provoking retort; it could hardly have been propounded quite seriously. In the first place, architecture itself, in its existing monuments, is so fascinating a subject that its form and its records well deserve to be enshrined in those costly folios of description and illustration which are among the most beautiful productions of the art of bookmaking, and the most decorative treasures of a sumptuously stored library. There are few things more attractive to the eye and the fancy than the sight of a shelf-load of monumental volumes in which, with the toil of years, the illustration of some important phase of architecture has been adequately carried out. They symbolise, in a way, the importance and the dignity of the art. We should have small sympathy with anyone who could look over such a collection without feeling his architectural fervour stimulated thereby.

And as to the utilitarian side of the question, is there no use, for example, in the record of the careful measurements of the most perfect building in the world; or is it to be supposed that we ought, each of us, to ignore all the facts drawn in Penrose's volume, and go and measure the Parthenon again for ourselves? Or is Fergusson's vast *aperçu* of the history of architecture, the work of almost a lifetime, a thing of no value?

However, these heresies we hear from time to time: and if they are directed against permanent and monumental publications, *a fortiori* we must suppose that the mere ephemeral literary tribute of a weekly journal is to be contemned as valueless; and, indeed, we hear of discriminating subscribers who cut the illustrations out of a journal and throw the rest away. If they are right, it is the fault of the journal. Otherwise, it may be an indication of a rather narrow range of sympathies and education. It does not follow that because the ultimate end of architecture is the production of good

buildings, all writing about the subject is useless—even to that end.

Let us consider the main objects which may be kept in view in the pages of a journal devoted to architecture. The first, and the most simple and obvious one, is the mere giving of information as to what is going on in the world of architecture and building; what buildings are completed, and what new ones, or competitions for new ones, projected. That is almost what one may call the mechanical part of journalism, dealing with a special class of subject; its great merit is to be accurate; but if accurate, it is of more than immediate value. It is a record of fact which may be of service for after reference.

The further step is, to give information on practical subjects connected with new materials or methods of construction; that is the scientific side of the enterprise, and is a very important one; by many members of the profession it seems to be regarded, in fact, as the only important element in a professional journal. We want what will help us in our daily practice, they say in effect; all the rest is padding that we can do without. That also is a somewhat narrow view of the subject; a point to which we will presently return. For the moment we may observe that it is important that this scientific information should be not only accurate and learned in itself—furnished by men competent to instruct others on the subject (which it is the business of the editor to see to), but that it should be entirely unbiassed; an object not so easily obtained as is sometimes supposed. Experts in some special form of construction have sometimes an interest in its use, direct or indirect; or, without being interested in that sense, have their own special preferences for a favoured method or a favoured form. All these disturbing influences have to be discounted, if the instruction given is to be what Bacon calls "dry light." In the lay press of this country the conditions are quite otherwise. Readers would be astonished could they know how many newspaper paragraphs recommending this or that invention are really written by the people concerned in making money out of it. Such pitfalls should, at all events, never occur in a journal backed by professional knowledge.

But this practical information, after all, is not architecture; it is only the means to architecture; the structural basis on which, as on a solid rock, the palace of architecture should rest. Architecture is the expression of beauty and of character in building. And this is a matter of designing, of drawing, you say; and writing about it is not designing. But is there nothing to be said on the subject that is worth saying? Is modern architecture, for instance, to be a matter of tradition, of imitation and combination of accepted forms; or is it to be a matter of individualism and invention? Upon the answer to such a question hangs the whole present and future of modern architecture. If the subject can be cleared up by any literary discussion, surely that need not be labour or type wasted. It is, in part at least, by thinking over such problems, considering them from all sides, that we may come to a decision as to what to aim at. That is what architectural criticism, in the higher sense, really means. It is an endeavour to ascertain our right direction; no unimportant object in connection with an art so abstract, so little governed by the example of nature, as architecture. The painter and the sculptor have at least the natural figure or the natural landscape to keep their aims within definite limits; outside of those models they may not stray beyond the extent allowed by certain conventions of treatment. But the architect has no such limitations of form before him; he works towards an ideal which is in his mind, but not in nature. It is a matter of thought which may from time to time be cleared up by discussion. As a poet has said, when urging that two minds to a subject are better than one—

"Thought disentangles running o'er the lip."

May it not disentangle running through type, too? And there is the sacred duty, also, of promoting enthusiasm in architecture, in which words may be by no means powerless. There is perhaps not a single proposition in Ruskin's "Seven Lamps" which is in itself incontrovertible; yet who ever read it without having his enthusiasm quickened? And it is with the same end, of stimulating enthusiasm, that the study and illustration of the architecture of the past should not be neglected. It is a poor sort of spirit that says, or thinks, that such studies are of no practical use; give us something that assists us in our practice of to-day. That is to make of architecture a profession rather than an art. The contemplation of all the great things in the architecture of past ages should be a source of inspiration. "Practical" is a dangerous word; it often comes terribly near to meaning "prosaic"; and he who has not fed his mind on the great architecture of the past is not very likely to produce great architecture in the present.

It is a humbler but not unimportant function of architectural literature, more especially in its journalistic form, to be able to say the right thing at the right moment, and more especially to give a word of support, when it is likely to be of effect, to a measure or an opinion which has been the subject of discussion and difference, and where perhaps neither side sees the matter in all its bearings. A few words calling attention to the real issue which underlies a discussion, and supporting what appears to be the better side in it, may serve to give voice, not without effect, to what perhaps others think but have not the opportunity of saying.

For all which reasons it may be contended that writing about architecture is not necessarily an entirely useless exercise of the faculties.

The Science of Stained Glass.

IT is noteworthy that recent years have seen many valuable contributions by scientific men to the study of architecture and the allied arts. The paper read by Mr. Noel Heaton before the Royal Society of Arts, of which a short abstract appears on another page, is an instance in point, for it adds much useful information to our knowledge of the scientific basis of stained glass design. The elucidation, analysis, and comparison of the materials and methods employed in any of the crafts is not merely a guide to the present-day craftsman, but is also valuable in disclosing some of the secrets by which our forefathers obtained effects which we envy but cannot reproduce. It is not merely interesting but extremely useful to learn from Mr. Heaton that the mediæval glassworker obtained strong, vigorous lines in his glass-painting by using an intense colour flux to seal his pigment on to the glass canvas—to borrow a painter's term—of his picture. By the use of such a flux he strengthened and gave body to the particles of his pigment; whereas the modern craftsman, using a colourless or transparent flux, depends solely on his pigment particles, and his lines are apt, in consequence, to look broken, or "rotten." It is not surprising, perhaps, to learn that the Gothic—and especially the late Gothic—glass was less durable than either the Roman that preceded it or the modern that followed it. We are sufficiently removed from the Gothic Revival to appreciate the wonders of the Mediævalists without crediting their infallibility. But a conclusion one can hardly escape in reading Mr. Heaton's paper is that the Mediævalist obtained some admirable effects in his glass through the limitations both of his technique and of his plant. The primitive nature of his furnaces and appliances resulted in the production of glass that was very imperfect or very perfect, according as you regard it from the purely utilitarian or the æsthetic standpoint. The irregular thickness and the "reaminess" caused by slight variations of compositions in different parts of the sheet are defects; but it was these very defects which caused the light passing through it to become irregularly refracted and partially diffused, and so conferred on Gothic glass that peculiar character for which it is famous. The Gothic craftsman triumphed, therefore, either because of his limitations or in spite of them.

"Vandalism in South London"

A RESIDENT in Camberwell Grove has written a bitter letter of complaint to "The Times" about the manner in which the Camberwell Borough Council has been treating the trees in that thoroughfare; and has thereby provoked a spirited controversy in the columns of our contemporary, to which Sir Aston Webb, R.A., and Mr. Arthur Severn have contributed. From the Town Clerk's statement it seems that this lopping has been undertaken to remedy complaints of obstruction to traffic, light and air, dampness to houses, etc., but it is the contention of the Camberwell Grove resident that the work has been undertaken for the benefit of the unemployed, who, from his point of view, would have been better occupied in digging holes and filling them up again. The debatable point as to the necessity or otherwise of the work, and whether it could have been done differently is now beyond the range of profitable discussion; but the suggestion of Sir Aston Webb is well worth consideration and development. If we grow forest trees on the edge of the pavement, they will, unless pruned and controlled, undoubtedly become troublesome both to the street traffic and to the houses. It is the distinguished architect's idea that "now that street tree planting has become so general with us, and is a matter that greatly affects the beauty and healthiness of our streets, our local authorities should hold a joint inquiry into the best treatment of street trees alike from the horticultural, the æsthetic, and hygienic sides, as exemplified not only in our English towns, but also on the Continent, especially in France; and that, after taking the opinion of those best able to give advice, an authoritative statement of suggestions should be drawn up which would form a reliable guide for those who have charge of our trees in the future, and while ensuring some uniformity of treatment might at the same time serve to reassure the public that, while the trees were being carefully tended, their own interests and also the beauty of the streets were being duly considered." That system seems to us to embody the common sense of the matter. In particular, we should like to repeat here our former contention that in any scheme of street tree planting the trees should adorn and not obscure the houses, and should be a source of unalloyed pleasure, and not a general nuisance.

"Architects and the Public."

UNDER this title Mr. W. Shaw Sparrow, who writes rather as if he was the instructor of the world about architecture, has an article in "The New Age" which includes one point worth attention. He repeats, and rather forcibly, the criticism, which has not infrequently been made by people outside the profession, on the 5 per cent. system of charging for an architectural design and the surveillance of its execution, as leaving it open to a client to feel that the architect is consulting his own interest whenever he proposes an enlargement of a scheme. Few clients, perhaps, really think so, but there are some who do, and the idea that the client may have such a suspicion is not a pleasant one. But one of the principal other objections to the five-per-cent. system is that it allows nothing for exceptional talent or exceptional fame; the gifted architect is supposed to command no higher terms than the unknown beginner; and if he is to make the most of his abilities, it must be not by charging on a higher scale, but by accepting more commissions, and hence undertaking more buildings than he can give personal attention to. There is more in this than architects have quite realised. Mr. Sparrow quotes a remark made to him which is worth requoting:—

> If I buy from Tadema a beautiful picture of Roman life, and pay him £3,000, I know for certain not only that the work is entirely his own, but that he has given to it months of undivided thought and loving care. On the other hand, if I build myself a house for £60,000, I am likely to hear that my famous architect at the same moment has several such houses in hand, as well as a large public building. Is that any pleasure to me? Am I satisfied with occasional visits from my chosen servant? I would sooner pay him four or five thousand pounds and have all his time for a year. I am afraid of a large office staff in architecture, as I am of school pictures by Rubens.

It is impossible to deny that there is truth in that, and that five per cent. and the "large office" staff is a system which tends to produce mechanical architecture. It is true that it is a system consecrated by long usage, and that it saves trouble to some extent; but if architecture is really an art, and not a trade, there is no logic in paying for it on a basis of financial outlay. The Institute have now under consideration the revision of their schedule of architectural charges; cannot they at least insert the thin end of the wedge by stating that any member is at full liberty to arrange his own terms with his client, if he prefers that to five-per-cent; provided always that he does not descend to lower terms than the five-per-cent. would have amounted to? That this course has been suggested by some of their correspondents, in answer to questions recently circulated by the Institute, we know. One would prefer that there should be no mention of a minimum charge; but until the public is educated up to a proper sense of architecture and the dignity of an architect's calling, its deletion would place respectable practitioners, especially in the provinces, at the mercy of their less scrupulous brethren and those erring public bodies who ask architects to compete on the basis of professional remuneration. But as long as the Institute document lays down five per cent. as the legal basis for an architect's charge, architects will be nervous at adopting any other system, for fear that a court of law should refuse to recognise their claim. Let the Institute Council once say boldly that five per cent. is the minimum charge, and that an architect is at liberty to arrange his own charges as he pleases above it without derogating from professional etiquette, and the door will be opened for what would be a better state of things, certainly for architecture, and probably for architects.



Photo: Topical.

THE LOPPED TREES IN CAMBERWELL GROVE, CONCERNING WHICH A SPIRITED CONTROVERSY HAS BEEN PROVOKED, IN WHICH SIR ASTON WEBB, R.A., HAS JOINED.

NOTES AND NEWS.

The Amenities of Richmond.

There are more ways of killing the proverbial canine than hanging him. Some weeks ago we commented on the difficulties of the Richmond (Surrey) Corporation in preserving the amenities of their greatly favoured district, and in particular with the opposition of the townsfolk generally to the erection of a tall red-brick block of flats on the site of Ancaster House, an old Georgian mansion standing just by the Park gates. The Corporation has been able, under one of its by-laws, to defer the scheme for some considerable time, but weighty support to the opposition has been received from an unexpected quarter. Doubtless the great attraction and the money-making possibility of this building scheme to the promoting syndicate was the uninterrupted view which the flats would enjoy over Richmond Park. But H.M. Office of Works, as custodians of the Park, are not impressed with the scheme, and Mr. Lewis Harcourt and his advisers have decided, and already started, to plant a thick belt of quick-growing trees along their side of the fence, which will speedily efface any pleasant prospect which these flats might have enjoyed. It is considered that this counter move will prove a bar to the further continuance of the scheme. One can, of course, sympathise with the syndicate's point of view, and their disappointment at this setback to a promising building speculation. But there are certain places so richly endowed by Nature that they should not be unduly exploited, and we think Richmond is one of them.

* * *

The Town Planning Act.

The Local Government Board have issued instructions for the guidance of their inspectors in cases of public local inquiries under Section 39 of the Housing and Town Planning Act. Under these the inspector has power to summon persons for examination on any matter relating to the subject matter of the inquiry; he has also power to adminster an oath, or to require a witness to make and subscribe a declaration.. If the inquiry relates to an appeal under section 15, section 17, or section 18 of the Act, the inspector, either during or after the inquiry, shall visit and inspect the premises to which the appeal relates, and shall invite the parties to the appeal to accompany him. If, however, the inquiry is held in regard to an appeal against a demand for the recovery of expenses or an order with respect to those expenses under section 15 (6), the inspector need not make such visit and inspection unless the circumstances appear to him to require it or unless either party to the appeal desire it. The instructions also cover the manner in which the evidence should be taken, and in which the inspector should make his report to the Local Government Board.

* * *

Puddletown Church.

A strong rejoinder to the various criticisms passed upon the proposals for restoration at Puddletown Church has been made by the Rev. J. G. Brymer, the patron of the benefice. It appears that the Perpendicular chancel was pulled down in 1576, probably "through a desire to curtail the rectorial liability of repair." With the stone of this chancel was built in the village a house known as Stayles House. The house is now in a decayed state, and Mr. Brymer proposes to pull it down and re-erect the chancel with the stone, thus restoring to it what it lost in the 16th century. He considers it not unlikely that the foundations of the original chancel will be discovered. It is not intended to alter any of the existing features of antiquarian interest. The pulpit will be restored to its original position, the painted deal at the back of it removed, and the stairs to the rood loft revealed. The Archdeacon of Dorset, in defending the proposals, also in the "Dorset County Chronicle," says: "Perhaps it is not fully understood that the suggestion is to reconstruct the chancel, which (like those of both the churches in the parish of which I have charge) was for the most part pulled down in the 16th century. It is fully intended to preserve all those characteristic features which we value so highly, the east end being re-erected stone for stone, the three-sided altar-rails retained, and the panelling replaced. While the pulpit would be set back to the position which it occupied until 1850, the body of the church, the Athelhampton Chapel, the gallery, and the oak work would be unaffected." Nothing is proposed to be done, as it appears, which would detract from the antiquarian interest or the historic character of the church

* * *

The Earliest House-boat.

Successful spade work, and the publications describing its results, is having a revolutionary effect on our knowledge of the ancient practitioners of the arts and crafts. The inhabitants of Niffer, which is identified with the Biblical Calneh, founded by Nimrod or Merodach, are fortunate in having for their historians the energetic band of explorers who have the University of Pennsylvania for headquarters, whence has been recently issued "The Earliest Version of the Babylonian Deluge Story, and the Temple Library of Nippur." The original "books" on which this volume is based consisted of 433 pieces, mostly of unbaked clay, covered with hardened clay from the adobe walls under which they were buried. These tablets were unearthed by the fourth American expedition at the Tablet Hill Mound, which, in Professor Hilprecht's opinion, covers the ruins of the Temple Library, the school, and part of the archives of the older period. This building was probably in ruins about 2,000 years before the beginning of the Christian era! Yet, even at that remote period, civilization was sufficiently far advanced to include tablets showing grammatical paradigms and phrases, geographical lists of mountains and countries, lists of plants and animals, weights and measures, chronological lists, medical prescriptions, mathematical data, and a number of other subjects of intellectual interest. The Babylonian version of the Flood affords Dr. Hilprecht the opportunity (which perhaps no *savant* outside America would have had the courage to seize) of translating the work for ark—the very alluring word *magurgurrums*—as "house-boat."

* * *

Enduring Brickwork.

In uncovering the fine stone bridge over the moat at Hampton Court Palace, some interesting discoveries have been made. In the wall of the north wing, under Lady Gifford's apartments, two large archways have been revealed, evidently designed to bring the water into the moat; and on the south side have been found some curious brick steps leading by an archway into the moat from a subterranean way underneath the rooms now occupied by Lord and Lady Wolseley. There is much, says Mr. Ernest Law, in the "Times" of March 25th, which points to the waters of the moat being utilized to flush the vast system of arterial drainage which was one of the main features of Wolsey's palace. The brickwork of both the moat wall and the main building, though buried for 200 years, has mostly been found in as satisfactory a state as the stonework of the bridge. Where it was otherwise, it has been carefully patched with the old Tudor bricks. Tens of thousands of these—unrivalled for their texture and their varied tones of rich colour, extending from dark purples and crimsons to bright rose—have been collected from the *debris* and put aside for the restoration.

* * *

Old-time Prices.

The moat wall at Hampton Court was not built until six months after the bridge, namely, in the spring of 1536, but Henry VIII. was as much in a hurry for its quick completion as he had been in the case of the bridge. Labourers were accordingly employed by the score to hasten on the building of the wall and to work day and night. They were paid 5d. a day instead of the customary 4d., while those who were engaged in lading the water out of the foundations of the brick wall in the moat, by the stone bridge, were paid the very special rate of 6d. a day. Many fragments of moulded and carved stonework, old encaustic tiles, tools and instruments, and other objects of interest, have been discovered during the five months' excavations. The cost of the work, so far, has amounted to no more than £1,400.

* * *

The Greenock Housing Question.

As might have been expected, the housing accommodation report by the deputation sent by the Government torpedo factory workers who are about to be transferred from Woolwich to Greenock has caused much indignation in the West of Scotland. It is contended that the report exaggerates the facts, and that housing conditions in Greenock are "as good as anywhere in Scotland"—a phrase that seems almost provocative of repartee. What is more to the point, Lieutenant Acklow, on behalf of the Woolwich men, has written to the Greenock Corporation urging them to enter into a building scheme. It is of course regrettable that Scottish susceptibilities should have been offended, and apparently Lieutenant Acklow has taken the right course in explaining that the gist of the objection is mainly to be found in the difference in point of view as regards North and South. The conditions in the North are not necessarily worse than those in the South. They may be merely different, and the difference is keenly felt. By-and-by, there is to be a garden city in the Greenock district; but by the time this materialises the invading Southrons may have become accustomed and reconciled to their new surroundings.

* * *

"False Front" Beautification.

An interesting attempt at harmonizing the visible architecture of the principal street of a village is in progress at Wheaton, Ill. Wheaton is a small village 25 miles west of Chicago, beautifully situated and laid out, and with many attractive residences, but its two or three blocks of business premises are decidedly commonplace. Plans have recently been made for building a false front on all the buildings in these blocks, the aim being to treat the aggrega-

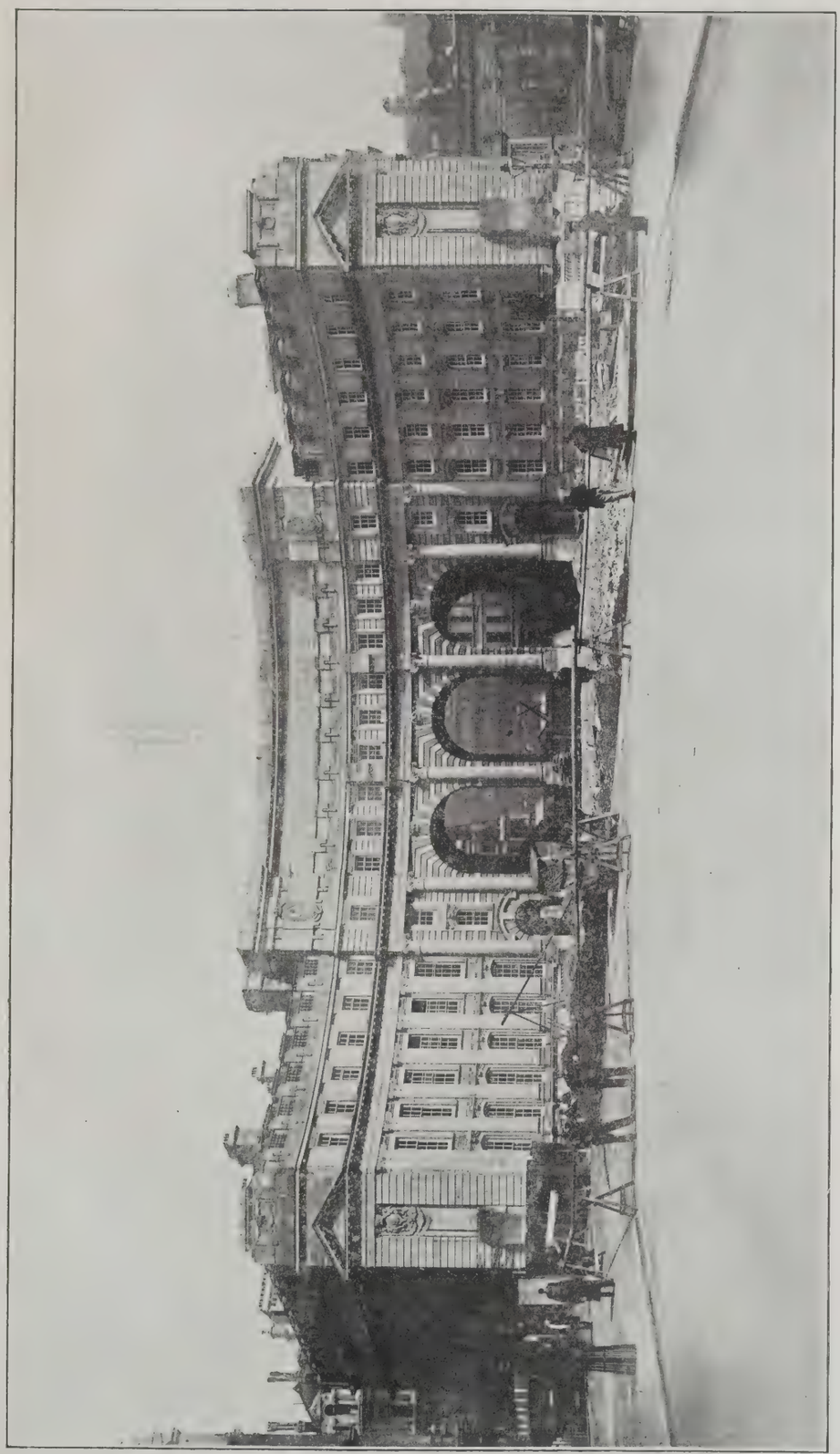


Photo: Topical.

THE NEW ENTRANCE TO THE MALL FROM CHARING CROSS: AS VIEWED FROM THE MALL. SIR ASTON WEBB, C.B., R.A., F.R.I.B.A., ARCHITECT.

Now that the hoarding has been cleared away a good view can be obtained of the New Entrance to the Mall, which forms part of the Queen Victoria Memorial Scheme. The wings on either hand provide additional offices for the Admiralty and an official residence for the First Lord of the Admiralty.

tion as a unit, but without material alteration of the remaining parts of the structures, and with sufficient diversity to preserve the distinction between separate buildings. The sketches that have been prepared indicate a following of old English village architecture, with gables and outside timbering in place of the present box effect with level sky lines. It is proposed to effect the transformation by covering the fronts with steel lath or expanded metal, and laying upon this a covering of concrete. It is argued that apart from the improvement from an artistic point of view a certain amount of protection from fire will also be afforded by the change. Another suburban village of Chicago, Lake Forest, has under consideration a somewhat similar plan of beautification. We dislike to say anything that may appear to be out of sympathy with any aspiration towards beauty, but we must confess to a strong, and perhaps unreasoning, dislike to this awfully sudden conversion at the hands of the beauty doctor. What on earth can Chicago have to do with old English village architecture, sham or real? The false-fronted shops in Wheaton, Ill., will give mainly the irritating impression of a sham-antique exhibit at some "World's Fair."

* * *

London's Cheapest Flats. The "Sam Lewis" flats, which will be inaugurated to-day, have been erected in the Liverpool Road, in accordance with a bequest by the late Mr. Sam Lewis, who left £500,000 for this purpose. For two shillings a week, a two-room flat, including bath, may be had; while for slightly higher rents families of workers with incomes under 25s. per week can obtain three-roomed flats furnished with a bath fitted with hot and cold water, free chimney sweeping, and the free use of venetian blinds. Under these conditions some 1,520 persons will be housed in luxury. The buildings were designed by Messrs. Joseph and Smithem.

ARCHITECTS OF THE DAY.

XI.—MESSRS. BUCKLAND AND HAYWOOD-FARMER OF BIRMINGHAM

[The firm of Messrs. Buckland and Haywood-Farmer and their work will be well-known both in Birmingham and to our readers. In adding their portraits to our gallery of Architects of the Day we give some particulars of their work, accompanied by some illustrations of their most recent buildings, the exigencies of space not permitting as full a selection as we desired.]

The Birmingham School has become a recognised term in architectural circles, and it is almost needless to add that this distinction is based upon the excellent work that Birmingham architects have produced in recent years. It is also curious to note how many names of well-known members in the Birmingham school begin with the second letter of the alphabet—Mr. W. H. Bidlake, Messrs. Bateman and Bateman, Mr. J. L. Ball, Mr. Butler (of Crouch and Butler), and Mr. H. T. Buckland (of Messrs. Buckland and Haywood-Farmer). The last-named firm, who are the subjects of our notice, have designed a good deal of the domestic work for which the Birmingham school is so justly celebrated.

With regard to personal details, it is nearly always difficult to extract these from architects, who are, generally speaking, a diffident race. Mr. Buckland, like many another true artist, does not "imagine that his biographical data are likely to be of the slightest interest to anyone," as it appears to him that "it is only a man's work which really interests others engaged in the same profession." Such modesty is very charming; but it discounts the well-ascertained phenomenon that at least nine out of ten normally constituted men are positively avid of biographical details, which, indeed, as some philosophers hold, may actually help to a better understanding of a man's art. Mr. Herbert T. Buckland, then, was born in 1869, at Barmouth. His earlier progenitors came from Crudwell, in Wiltshire. He was educated in Birmingham, first at a preparatory school and after at King Edward's Grammar School.

It was his boyish ambition to become a mechanical engineer. Accordingly, as a preliminary to being articled, he went, at the age of sixteen or seventeen, into the workshops of the famous firm of Boulton and Watt, at Soho, for a few months on trial. The result was complete disillusionment.

Mr. Buckland considers that he drifted into architecture by pure accident. Disillusionment having led to indifference, the lad entered without enthusiasm into articles with Mr. Henry Clere, quantity surveyor, Birmingham. At the very outset young Buckland joined the Birmingham Architectural Association and, in particular, became closely acquainted with Mr. C. E. Bateman, who had then just gone into partnership with his (Mr. Bateman's) father. Mr. Clere did the quantities for this firm, and his and their offices were in the same buildings. Buckland, having a good deal of spare time at his disposal, assisted the Bateman's with some of their drawings. This experience, and attendance at the Birmingham Architectural Association classes, gradually imbued him with an interest in architecture, and on completing his articles he went into the office of Messrs. Bateman. After two or three years Mr. Buckland purchased a share in the business of Mr. Clere. The firm then undertook architectural work, and among their first commissions were alterations and additions to the Navigation Inn at Bromford, near Birmingham, a drawing of which, by Mr. Buckland, was hung in the Academy about sixteen years ago.

After two or three years the partnership with Mr. Clere was dissolved, Mr. Buck-



Photo: T. Lewis.

THE WOMEN'S HOSTEL, BIRMINGHAM : BUCKLAND AND HAYWOOD-FARMER, ARCHITECTS.

This building occupies a site in close proximity to the New University, and has been erected as a residence for the women students there.



Mr. HERBERT T. BUCKLAND.

(Sketched from life by our Special Artist.)

Architects of the Day, XI.—Messrs. Buckland and Haywood-Farmer, of Birmingham.

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MR. E. HAYWOOD-FARMER

(Sketched from life by our Special Artist.)

Architects of the Day XI.—Messrs. Buckland and Haywood-Farmer of Birmingham.

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land taking over the architectural work. Among his early work was a large block of cottages at Bromford, one of his drawings of which was hung in the Academy. The first competition he won was for a large block of business premises at Plymouth. Mr. Buckland declares that he owes practically all his architectural education to Mr. Bateman and to the Birmingham School of Art, where Mr. Bidlake took the class in architectural design. For several years he was secretary of the Birmingham Architectural Association, and was for a year or two vice-president. For twelve years Mr. Buckland took classes in architectural design at the Birmingham School of Art, first as junior to Mr. Bidlake, and for one year with Mr. Bateman. Afterwards Mr. Buckland took the senior class, with Mr. E. F. Reynolds as junior.

Mr. E. Haywood-Farmer was born at Comberford Hall, near Tamworth, in 1871, and educated at Oundle School, Northamptonshire. On leaving school he was articled to Mr. J. Mander, architect, of Overstone Park, Northampton. In 1898 Mr. Farmer went to Birmingham and entered Mr. Buckland's office as assistant, and in 1899 joined him in partnership.

We regret that exigencies of space will permit us to illustrate only some of Messrs. Buckland and Haywood-Farmer's most recent work. The older work must be more or less familiar to readers of "The Builders' Journal," and it embraces some charming domestic work round Birmingham.

The Leigh Road Schools are one of the latest built for the Birmingham Education Committee; others for the same authority designed by them are the Secondary and Elementary Schools, Rotton Park, Birmingham (illustrated in "The Builders' Journal" for October 2nd and December 25th, 1907), Elementary Schools, Small Heath, Birmingham (illustrated in the issue for October 2nd, 1907), and the New Road School, Handsworth. Messrs. Buckland and Haywood-Farmer were also architects for the High School for Girls, Barnsley, which work was obtained in competition. This was illustrated in "The Builders' Journal" for January 30th, 1907.

A church at Sutton was the subject of a centre plate in "The Builders' Journal" for July 11th, 1906, and illustrations of alterations and additions to Naseby Hall, Northants, appeared on August 29th, 1906. A number of illustrations of other domestic work at Small Heath, Edgbaston, etc., by the firm have been published in "The Architectural Review" in recent years, and in the Review annual, "Recent English Domestic Architecture" for the years 1908 and 1909. Among the domestic work designed by the firm may be mentioned houses at Knowle, Rugeley (Staffs), Kenilworth, Wigginton, Four Oaks, Moor Green, Bridlington, Linden End, several at Edgbaston, and a house at Witley, Surrey, now in course of erection

The Women's Hostel, Birmingham, was completed some months ago, and occupies a site in close proximity to the new university. The building has been erected as a residence for the women students attending the university.

The illustrations of the village in the Elan Valley, South Wales, show some of the buildings which have recently been erected by the Birmingham Corporation in the Elan Valley, near Rhayader, South Wales, in connection with their water scheme, and provide accommodation for the workpeople engaged upon the work in connection with the construction of the reservoirs and filter beds.



Photo: T. Lewis.

THE WOMEN'S HOSTEL, BIRMINGHAM. BUCKLAND AND HAYWOOD-FARMER, ARCHITECTS.

The buildings are faced with Black Country bricks, with dressings of Hollington Stone. The roofs are covered with Westmorland green Slates.

ART NOTES.

Hues of Three Cities. Rome, Venice, London, that is the descending scale of allurement, but by no means the order of attraction for Mr. Walcot, who, in his third exhibition at the Fine Art Society, still finds something in each that claims him with an intensity that does not show any preference for climate or the romantically inclined. We mean that London traffic and London thoroughfares, their crowds and buildings, so much a part of the life of the metropolis, are as responsive to his medium as the waterways of Venice and her dream-palaces, or the all but vacuous spaciousness of the piazzas of Rome wherein the sparsely scattered groups of people and the drowsy-looking vehicles are reduced to a Lilliputian aspect and seem a vital part of Rome only that this very contrast in the scale of things may be secured.

Without rose-tinted glasses London can give us a harmony of black, white, and grey that does not suffer beside the warmer surfaces of Rome or the delicate tints of a palace on the Grand Canal. Our venerable Portland is the "Lydian-stone" of London, and drawings like those of the Law Courts, St. Paul's, Lombard Street, or the Reform Club must always have first claim on our affections. Mr. Walcot must inspire many to visit Venice and Rome, but he does something much more in persuading us to love London.

In the sketches of Charing Cross, Ludgate Hill, and the Embankment we find all our intimate acquaintance with localities to which we might be indifferent in their familiarity. And the same is expressed in one of the few drawings of Paris included in the present series, showing the old yellow horse-omnibuses starting from the Bourse, one of those earlier notes of an almost forgotten Paris that still survive in the midst of every phase of modernism.

We turn to Venice and find with some surprise that it can in a measure match London's monotones, certainly in a degree not to be attained in Rome. Compare with some of Mr. Walcot's best London work, the Prigione (grim reminder of our vanished Old Bailey), the Library of St. Mark (Nos. 21 and 49), the Nocturne of the same subject, or the exquisite little drawing of "A Gondola," recently exhibited at a meeting of the British School of Rome, in which the interest is drawn to the stonework with its Greek fret base-mould.

Of the Venice of our imagination there are two very Turneresque panoramas, and drawings of the Palazzo Orfe and the Campo St. Angelo that could be placed with Ruskin for colour and the entity given to separate stones. The sketch of La Giudecca is only less vivid than a Sargent.

Rome, however, is responsible for two of the finest things in this fascinating exhibition. One, a study in sienna of Pius VI.'s Sacristy, St. Peter's, a drawing primarily architectural in its qualities, catches the very texture of the stone and the variety of its age-worn surfaces. This is almost a bit of English sandstone—an angle-glimpse in an English cloister, or a piece of the peeling façades of Oxford. Our cathedrals are indeed a series calling for Mr. Walcot's interpretation, and we hope that he may not be deterred, as Ruskin was, from such a project. For though it does seem that long work among the warm-tempered buildings abroad must make one ill-disposed to linger for long in the rarely relieved greyness of our own, still there are days when things are heightened and the sunlight makes us see that England is not so unhappy a place as some would have us believe.

In the second, the entrance of the Scala Regia, the Vatican, you get in a small oblong drawing all the spaciousness and the emptiness of Rome that we hinted at above. Among the several Roman studies that we might select for notice, readers of Hawthorne will find in the impression of the Pincio the haunting mystery of the Marble Faun.



Photo: T Lewis.

THE WOMEN'S HOSTEL, BIRMINGHAM: THE ENTRANCE FRONT.
BUCKLAND AND HAYWOOD-FARMER, ARCHITECTS.



Photo: Cyril Ellis.

VILLAGE IN THE ELAN VALLEY, SOUTH WALES: THE SCHOOL.
BUCKLAND AND HAYWOOD-FARMER, ARCHITECTS



Photo : T. Lewis

THE LEIGH ROAD SCHOOLS, BIRMINGHAM: SIDE VIEW.
BUCKLAND AND HAYWOOD-FARMER, ARCHITECTS.

Mr. Walcot shows for the first time some of his architectural compositions and some interesting conceptions of ancient Roman life, and he gives us such diametrically opposed records of contemporary events as the Beatification of Joan of Arc (the scene in St. Peter's, rich with crimson and gold), and a hastily caught impression of the aeroplane that surprised the race-meeting at Sandown last November.

MAX JUDGE.

Art and Its Import. American architects are fully alive to the importance of educating their public. Hence the revision of their tariffs so as to admit on reasonable or easy terms certain kinds of works of art. "Already," says a writer in the "American Architect," "many of the old masterpieces have found their way to America, and undoubtedly many more are destined ultimately to enrich our public and private collections. Relying on present indications, it seems not improbable that American art galleries and museums may yet become noted as the greatest in the richness of their collections of any in the world. The effect which these paintings will have in the art education of the masses is well-nigh incalculable. If it were otherwise, perhaps we could not view with our present equanimity the distress of those nations which are losing their priceless treasures." Even so the walrus wept for the oysters. "'We weep for you,' the walrus said. "'We deeply sympathise.' With sobs and tears he sorted out those of the largest size." But we fear that our American friend, in the largeness and simplicity of his own faith in art, exaggerates the national "distress" so far as this callous country is concerned. Nevertheless, it is because we desire to help on the art movement in this country that we have added the present feature to this journal.

Who's Hoogh ? There has been much ado about the authorship of one of the pictures—"Refusing the Glass"—in the Salting collection. Some claimed it for Pieter de Hoogh, others for Jan Vermeer, yet others for J. Ochtervelt. All these guesses, it seems, were wrong; and, as it turns out, the speculators were pretty much in the position of the young lady who, receiving a letter addressed in an unrecognised handwriting, makes many guesses at the identity of the author, and at length reluctantly breaks the envelope and looks at the signature. The experts, grown tired of guessing, have discovered a signature on the picture. It is "S. v. H.," supposed to be Samuel van Hoogstraten, who was born in Dort in 1627, and died in 1678. He certainly painted in the same manner as De Hoogh.

R.B.A. Exhibition. At the one-hundred-and thirty-third exhibition of the Royal Society of British Artists, the 338 pictures on view show a large preponderance of landscapes and portraits, the former testifying to the strength of the influence of Constable (via France), the latter to that of Mr. Sargent. *Genre* subjects seem to be quite out of fashion, and the reaction against Turner seems to be complete.

The Rise of Hals. Mr. Otto Kahn, banker, has given in New York 500,000 dols., or about £100,000, for a portrait group by Frans Hals, comprising five whole-length portraits in a landscape. The canvas measures 79ins. by 112ins. The picture has been exhibited as representing the painter and his family, but the identity is questioned. The man and the woman in the group are perhaps the same couple as the two figures in a picture in the Rijks Museum, Amsterdam, which were formerly, but are now no longer, supposed to be portraits of Hals and his wife, and it follows that the portraits in the Kahn



Photo : T. Lewis.

THE LEIGH ROAD SCHOOLS, BIRMINGHAM: GENERAL VIEW. BUCKLAND AND HAYWOOD FARMER, ARCHITECTS.



Photo: Cyril Ellis.

VILLAGE IN THE ELAN VALLEY, SOUTH WALES: COTTAGES AND THE VILLAGE FOUNTAIN. BUCKLAND AND HAYWOOD-FARMER, ARCHITECTS.

picture are of dubious identity; and it is by no means certain that any indubitable portrait of Hals is in existence, the authenticity of the one or two accepted portraits being open to question. The rise in prices of pictures by Hals is very remarkable. The first Hals to reach four figures in this country was a portrait at the De Zoete sale in 1885, which fetched £1,008. In 1902, at the Cholmeley sale, Messrs. Agnew paid 3,600 guineas for a small portrait; in 1908 the National Gallery gave £25,000 for a group and now Mr. Kahn has given what is stated to be "a record price for a single picture."

Art in Epigram. A case, the second of its kind, having been reported from Bristol of a policeman who paints when off duty, and has exhibited pictures, "Punch" devotes a poem to the subject. We venture to quote the first and best verse:—

"Ever we knew them firm but kind.
Keen, when a row arose, to whelm it,
But not till lately looked to find
The artist underneath the helmet;
But now the facts are guaranteed,
The coat of blue, the buttons argent,
May hide a CONSTABLE—indeed,
A veritable SARGENT."

Probably the difficulty of rhyming the name precluded a much-desired reference to Whistler.

Mr. St. John Hope. The resignation by Mr. W. H. St John Hope of the assistant-secretaryship of the Society of Antiquaries has been accepted by the council of the society with a regret that will be widely shared. For five-and-twenty years Mr. Hope has been closely associated with some of the most notable achievements in archæological research, and particularly with the important discoveries at Fountain Abbey and Easby, Castleacre Priory, Furness Abbey, St. Radigund's and Langdon Abbeys, Ludlow Castle, and above all at Silchester, where he helped to initiate, in 1890, the remarkable excavations which from then till now have yielded such rich contributions to our knowledge of Roman dwellings. Mr. Hope has published several books, the first of which is an architectural history of Rochester Cathedral; and it is understood that he is now completing, by command of the King, a very thorough history of Windsor Castle.

Whence Came Byzantine? M. Charles Diehl, whose paper on Byzantine art contributed to last year's Archæological Congress at Cairo has just been published, lays stress on the debt to ancient Egypt, whence Byzantine art derived, for instance, its characteristic architecture, and the high technical skill shown in its sculpture. The "Athenæum" adds the comment that "the more facts come to light, the stronger does the obligation of the modern world to ancient Egypt appear."

OBITER DICTA.

Merciful. A work of art must be estimated by the degree of its merit, and not by the extent of its defects. —*Times.*

Generous Loan. The Law and Finance Committee of the Greenock Corporation agreed [with reference to the housing requirements of the Government workers who are being sent from Woolwich to the Clyde Torpedo Factory] that should the Admiralty proceed with any scheme of housing, the Corporation would lend *their moral support.*—*Glasgow Evening Citizen.* [The italics are ours; the generosity is purely Glaswegian.]

Venerable Wood. It would be a matter for serious regret if the development of fireproof construction in domestic architecture were ever to lead to the abandonment of woodwork as a decorative feature of the house. The use of wood, both for structural and ornamental purposes, has the sanction of an antiquity too remote to be estimated, for it dates back to those periods of human history when the shelter of a cave or of a tent of skins was first exchanged for that of a hut built of logs and thatched with leaves. In times comparatively recent—though even these are historically remote enough—wood construction became so elaborate and so artistically complete that it was able to impose its characteristics upon the style of the stone buildings which were erected by highly civilized nations. The Egyptians, the Greeks, the Romans, and many of the Eastern races, simply translated into stone the structural forms to which they had become accustomed in the woodwork that had been handed down to them from previous generations.—*Art Journal for April.*



Photo: Cyril Ellis.

VILLAGE IN THE ELAN VALLEY, SOUTH WALES. A COTTAGE. BUCKLAND AND HAYWOOD-FARMER, ARCHITECTS.

Ugly Houses. Surely if those landlords who have great empty houses to let would convert them into flats they would receive more in the aggregate; and then, when the lease falls in, as many of them are to do shortly, let us pull down the ugly things and build small houses in their place. . . The serious aspect to the neglect of the housing of the middle classes is that thousands are driven out of London in despair, to seek their dwelling elsewhere.—*Peter Pepys in "The Throne."*

Defect of Modern Stained Glass. "The great danger at the present time, however, seems to me to be the over-elaboration of variety in colour and texture, the striving by the glassmaker continually to produce new effects to tickle the fancy of the artist. I think myself you have too many facilities at your disposal, and that the great fault of the modern stained glass window is the temptation to lack simplicity and harmony of colouring. In the thirteenth century you rarely find more than five colours of glass used in a window. I do not say this was anything more than making a virtue of a necessity on the artists' part, because that was about all the range they were capable of producing. But the effects obtained by balancing these few colours one against the other seem to me to be some of the most beautiful the world has ever seen. I have seen modern windows in which scarcely two pieces of glass in the whole window were of the same nature. The result may be extremely pictorial, but it misses some of the finest qualities of stained glass."—*Mr. Noel Heaton on "The Foundations of Stained Glass Work."*

BRUNELLESCHI AND THE RENAISSANCE.

By PROFESSOR BERESFORD PITE, F.R.I.B.A.

[*This is a short abstract from a long and interesting paper read before the Architectural Association. A considerable portion of the paper consisted of historical references, extracts from contemporary documents, biographies and critical studies of the Italian Renaissance which helped admirably towards an understanding of the times and events which influenced Brunelleschi and his contemporary artists. Exigencies of space compel us however to confine our summary to the more important events and works of this great master as set forth in Professor Pite's paper.*]

The period covered by the life of Filippo di Ser Brunelleschi, who was born at Florence in 1377, and died in 1446, seems to claim especially, as do so many similar epochs of a life-span, a pre-eminence in artistic and historic importance.

The Dawn of Renaissance.

Symonds describes better than anyone else the intellectual movement and spirit of the era of Brunelleschi, the Cinquecento literally beginning when, as we have seen, he would be twenty-three years of age, so that his prime came with the full tide of that most delightful and wonderful phase of early Renaissance art which included his rival Ghiberti, 1378-1455, and his attached intimates, Donatello, the incomparable sculptor, 1386-1466, and Luca della Robbia, whose delicious art and technical achievement so fascinates ourselves. To this group we have only to add the names of three contemporary painters to indicate the marvellous galaxy of Florentine artistic power: Fra Angelico, 1387-1455; Masaccio, 1400-1433; and Filippo Lippi, 1400-1469. Symonds says: "Speaking roughly, the half century between 1450-1500 may be termed the culminating point of the Renaissance,"

Character of Brunelleschi.

It would not be difficult to find material for an architectural biography of unusual interest to modern professional men in the career of Filippo Brunelleschi—competitions, committees, strikes, rivalries, the employment of models, and tactical manœuvres of various kinds would be provided such as insure a sympathetic ear; while force of personal character, versatility in sculpture and mechanics, and many points of contact with other branches of art and science would almost fill up the ideal and make Brunelleschi's story the true modern exemplar of an architectural student.

Vasari, who wrote in 1550, about 100 years after his death, declares that "he was of such exalted genius that we may truly declare him to have been given us by Heaven for the purpose of imparting a new spirit to architecture, which for hundreds of years had been lost."

The stormy rivalries of Florence during his lifetime point to the existence of strong appreciation of his talent, and we find that Cosimo de' Medici introduced him to Pope Eugenius IV. by an autograph testimonial, which runs as follows:—"I send your Holiness a man of such immense capacity that he would have confidence enough to turn the world back on its axis."

Mons. Müntz (quoted in Blashfield and Hopkins's edition of Vasari) "calls Brunelleschi the Christopher Columbus of modern architecture, and asserts that he created it as a complete entity.

The Renaissance.

William J. Anderson writes, in the introduction to "The Architecture of the Reniassance in Italy," that that movement "has been claimed as a result of the influence of literature and the study of the ancient manuscripts; but literature, while bolstering its decline and fall, had scarcely more influence on its origin than the writings of Virgil, Horace, Livy, and Ovid had on the architecture of the Augustan age they adorned. Originality has never been displayed to greater degree than by the architects of the Early Italian Renaissance, and the interiors of San Lorenzo, the Badia at Fiesole, and Santo Spirito—all churches of Brunelleschi—are real works of genius. Brunelleschi, seeing the confusion and incoherency of the work of his time, went farther afield for his architectural technique to find it in the ancient principles of building, laying the foundation of a great revival by his masterly use of them, while fully satisfying immediate requirements. In Brunelleschi's resolution to acquire the Roman principles and to build upon them, we have just a distinctive circumstance unprecedented in the world's history, it may be, but in its audacity quite characteristic of the deeds of the time.

To this, the view of a modern architect, we will add the testimony of Leon Battista Alberti, a young contemporary of Filippo Brunelleschi. The passage is taken from the dedication to Brunelleschi of his (Alberti's) treatise on painting:—

"Who is so unfeeling or so envious that he would not praise Filippo (i.e., Brunelleschi), the architect, beholding here a structure so grand, lifted to the heavens, ample to cover with its shadow the whole Tuscan people,



Photo: Cyril Ellis.

VILLAGE IN THE ELAN VALLEY, SOUTH WALES: A COTTAGE. BUCKLAND AND HAYWOOD-FARMER, ARCHITECTS.

erected without aid of framework or multitude of timbers—a work of art, in truth, if I judge rightly, such as, deemed incredible in these days of ours, was neither conceived nor known by the ancients?"

His Individualism.

Individualism came to architecture with Brunelleschi, remained to us until Mr. Street, and is not apparently yet replaced by co-operative design and workmanship. The works of Brunelleschi may be divided into two fairly distinct groups, and it may appear simple to do so, appraising the value of either to the Renaissance movement as follows:—(1) The completion of the mediæval cathedral of Florence by the addition of an octagonal-pointed vault involving architectural and mechanical problems of great importance; and (2) the revival and employment of architectural features, derived from classical studies, of great refinement and beauty, forming the first clearly defined phase of a new Italian style, and of great subsequent influence and permanent artistic value.

The first, a special problem completing a mediæval conception in a practical manner, came to its termination, and the second, the origination of a method of architecture with new detail and proportions, developed until it obtained a practically complete hold of the architecture of all civilised peoples.

Brunelleschi was an enthusiast for this classic spirit also; he loved it, mastered it, employed it, tentatively in the Pazzi Chapel, and, as a revelation of new and wondrous gracefulness in the churches of San Spirito and San Lorenzo, while the Badia at Fiesole and the Loggia of the Innocenti Hospital show that he knew how to employ these artistic materials naturally in expressive construction. The development of a charming architecture, connecting and enshrining the swift movements of sculpture and decorative painting until the time of Michelangelo a century later, is due to his initiative and school.

Santa Maria di Fiore.

The problem of the completion of the Church of St. Mary of the Flower, that is, of The Lily, alike the Flower of Florence, and hence her name, and of Mary, was urgent just at that period in the early manhood of Brunelleschi, when, as with you, apparently insoluble enigmas exercise perhaps their greatest fascination over the mind. The new cathedral replaced the old historic Church of the Santa Reparata, which resembled the beautiful San Miniato, the citizens in 1294 having determined upon its rebuilding.

Arnolfo di Cambio was at this time Architect to the Republic, and to him Florence owes the bulk of her XIVth century monuments. Until his death in 1310 the works had continued in spite of much disturbance of civic peace by calamitous wars, seditions, and fire; the exile of Dante coming within this period.

The diminished revenues of the Commonwealth caused the suspension of works until 1331, and in 1334 Giotto, the painter, was appointed chief master of the work of the cathedral, and overseer of the other constructions of the Republic. He quickly begun the design and erection of the Campanile, but died in two and a half years' time, when the tower was only about one-third of its height.

Taddeo Gaddi, his godson, having worked with Giotto for twenty-four years, was one of those to whom was intrusted the oversight of the works on the Campanile; this Gaddi is the celebrated painter, but he also was the architect of Ponte Vecchio, with its charming street.

Brunelleschi's Chef d'œuvre.

It will be impossible, however, to appreciate Brunelleschi's task unless it is borne in mind that the progressive development of mediæval cathedral building is regulated and marked by the construction of vaulting. The fact that it was necessary to vault the nave occasioned the whole series of factors of aisles and buttresses, and conditioned the plan of transepts and eastern extension. The use of the pointed arch had enabled vaulting chambers of all shapes and sizes to be constructed with facility in diverse materials by the employment of ribs which gradually assumed to themselves nearly all the constructive qualities. This rib principle left the spaces between without strains or stresses, so that they were filled in with the lightest material, or even left in an open veil of tracery, as in Henry VIIth's chapel. In Italy the use of brickwork for vaulting enabled the fillings to be extended, but it never became the practice there, as here, to multiply the strengthening ribs for the sake either of stiffening the vault or for æsthetic reasons. The earlier and later mediæval vaults of Italy, alike, were quadripartite in system, and, as at Florence, of the greatest size, the nave having a width of 55ft. and consisting of only four immense square bays. The nave of Westminster



Photo: Mansell.

THE PAZZI CHAPEL, CLOISTER OF SANTE CROCE, FLORENCE. FILIPPO DI SER BRUNELLESCHI, ARCHITECT.
This work exhibits with fullness the charm of Brunelleschi's power as a draughtsman and designer: the elegance, refinement, and originality of the whole are wonderfully fascinating and characteristic. The vigour of the vaulted atrium, with its delicately moulded attic storey and beauteous frieze, the delicacy of the doorway, and the grace of the relief and the treatment, make this work a "gem of the Renaissance."



Photo : Mansell.

THE DOME OF THE CATHEDRAL, FLORENCE. FILIPPO DI SER BRUNELLESCHI, ARCHITECT.

This, one of the most famous Domes of the world, spans the immense octagon crossing (135 feet across) of the Cathedral at Florence, and is peculiar in rising from an octagon, preserving the eight sides of the latter. The construction is of stone groin ribs with brick filling. Brunelleschi introduced a great bond of timber, bound with iron ties, at the base.

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Abbey having a clear width of 35ft., employs twelve bays in a similar length of 240ft.

The principle of both is, however, the same; the rectangular chambers of the vault at Florence are spanned by pointed arches, having stone ribs at the intersections and brick cells between.

Principles of the Dome.

The boldness with which the principle of stone groin-ribs with brick filling had been employed in the vast span of the nave seems to have convinced the builders that no greater difficulty would attend the vaulting of the octagon. It may be remarked here that the use of tie-rods to the vaulting and arcades of the nave is an economy designed to dispense with flying and other buttresses, and that where the octagon was placed, and masses of wall occur which provide abutment for the great arches, neither protruding buttresses nor tie-rods are employed.

The enormous scale of the octagon, 135ft. across, with the choir stalls grouped in the centre, was to provide the city with the grandest temple then in Western Christendom, and if the cupola shown in the fresco of the Spanish chapel only supposed upon the basis of Talenti's octagon, but little diminution of its external glory and none of its internal beauty or usefulness would have been sacrificed.

The greater work, begun in 1357, was pushed on, and ten years later the four bays of the nave were nearly completed. Many consultations with the Board of Works ensued, and difficulties soon became apparent. In 1368 work was begun on the eastern apse, and in 1369 Talenti was succeeded by his son, municipal funds being required for other objects, among them the erection of the Loggia del Lanzi from Orcagna's design. It is not till 1382 that activity at the Cathedral is again evident, for in 1383 the building of the chapels to the choir was commenced and commissions were given for sculpture. In 1407, after nearly forty years, the eastern tribune, with its five chapels, was completed, and at the threshold of the Cinquecento the construction of the octagonal vault could no longer be deferred.

The Baptistery Gates, Florence.

The competition of sculptors inaugurated in 1401 for completing the series of bronze doors to the baptistery, marks an epoch in the development of the arts of sculpture and bronze-founding. The competitors were selected, and young men are found among the six; Filippo Brunelleschi was but twenty-four, and Lorenzo Ghiberti, whose panel was accepted, was twenty. It is stated by a biographer of Brunelleschi that the commission of assessors proposed to divide the commission, and he gives Brunelleschi the credit of declining the work under the circumstances; but in any case the work was given to Ghiberti towards the end of 1403.

Brunelleschi and Rome.

Vasari's story of Brunelleschi's journey to Rome accompanied by his attached friend, and junior by nine years, Donatello, seems to require further proof, as Professor Norton notes that Donatello appears as assistant to Ghiberti both in his first and in a further agreement for the execution of the gates. It is clear, however, that Brunelleschi, who was of good family, sold some property, and with the proceeds paid the expenses of his visit to Rome, the first of many—and it appears that he worked at his handicraft as a goldsmith, and exercised his mechanical genius at making clocks, maintaining himself thus, but not without visits home again from time to time. The condition of Rome after practically a millennium of decadence cannot easily be realised. The great city had been for centuries in a repellent condition of decaying splendour. The Imperial monuments had not yet attained the credit and charm of picturesque ruin under which Piranesi knew them, and were nothing more than the dilapidated symbols of a departed glory. The fame of pagan and persecuting Rome was still obnoxious in its monuments, and the scenes of martyrdom had not yet become sanctified by artistic as well as religious tradition.

It is not difficult for us to realise what Rome could reveal to such an intelligent artist, just breathing emancipation from tradition, and conscious that Ghiberti had struck a freer and fresher note in sculpture than any before. The strong genius of his young admirer and follower, Donatello, tended in the same direction, and we are told pretty stories of how Donatello "had eyes only for sculpture"—the great antiques were not then unearthed—while Brunelleschi devoted himself to the monuments.

Brunelleschi appears to have been again in Florence three years after the competition for the Bronze Gates in 1404, as he matriculated as a goldsmith on July 2nd in that year; the celebrated guild including modellers, workers in metal, and painters.

It is probable that Brunelleschi spent the ensuing years until he was forty, at Rome, a reputation for knowledge of architecture, however, accruing to him at home during the period of his absence from Florence. He must not be regarded as a disappointed sculptor, who exiled himself from his own field of executive art through jealousy of an accomplished rival, but as having discovered a new source of inspiration and study in that combination of mechanics, geometry, and art, afforded by the buildings of Ancient Rome from which he could not tear himself away. We do not find him again in Florence until 1417.

The Building of the Dome.

It is not easy to understand how the octagon stage can have been reached without the adoption of some well-defined scheme for the vaulting, as the elevation above the abutting walls removed it beyond the possibility of employing them as buttresses. The provision of this drum storey lifted the cupola vault from the category of Gothic vaults, and at once placed it among the long-forgotten and forsaken series of domes originating with the Pantheon at Rome, and developing in the later epoch of Byzantine architecture. A dome poised upon a drum has to provide for its own thrusts, which should be reduced to a minimum by horizontal arcuate construction, and can then be counterpoised by weight placed vertically upon the haunch as in the *gradene* of the Pantheon. The Gothic pointed vault, however, could not exist even momentarily without the ample lateral abutment of flying buttresses or massive walling; and it has already been pointed out how iron tie rods provided for this in the vaulting of the nave. I must confess to the strongest suspicion, though there does not appear to be direct evidence to support it, that the elevation of the cupola is due to Brunelleschi's advice, and that his observations at the Pantheon convinced him that what had been done by the ancient Romans was not beyond his powers. It is certainly highly probable that this height would not have been erected without reliance upon some guide or scheme for dealing with the thrusts of the vault. In any case, embarrassment attended upon the Board; the Guild of Master-masons seem to have exhausted their traditions, and the actual need for an impossibly big centring upon which to build the vault, after the manner of the baptistery, though so much larger, brought the works to a standstill.

An anonymous contemporary of Brunelleschi's, whose work is the probable basis of Vasari's as well as of other biographers, tells us, "But if the master builders had seen difficulties, Philip showed them far more. And someone asking, Is there, then, no mode of erecting it? Philip, who was ingenious also in discourse, replied that if the thing was really impossible, it could not be done; but that if it were not so, there ought to be someone in the world who could do the work." The recorded payment of ten florins was not probably made only for this philosophic stimulant, but for advice and work in connection with the whole drum storey and its eight suspiciously Roman eyes.

Between this year (1417) and 1420, when Brunelleschi, Ghiberti, and Battista d'Antonio, master mason, were jointly appointed to build the cupola at a salary of three florins a month each, there was much evident controversy, and there is in the anonymous biography and in Vasari much picturesque description of indecision on the part of the committee, rivalry on the part of the "profession," and strategetical manœuvres between Rome and Florence by Brunelleschi. Amidst it all, the fact ultimately emerged that the professed sculptor-goldsmith, but amateur builder, had science and skill enough to make him confident of his ability to design scaffolds and construct a vault upon the huge octagon, 135ft. across, that would stand without either abutment or crossties. The three years' discussion and disputation amounted to a conviction that the little, clear-headed man of forty-three could do it, and his mystifications and secretiveness, his sudden absences, and vigorous assertiveness were the means by which this conviction was produced.

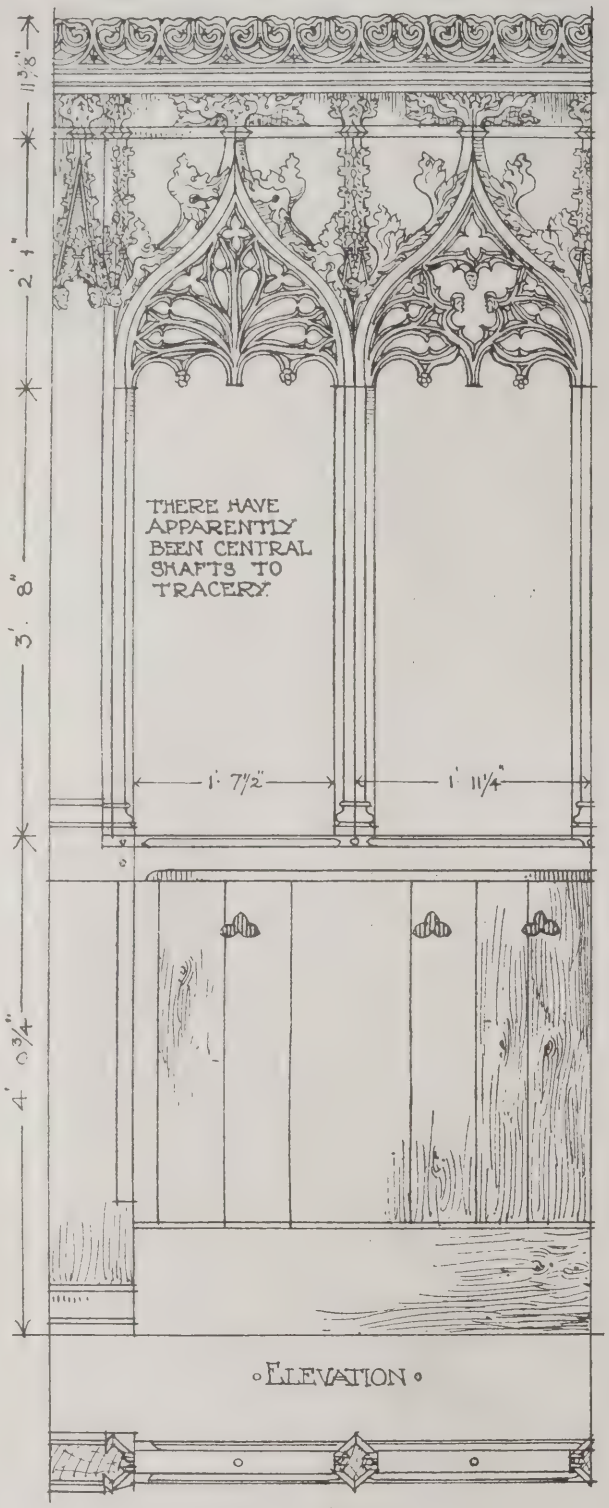
The joint appointment of the popular artist Ghiberti, with his strong local interests (Florence had become enthusiastic over his bronze doors), and of the recognised professional man Battista, seems, under the circumstances, reasonable, though the difficulties of joint control were little compared with those of joint reputation which were ultimately involved. This latter point was everything to such a character as Brunelleschi's, and led to the squabbles with Ghiberti, and to the ultimate demonstration that Brunelleschi could and would carry the works to successful completion alone.

Competition for the Dome.

A competition was inaugurated on Aug. 19, 1418, for the designs for the cupola, and a premium of 200 florins offered, the time extending to December 12. In the next year Brunelleschi and Ghiberti were each commissioned to make models on a large scale, and Brunelleschi employed Donatello to assist him with Nanni di Banchi. A brick model was made, based on his Roman studies, exhibiting the apparently impossible feat of how to build a dome without centring, an achievement derived from the Pantheon, and embodying the fundamental difference between a dome erected in horizontal rings or series, each complete and supported on its predecessor, and the mediæval groined rib to which, from the springing, a wooden centring piece was necessary.

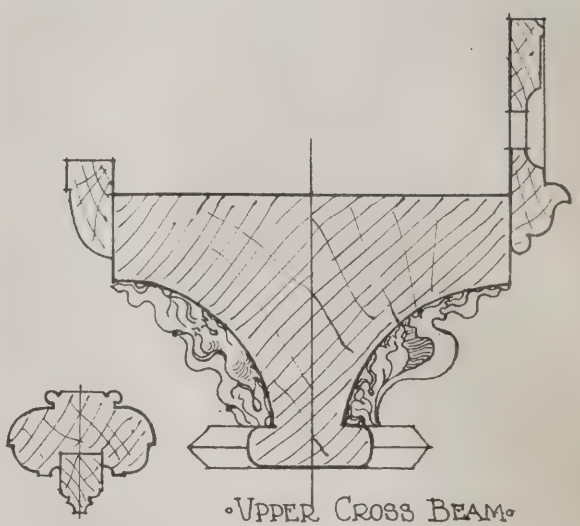
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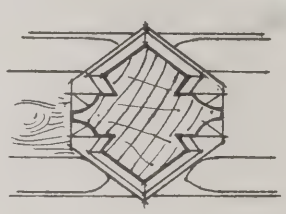
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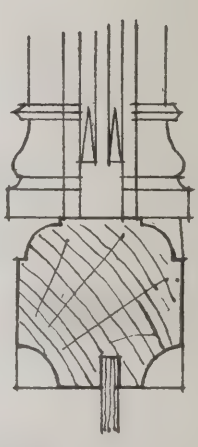
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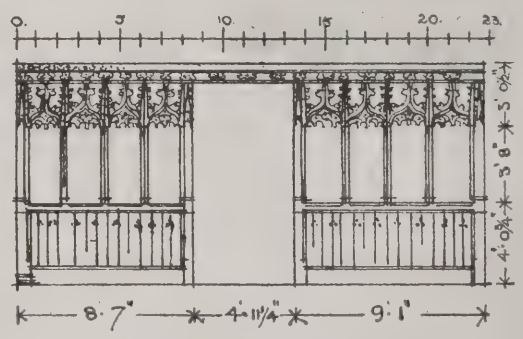
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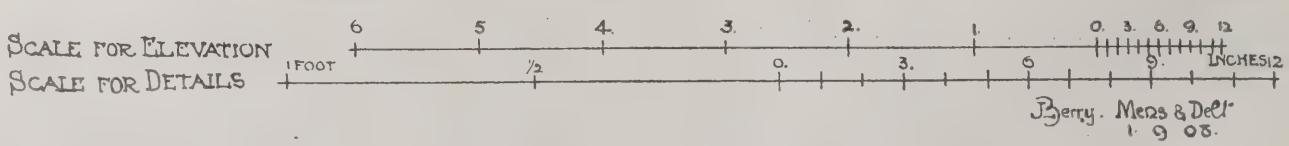
◦PLAN OF SHAFTS◦



◦SECTION OF ◦ ◦LOWER BEAM◦



◦KEY ELEVATION◦



DETAIL OF SCREEN BETWEEN NAVE AND CHANCEL LAVENHAM PARISH CHURCH SUFFOLK
MEASURED AND DRAWN BY J. L. BERRY.

The request for back numbers of "Details," all rights in which publication have been acquired by the Proprietors of "The Architects' and Builders Journal," have been so numerous that it has been decided to republish selected plates in this paper. The screen here illustrated is one of the finest of the "Decorated" period. It is of oak, the top beam being in one piece, with mouldings and crockets carved out of the solid. The cresting, apparently, has been restored. Originally there were slender shafts to the tracery, the work of the iconoclast who sawed them off is greatly to be regretted.



DETAIL OF SCREEN BETWEEN NAVE AND CHANCEL, LAVENHAM PARISH CHURCH, SUFFOLK.

THE WELSH NATIONAL MUSEUM COMPETITION.

[This is the most important Competition that has been held since that for the London County Hall, the total estimated cost being about £250,000. The new building will be situated in Cathays Park, Cardiff, and will form part of the group of important new public buildings recently erected there, which include the City Hall, the Law Courts, the University College and University Registry Building, and the Glamorgan County Hall. The assessors were Sir Aston Webb, R.A., Mr. J. J. Burnet, A.R.S.A., and Mr. Edwin T. Hall, F.R.I.B.A., and their choice fell on the design of Messrs. Smith and Brewer of London. Premiums of £200, £150, and £100 were awarded to the designs of Mr. T. L. Vesper, Mr. Henry T. Hare, and Messrs. Milne and Hepburn, respectively. One hundred and thirty-seven firms entered for the competition. A review of the drawings, by our special Commissioner, follows.]

The conditions of the competition are sufficiently well known to architects in general to require no detailed description, but a recapitulation of the chief points may be desirable.

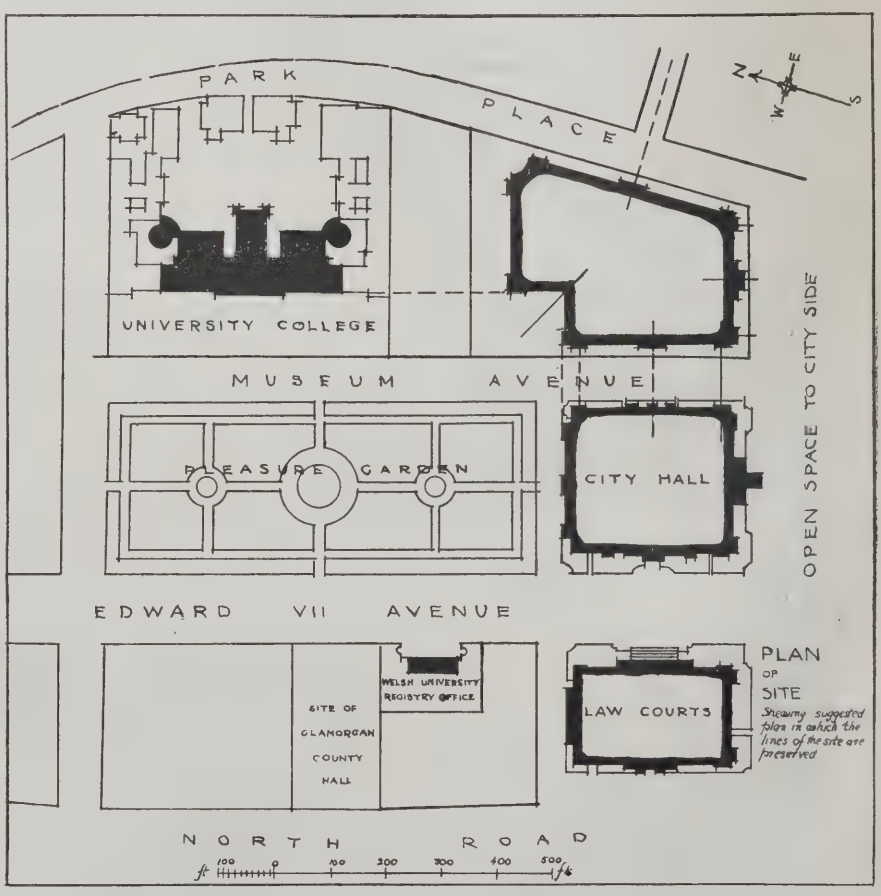
The total cost of the building was not to exceed £250,000, though this sum was not to be considered as including sculpture. Six exhibition galleries for the departments of antiquities and history, geology, botany, zoology, industries, etc., etc., were to be provided, varying in size from 3,000 sq. ft. to 12,000 sq. ft. Round these were to be disposed smaller rooms or alcoves. In addition to the accommodation required for research students and reserve collections, an aquarium and children's museum had also to be provided. Under the head of administration and work rooms were to be included a library capable of containing 20,000 volumes, a restaurant of about 2,500 sq. ft. in area, and a lecture theatre large enough to accommodate at least 500 people. No provision for residential quarters was required. About one-third of the proposed work, including the south block, capable of temporarily housing all the six departments of the museum, in accordance with the requirements of the conditions, is to be erected in the first instance.

The drawings submitted by each competitor were insured by the Council of the National Museum of Wales against fire to the value of the second premium—£200. With the exception of the perspective, all elevational drawings submitted were to be executed only in pen and ink, without shading or colour of any kind, except the inevitable flat tint of Indian ink on the door and window openings and on the roof. We cannot understand this rooted objection to drawings rendered in the French and American manner. For our part we are of the opinion that the surface-modelling of a design can only be properly appreciated when the relative depths of projections are made apparent by corresponding shadow values. We do not see any reason why competent assessors need feel distrustful of such a method of expression.

Some description of the disposition of the existing buildings adjacent to the site is necessary to a proper comprehension of the nature of the problem. From the accompanying sketch-plan it will be observed that the site itself is on the east side of Messrs. Lanchester and Rickards's City Hall, and in a balancing position to their Law Courts, and that the axis of the large rectangular "Pleasure Garden" is coincident with that of the City Hall. Next to the vacant site on the north side and facing the garden is Mr. Caröe's University College, only the central part of which has been erected as yet.

It was required in the conditions that the new Museum (the elevations of which were to be of Portland stone) should be in sympathy with the general scheme adopted. At the same time it was made clear that this was not to be taken as involving an actual reproduction of the design of any of the existing buildings.

From this we should have thought it sufficiently obvious that the clause had a broader significance than that apparently understood by the authors of the premiated scheme. It seems to us a first essential in any scheme claiming architectural merit that satisfactory contour should be preserved both on the garden side and on the part to Park Place, the latter being an important residential boulevard with clearly defined lines. We mean, in fact, that the Park Place façade should follow the line of the road, as is practically suggested in the proposed extensions to University College; and, in the case of the elevations to the garden, the lines of the façades of the Law Courts and City Hall, and of University College should have been maintained and the shape of the main space thus preserved. The problem was one of extreme difficulty, and on that account no doubt was ignored by almost every competitor. In practically every case the narrowest meaning was read into the clause already mentioned, and a design evolved regardless of larger considerations.



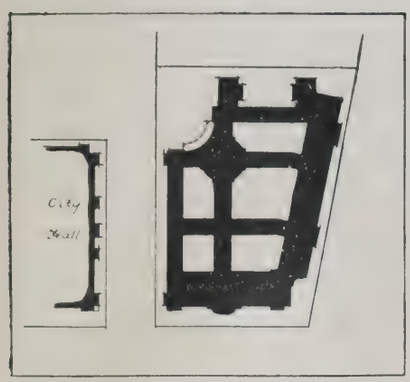
PLAN OF SITE
Showing suggested plan in which the lines of the site are preserved

Selected Design.

Messrs. Smith and Brewer's plan is remarkable for its economy, a saving of at least £10,000 on the sum available (£250,000) being effected. But the feature in their scheme which probably decided the assessors' choice is the fashion in which the reserve collections are placed back-to-back to the general exhibition galleries, completely enclosing them on three sides of the site, and so disposed as to be conveniently accessible from them. The general exhibition galleries themselves are lighted from the large interior court, in the middle of which are the central galleries. The reserve collections are lighted from the main façades. Messrs. Smith and Brewer appear to have thought it worth while to secure a double set of reserve galleries by the introduction of a ground-floor mezzanine, which results in the division of the windows of the main façades by the thickness of a floor, though we ourselves should scarcely have thought the consequent disfigurement justified the saving of expense.

The practical destruction of the architectural value of the chief axis of the plan, by a series of unfortunate contractions, is to some extent compensated for by the ingenious manner in which the small alcoves required in the conditions are grouped round the central galleries. The lines of cross-communication are also well maintained, and there are distinct possibilities in the introduction of the garden court, with its well, beneath which the aquarium is placed.

In the conditions emphasis was laid on the desirability of placing the administration rooms in a central position, and in such a fashion that whilst not being subject to annoyance from the general public they should yet be readily accessible to officials from all departments. Messrs. Smith and Brewer have placed them over the main



BLOCK PLAN. DESIGN SUBMITTED BY REILLY, WOOD, AND BURROUGHS.

entrance. The relegating of lavatory accommodation to the basement will not, we imagine, conduce to convenience either, and if the basement itself is to be dependent for light on the basement windows, which, shown in elevation to 1-16in. scale, have the appearance of rather meagre pigeon-holes, undesirable confusion may possibly arise.

A particularly unhappy treatment of the façade to Park Place is achieved by the addition of a semicircular feature in the form of a lecture theatre on the ground floor, which effectually destroys all continuity of effect. Practically the idea is admirable enough and provides the required direct access from the street.

With regard to the elevations in general, we take it that in the case of the south front, the end blocks in the former's design are intended to echo the masses occupying a similar position in Messrs. Lanchester and Rickards's Law Courts. But Messrs. Lanchester and Rickards strengthen their surface modelling in precisely those places where the authors of the selected design have thought fit to leave it most unconvincing. The scale, superficially maintained in the main lines of the flanking blocks, is altogether ignored in their minor composition. And the introduction of the central feature deprives the whole arrangement of significance

Second Premiated Design.

In the scheme submitted by Mr. T. L. Vesper the general arrangement along the chief axis is, in some degree, reminiscent of that adopted by the authors of the selected design. The lines of cross-communication are equally good, whilst the disposition of the stairs is considerably better. The plan, however, though simple and direct as a whole from the utilitarian point of view, is marred by certain failings in practical details and by non-compliance with the requirements of the conditions in several respects.

The main-service lift on the ground floor is inconveniently placed, and the lecture theatre, specially required to be directly accessible from the street, is centrally placed on the first floor. Another defect is the position of the library. From the conditions we would presume that the latter would be almost solely for the use of students consulting the director, and for that reason it would require to be placed in close proximity to the director's room. Actually, it occupies a position on the first floor over the main entrance and quite removed from the director's apartments, which are situated in a distant corner on the ground floor.

Mr. Vesper's elevations are composed in a manner with which we cannot pretend sympathy. In our opinion they ignore the essential principles of massing. For example, on the south façade where two end blocks form the flanking pieces to a central feature, we should have thought only three solutions could offer themselves. Taking it that the end blocks are necessary to echo the arrangement of the Law Courts, either the connecting piece between them should be treated as one continuous face, or else broken by a broad mass of less projection and height than the end blocks, or else the centre should be marked by a strongly designed one-storey projection. Mr. Vesper has preferred a narrow interruption. The elevation to Museum Avenue has rather more features than good composition requires, and a closer inspection of the detail reveals what we ourselves regard as but an inferior handling of motives.

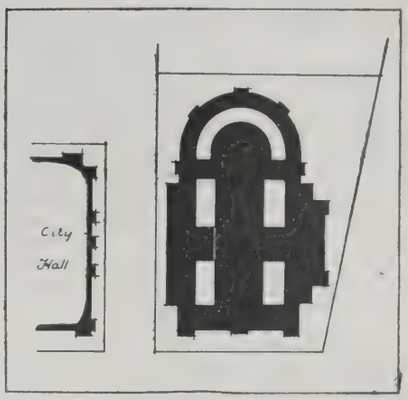
Third Premiated Design.

The scheme gaining the third premium of £150, the work of Mr. Henry T. Hare, is marked by simplicity and directness, but lacks any architectural conception in the relative arrangements of the rooms. It seems to have been thought out rather as an exercise in economical building than as an artistic problem.

The treatment of the elevations is rather at variance with that of the adjacent front of the City Hall, whilst the detail lacks correctness.

Fourth Premiated Design.

Messrs. Milne and Hepburn, the authors of the 4th premiated design, are to be congratulated on taking into consideration the axis of the City Hall façade to Museum



BLOCK PLAN, DESIGN SUBMITTED BY LANCHESTER AND RICKARDS.

Avenue and on preserving the lines of the garden square. But we could have wished that a similar care had been displayed in the front to Park Place, which is broken in a fashion calculated to give the plan an awkward and botched appearance.

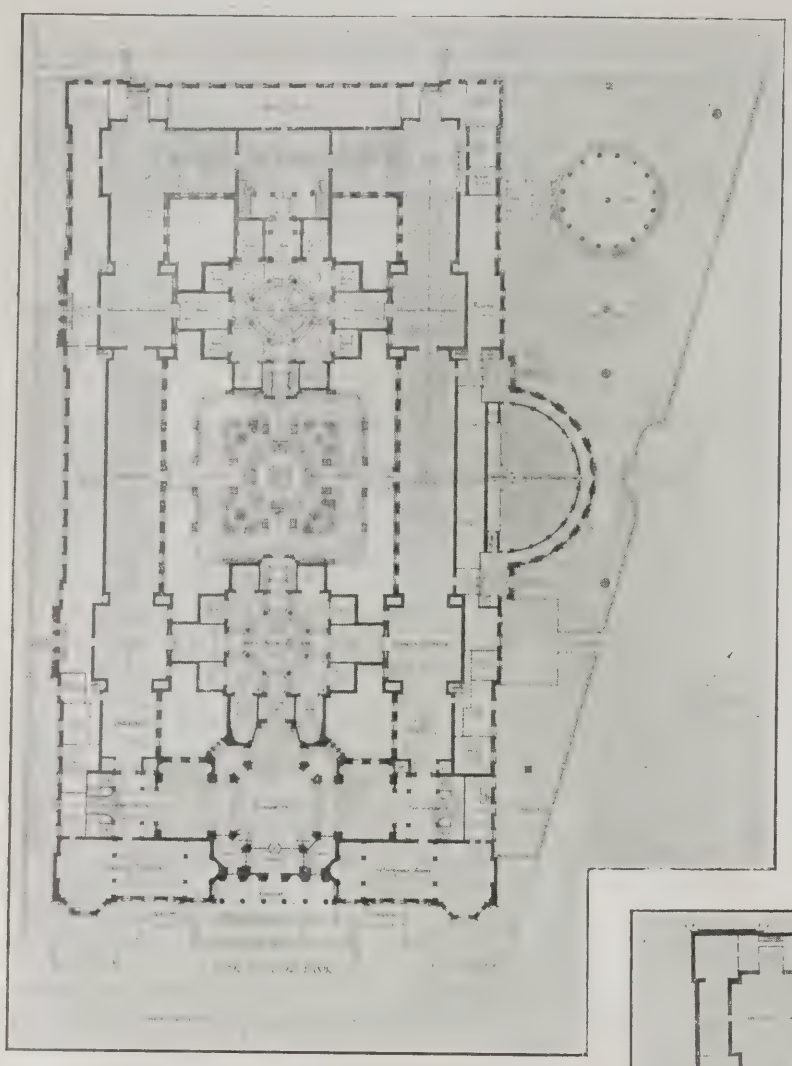
Other Designs.

Messrs. Lanchester and Rickards submit two schemes modelled on the same lines, both of which, for some unaccountable reason, fail to take into consideration the necessity of preserving the shape of the garden square. Nevertheless, we have no hesitation in pronouncing Messrs. Lanchester and Rickard's design—regarded from the point of view of plan—by far the finest conception submitted. The spacious central hall dominates a masterly arrangement of beautifully-shaped parts disposed in perfect architectural relation to each other, and the whole is worked out with due regard to actual requirements. The treatment of the façades, as might be expected, harmonises with those of the Law Courts and City Hall. The elevations themselves are most vigorously drawn. The detail is difficult.

Messrs. Reilly, Wood and Burroughs are the authors of a design in which the shape of the plan is determined by the architectural requirements of the site, considered in relation to the other buildings, the main lines of the square and the line of the Park Place boulevard. The dominating mass—a lofty feature of great strength—is placed at the diagonal axis of the Pleasure Garden, and the grouping of the features subsidiary to it is finely managed. Unfortunately, the plan lacks compactness in certain minor parts, and is not always thoroughly resolved. The detail through-



THE WELSH NATIONAL MUSEUM COMPETITION: SELECTED DESIGN. SMITH AND BREWER, ARCHITECTS.



WELSH NATIONAL MUSEUM: SELECTED DESIGN. SMITH AND BREWER, ARCHITECTS.

out is distinguished by that facility and scholarship which we have come to consider so extraordinary in this country. The perspective illustrating one of the pavilions of the south front is most accurately drawn and beautifully rendered

We shall devote further consideration to the designs submitted after their prospective exhibition in London. Next week we shall publish reproductions of the other premiated designs which considerable pressure on our space has prevented us from illustrating in this issue.

NOTES ON COMPETITIONS.

LIST OF COMPETITIONS OPEN.

APRIL 9. ELEMENTARY SCHOOL, BLOXWICH. Particulars given in our issue of March 16th. No further conditions will be issued.

APRIL 23. COUNTY OFFICES, NAVAN. Particulars given in our issue of March 16th.

MAY 31. MUNICIPAL OFFICES, KARACHI. Particulars given in our issue of March 16th.

JUNE 11. COVENTRY. ENLARGEMENT OF SCHOOL at STOKE. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

JUNE 15. ELEMENTARY SCHOOLS, ACTON. Particulars given in our issue of March 16th.

AUGUST 31. COVENTRY. NEW ELEMENTARY SCHOOL in Centaur Road. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

NO DATE. BIRKENHEAD CHILDREN'S RECEIVING HOME, at the Union. The Guardians invite architects residing within the limits of the Birkenhead Union to submit designs for a proposed Receiving Home for Children in Birkenhead. Premiums are offered to those three architects whose plans are selected. Conditions and instructions may be obtained from John Carter, Clerk to the Guardians, Poor Law Offices, Birkenhead, on application by letter only.

CORRESPONDENCE.

[The Editor declines responsibility for the statements made or opinions expressed by correspondents.]

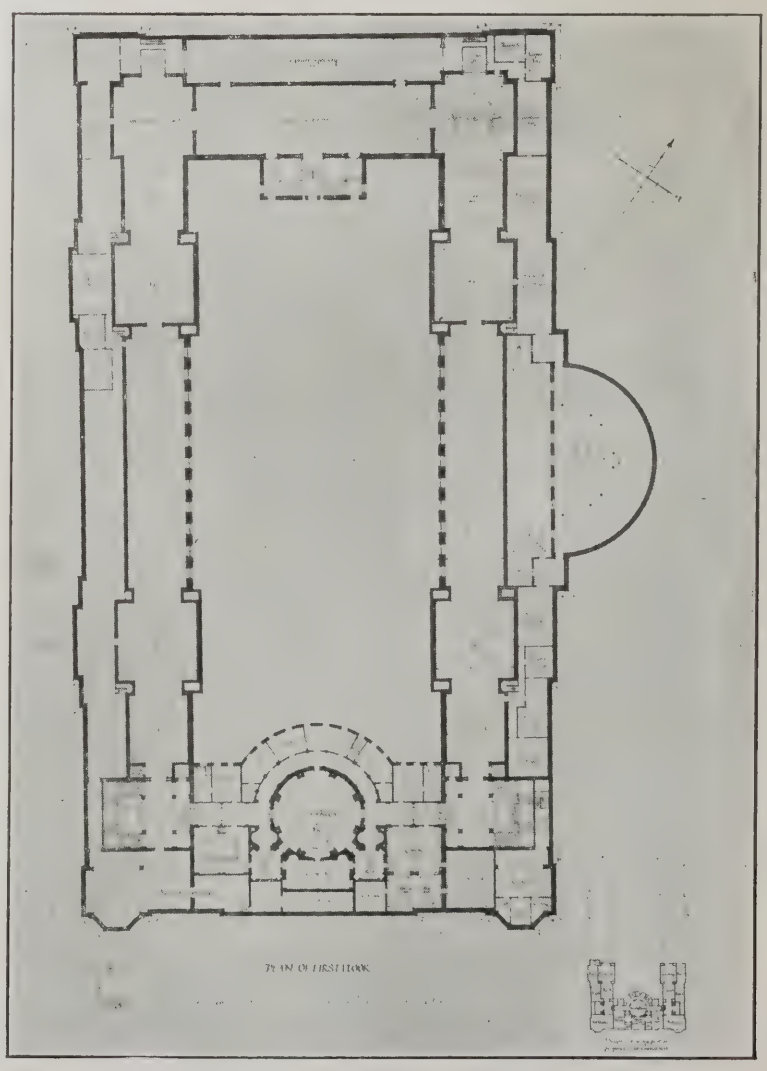
Prime Costs and Provisional Sums.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In "R.C.'s" letter in your issue of March 23rd, the writer is evidently suffering from a grievance common to contractors generally, which is entirely their own fault. In my experience, where prime costs are included in quantities, the contractor is at liberty to price the item out, adding such profit for himself as he thinks fit. In the case of provisional sums, I have never yet seen a case where no builders' profit is included. The amounts are usually stated either as including 5 per cent. profit to builder, or else the builder is asked to add his commission at the end of the Provisions Bill.

As long as builders, in their anxiety to keep as low as possible, choose to ignore a reasonable profit on these items for themselves, they are bound to suffer.

Manchester. "A.B.C."



WELSH NATIONAL MUSEUM: SELECTED DESIGN. SMITH AND BREWER, ARCHITECTS.

MURAL PAINTING.

By PROFESSOR GERALD E. MOIRA.

[*This is an abstract of a paper read by Professor Moira at the Carpenters' Hall, upon an ancient art that has been sadly neglected in modern times. Professor Moira is well known for his work in this branch of art, and probably his best known mural paintings are in the New Sessions House, London. In collaboration with Mr. F. Lynn Jenkins, he carried out the coloured gesso decoration in the Hall of the Trocadero Restaurant, London.*]

Mural painting has had a very chequered career. Whether we went far back to the earliest times or not so far back we could find the great use it had been put in recording the history of nations, and we should remain, perhaps, in ignorance of without this facile mode of expression. The tempera paintings in the tombs of Egypt helped us to decipher not only the life of that great nation, but the costumes of the people and the minute details of their crafts, metal work, wood construction, and even shipbuilding. With this work as a peg to hang their artistic ability upon, the Egyptians taught us colour (in a crude manner, perhaps) and design. Primary colours were arranged in a manner which has influenced all decoration down to wall papers. This tradition from Assyria, India, Persia, and Egypt came gradually westward, passing through a Byzantine phase, and reached Italy, the field of all that is most interesting in mural work. It spread over France, and later arrived in England.

What else did it give us? A knowledge of those ordinary workmen laying down the formation of decorative design which was to have an enormous influence on Italian work of the fifteenth and sixteenth centuries.

These men had no Royal Academy education, no Prix de Rome as a hall-mark of their ability, but every work these men did was literature—telling the story of their time more beautiful and convincingly than prose. So much for the commencement. It is hardly necessary to go back further, as the same conditions no doubt prevailed.

Rise of the Italians.

One day long after the laying-down of this foundation of decorative historical design came Giotto and a hundred and one others, who were rather more gifted as artists. The culture of the masses and the Church demanded something more. They learnt to see stereoscopically. By that I mean they had learnt to see things more in the round than the Egyptians. The figure, instead of being flat, which gave the Assyrian work such distinction, became more round, and the cast shadow, as the commencement of realisation of tone, crept in. It was advancement, and as advancement was praiseworthy. They used people around them as their models, mixing them up with history and allegory. All these men, Giotto, Botticelli, etc., had not sullied the traditions of decorative art.

The Serpent in Eden.

But one fine day came from the East a man who brought sweet gum, incense, and myrrh, and discovered some struggling artist who had not done so well in his altar-pieces and vases as his neighbour at the next stall. Perhaps he was uncomfortable as to where his Sunday dinner was to come from. This Hebrew dealer went to him and said: "Thy work is not so bright as the others; take this gum and dissolve it in oil of linseed." What was the result? To revolutionise—perhaps ruin—the great tradition of decorative work, the glory of the past. It was the origin of the Royal Academy and such-like institutions. But we to-day are trying hard to bring back some of the great work and big traditions of that past, so that perhaps this varnish will be in time forgotten. What I wish to bring to your notice to-night is not so much how they did their work or what medium they used.

The Triumph over Difficulties.

What I consider is more interesting are the reasons for such work, the difficulties which beset these men, and how they overcame them. As to-day, so in the past, these men had to deal with them. Giotto was employed by the Franciscans, and educated as he was in the type of conven-



Photo: Mansell.

MURAL PAINTING: THE "POVERTY" FRESCO IN THE CHURCH OF ST. FRANCIS AT ASSISI, BY GIOTTO.

tion so prevalent then, the usual stereotyped saint in a long garment, one marvels when one realises how he came to deal with that great patron saint of theirs (Giotto lived about one century after St. Francis) in his work in the church at Assisi. [A series of slides were shown of the mural paintings on the walls of the church at Assisi, illustrating the life of their patron saint concurrently with the life of Christ.] In them we find perspective, and the figures are those of men whom he (Giotto) was accustomed to see around him in his work. These people of the times were brought into the pictures the better to teach their meaning to the people. [Slides were shown of the "Triumph of Death" in the Campo Santo, the "Healing of Tabitha," and the Adoration of the Magi, by Botticelli.] In these, portraits of contemporary men are found, such as members of the Medici family—Cosimo, Giuliano, and Giovanni, and even Botticelli himself. They were not put in from a desire of the donor to appear better than the others, but to show that all classes were subservient to the great religious idea, that though man was a power yet he owed worship and humble service to God. The "Return of Ulysses" in the National Gallery, the lecturer said, was shown to impress upon us the necessity of using the dress of the time. If we painted the "Return of Ulysses" to-day, in modern dress, we should be ridiculed. Now we come to something that is more in our time, quite as important as St. Francis was to Giotto—the fresco in the House of Lords, of Wellington, by Daniel Maclise. Though it may have a lot of faults, still it is an attempt to do something of the man's time, that he knew something about; and though we laugh and jeer at it because of its early Victorian character, we cannot help admiring it on that score. Concerning a painting by Lord Leighton, also shown, the lecturer remarked that here we had a very beautiful type of work, and though we did not like to run down a man who did as much for poor decorators as Lord Leighton did, yet one could not help feeling that this example would soon become late Victorian, just as much as the fresco in the House of Lords is now early Victorian.

Modern Examples.

Next some slides were shown of work executed by Professor Moira himself at the Unitarian Church House, at Liverpool, representing the raising up of Truth by Time. All around are grouped portraits of great men of all ages. These were followed by illustrations of the decorations at the New Sessions House by Sir William Richmond, illustrating "Roman Law," "The Golden Age," and "Greek Law"; also illustrations of the lecturer's decorations at the same building.

Methods at the Sessions House.

In connection with these decorations the lecturer said they did everything they could in conjunction with the late Mr. Mountford (the architect) to secure a perfectly dry and therefore more or less permanent wall upon which to place their work. This was arranged as follows:—First, the outer wall of stone and brick, then an air space; then a wall of one brick thick, tied to the outer, the insides of these walls receiving a coat of paint. Then came another air space and then another wall, of reinforced stick and rag, that is, French plaster cast with layers of canvas and battens of wood with a thin structure of woven steel, galvanised, embedded at the back. Sir William Richmond had sent him the following description of his method:—

"The wall was prepared with slaked lime and marble dust. Two coats, one thick, the other thin. I tried three surfaces, one rough, next less rough, the other quite smooth; the last was by far the better method for the ground. When the two coats are nearly dry a thin layer of lime is painted over the whole surface, then rubbed down; but great care must be taken that the brush employed has not been used for white lead; it must be a new one. I was troubled by some carelessness on this score, which was, however, remedied by Professor Church, *i.e.*, a certain black stain. The design was then drawn in in charcoal, corrected, and then redrawn in raw sienna and white. Under blue I painted red, under flesh white, black, and raw sienna, warm and shade cool in lights; all else was painted at once as much as possible. *No* glazing, because it tends to darkness; all tints mixed with white, even glazing tints. Colours ground in water. In their powder, mixed fresh every day with the yolk of an egg; an equal body of egg mixed with an equal body of pigment. I took care not to lost my ground, because, by retaining it, a greater brilliancy is acquired. It is well to mix some vinegar with the egg; it keeps it fresh. *No* bad eggs should be used; they set up fermentation. The medium with which I painted was milk with no water; this causes the egg to dry as hard as stone, and is very binding. This method of painting includes all that can be done in oil; one can paint thick or thin, retouch as much as one likes, and scrumble in their colour for atmosphere, or where one needs to grey or lighten a tone. The colours I used are zinc white, N. yellow, yellow ochre, raw sienna, light red, Indian red, ivory black and cobalt, and a little terra verde. It and yellow ochre must be used carefully, raw sienna also, as all three colours are apt to darken from a distance. The great principle is that the drawing shall be sound at starting, for it is well to have to make no important changes, especially such as would involve painting dark over light. The yellow of the yoke entirely disappears in time, leaving the colours pure and fresh. Blue is a bit difficult to manage; it is best when painted over red if it is to be a purple blue, over yellow if a green blue, and it should not be loaded, as that results in a heavy effect."

Slides were shown of the cardboard sketch models of the interior, in which the sketches of the decoration were placed. It was essential, said Professor Moira, that one should have, in work of this kind, a good sketch-model to start with. As regards his own method, the lecturer said he laid a thin coat of marble chips and



Photo: Mansell.

MURAL PAINTING: ST. GÉNEVIÈVE, BY PUVIS DE CHAVANNES, IN THE PANTHEON AT PARIS.



Photo : Mansell.

MURAL PAINTING: THE ADORATION OF THE MAGI, BY BOTTICELLI.

white lead, doing the more laborious work in the studio and the finishing *in situ*. The canvases were fixed to the walls, which were prepared with two or three coats of white lead—very thick white lead and strong varnish, thus embedding the canvas in two layers of thick paint, in this way entirely shutting it off from access to the outer air. He painted in oil paint with a medium of hard white wax dissolved in turps: One quart of turps, ¼ lb. of hard white wax, 2 oz. of spike oil, 2 oz. of copal varnish, putting the oil and the varnish into the dissolved wax before it cooled down. Some further slides of the Sessions House work were then shown; also some frescoes in the old Hall of the Carpenters' Company, painted over at some troublous time and rediscovered in 1845.

Possibilities.

In conclusion, Professor Moira said that when one looks at the work of men of to-day, such as work by Mr. Frank Brangwyn, such as the frescoes round the Grand Trunk Railway building, one feels that it is going to live, for in it there is an allegory mixed up with the toil of our daily life. We don't want fluffy Greek maidens—the man in the motor car and the man in the silk hat are no more difficult to treat than the man in the sugar-loaf hat which we have seen to-night. It looks as if we were afraid of the man next door. Let us try and forget the man next door and do something on our own account. The lecturer concluded with expressing thanks to Sir W. Richmond, Mr. Frank Brangwyn, and others, for lending slides and other assistance.

NEWS IN BRIEF.

A catalogue of the collection of books, prints, and antiquities connected with Shakespeare, which are enshrined in the Museum at Stratford-on-Avon, has been prepared by Mr. Richard Savage, the secretary and librarian. The work, which is illustrated by photographs, contains a good deal of the biographical, historical, and bibliographical annotations which make it far more valuable than a mere list of exhibits.

* * *

A committee was formed in November last for the purpose of purchasing the full length portrait of the Duke of Wellington, by Lawrence, for Wellington College. The picture is in the hands of Messrs. Agnew and Co., who purchased it for 2,000 guineas on November 25th, and Mr. Lockett Agnew has agreed to sell the picture to the committee at cost price, giving them six months' grace to find the money. About £1,700 has been received to date, the King, the Prince of Wales, and other members of the Royal Family being among the subscribers.

* * *

The Strathallan and Tullibardine estate of the Earl of Perth will be offered for sale at the end of April by Messrs. J. A. Lumley and Dowell. The original Castle of Strathallan, dating back about 480 years, is incorporated in the present Scotch baronial structure of the early 19th century. In the park of 450 acres are some famous trees of historical interest.



Photo : A. P. Monger.

MURAL PAINTING: LUNETTE IN GREAT HALL, NEW CENTRAL CRIMINAL COURT, LONDON, BY PROFESSOR MOIRA. "MOSAIC LAW." MOSES SURROUNDED BY THE PROPHETS.



Photo: A. P. Monger.

MURAL PAINTING: LUNETTE IN GREAT HALL, NEW CENTRAL CRIMINAL COURT, LONDON. BY PROFESSOR MOIRA. "ENGLISH LAW." KING ALFRED AND HIS COUNCILLORS.

The tenth annual exhibition of the International Society of Sculptors, Painters, and Gravers, opened on Friday last at the Grafton Galleries. This will be followed on May 21st by the Society's "Fair Women" Exhibition. MM. Rodin, Besnard, Gandara, Cottet, and the most distinguished Continental artists will be represented, and the modern work will be leavened by Goya and a few works by the older masters of special excellence.

* * *

The Roads Improvement Association has issued its supplementary report upon calcium chloride as a dust layer, the judges appointed being Mr. H. P. Maybury (County Surveyor, Kent), Mr. A. Dryland (County Surveyor, Surrey), Mr. G. W. Manning (Surveyor, Staines U.D.C.), and Mr. W. J. Atkinson Butterfield (analytical chemist). The judges are of opinion that the treatment has the ill effects of causing during the winter months an abnormal quantity of sticky mud, a decided tendency to licking up, and a disintegrating action upon the macadam surface. Notwithstanding this, they are of opinion that the process is probably not more injurious to macadamized roads than the excessive watering now demanded by the public effectively to lay the dust.

* * *

Some 40 or 50 works by members of the Chelsea Arts Club have been brought together by Mr. George Lambert and sent to the Düsseldorf Exhibition which is open for six weeks. Among the artists represented are:—*Painters*: Mr. W. Orpen, A.R.A., Mr. John Lavery, A.R.S.A., Mr. Lambert, Mr. Philip Connard, Mr. Robert Fowler, Mr. Glyn Philpot, Mr. J. Young Hunter, Mrs. Fagan (wife of the club's honorary secretary), Mr. Alexander Jamieson, Mr. A. Talmage, Mr. Alfred Hayward, Mr. W. Manning, Mr. Cecil Rea, and Mrs. Rea (Constance Halford). *Sculptors*: Mr. Derwent Wood, A.R.A., Mr. Bertram MacKennal, A.R.A., and Mr. Basil Gotto, and *Draughtsman*: Mr. George Belcher.

* * *

Eastbourne is to be extended by the inclusion of Hampden Park within the borough boundaries, and the Corporation Bill, which provides for this and for conferring the powers of a county borough on the municipality, will be practically unopposed. Compensation will be paid to the East Sussex County Council and the Eastbourne Rural District Council.

* * *

Trinity House has decided to build a new lighthouse on Pennines Head, St. Mary's, the chief island of Scilly. This



MURAL PAINTING: LUNETTE IN GREAT HALL, NEW CENTRAL CRIMINAL COURT, LONDON. BY SIR WILLIAM RICHMOND, K.C.B., R.A. "THE GOLDEN AGE," BEFORE LAWS WERE MADE.

will supersede the St. Agnes Light, and will be as powerful and prominent as the Wolf Light or the Eddystone Lighthouse.

* * *

The work of renovating the west front of Hereford Cathedral, which has been carried on continuously for some years, has been completed at a cost of £15,500, all of which has been paid. The Dean intends issuing an illustrated booklet shortly giving an account of the restoration works during the past century.

* * *

The Laundry Exhibition opened at the Agricultural Hall, London, last Saturday, includes a display of linen, etc., from the London County Council technical institutes and schools, and is probably worth a visit from architects and builders interested in the design and fittings of laundry buildings. The exhibition remains open until Saturday next, the 9th inst.

* * *

In our account of the Finsbury Park Pavilion and Skating Rink last week, the address of Messrs. J. F. Phillips and Son, heating specialists, was given as 21, Victoria Street, London. The correct address is 21, Old Queen Street, Westminster, S.W.

* * *

A correspondent of "The Times" writes to complain of the removal of John's Bridge, Kilkenny, which is to be done, apparently, on the ground that it is "inconvenient." The bridge is said "to be the centre and link of the whole of that picturesque place of monuments and memories."

* * *

A monument has been unveiled in the Place des Etats-Unis, Paris, to the memory of Horace Wells, the American dentist, who introduced painless dentistry by the use of nitrous-oxide gas. The monument consists of a bust of Wells, supported by a white marble column to which is affixed a medallion of Paul Bert, the physiologist, who perfected Wells's method.

* * *

The firm of E. H. Shorland and Brother, of Failsworth, Manchester, warming and ventilating engineers, has been converted into a private limited company. This step has been taken for family reasons, and to enable the old employees to have a more direct interest in the business. There are no debentures, and the majority of the shares are held by the former partners. The style of the new firm is E. H. Shorland and Brother, Limited.

* * *

Mr. Edwin T. Hall, F.R.I.B.A., of 54, Bedford Square, W.C., draws our attention to an error in our announcement of the result of the competition for the new Examination Hall of the Royal College of Physicians and Surgeons. The design stated to have been submitted by him was really sent in by Mr. E. Stanley Hall, M.A., of the same address.

* * *

St. Mary's Parish Church, Peckham, is in danger of collapse, and an urgent public appeal is being made for £600 to complete the sum of £2,800 required for repairs. Mr. A. H. Ryan-Tenison, F.R.I.B.A., is the architect.

* * *

Mr. J. S. Gibson, F.R.I.B.A., of 5, Old Bond Street, London, W., is the architect for the new premises of Messrs. Arding and Hobbs, at Clapham Junction.

BOOKS.

The Craft of the Jeweller.

Simple Jewellery: A Practical Handbook. By R. Ll. B. Rathbone. London: Constable and Co.; 1910. 6s.

The full title of this little book states that it is a handbook "dealing with certain elementary methods of design and construction," and that it is "written for the use of craftsmen, designers, students, and teachers."

The keynote of the book is the principle that, in jewellery, design and workmanship should go hand in hand, and each should re-act on the other; in fact, we may take it that the author means that design in jewellery may often actually arise out of workmanship, and the tool become the unconscious prompter of the design. In condemning (in which we entirely agreed with him) the greater proportion of commercial jewellery, he does not deny that this often displays exceedingly clever workmanship, "but it fails to give us the pleasure it ought to do, because its ways are not those which bring out and accentuate the special and individual beauties characteristic of the precious metals, and because its methods of using precious stones are generally vulgar and aggressive."

In addressing the beginner in jewellery, Mr. Rathbone recommends him to pass over what he calls "pictorial and sculpturesque jewellery," such as much fine and sumptuous Renaissance work, as representing a class of work beyond a beginner; to fix his mind in the first instance on craftsmanship as the essential thing, and to study such examples of older work as represent the effects of craftsmanship, of the shaping of metal in numerous comparatively simple forms. Of such work some illustrations are given. And he recommends the beginner to try first the making of a number of what he calls units—small forms which can be made out of metal in various ways and by various instruments (which are described and illustrated), and which can be arranged into a great variety of designs. The student would thus make a first step in evoking design out of the manipulation of metal. Some very effective geometric designs "made up of loose units" are illustrated, and it is shown how a temporary trial arrangement may be recorded for future use. All this may seem to be only the A B C of jewellery; but it is beginning at the right end. The illustrations of a number of designs for silver charms on a small scale serve to show what a beautiful and effective variety of forms may be obtained merely by links twisted up and manipulated in different ways. Yet, in spite of this, we know how difficult it is to get, by purchase, a gold or silver watch chain which shows anything like artistic feeling. They mostly represent only a few stock ideas.

The book is a very practical one, and contains full instruction in the use of tools and in methods of manipulation.

THE CHAPEL OF THE RED MOUNT, KING'S LYNN.

This rather curious octagonal building is perhaps all the more interesting from the fact that its history is indeterminate. Apparently it was designed to be almost as much a stronghold or "city of refuge" as a house of prayer; but fortunately it has escaped serious assault, and therefore preserves much work—such as the vaulting in the upper chamber, as shown on p. 284—that is worth inspection and will even repay study. The planning of the various floors (see p. 286) is worth examination; and on the whole, Mr. Ralph Surridge has not wasted his labour in measuring and drawing so quaint a building. Local repute connects it with several historical personages, among them Mary Queen of Scots, but there does not appear to be any authentic ground for these assertions. The building stands in the public park, not far removed from a fragment of the town wall.



THE CHAPEL OF THE RED MOUNT, KING'S LYNN: GENERAL VIEW.

FOUNDATIONS OF STAINED GLASS WORK.

By NOEL HEATON, B.Sc., F.C.S.

[*This is an abstract of an exceedingly interesting and useful paper read by Mr. Heaton before the Royal Society of Arts. Scientific and searching investigation into mediaeval work gives a less favourable impression of it from the technical side than the protagonists of the Gothic Revival would have us believe. It is not therefore surprising that Mr. Heaton should find that much of the mediaeval glass was less durable than the Roman that preceded it, or the modern glass that followed it. His lecture is also useful for its indication of how far the composition of glass to secure effect may be compromised with the composition to secure durability.*]

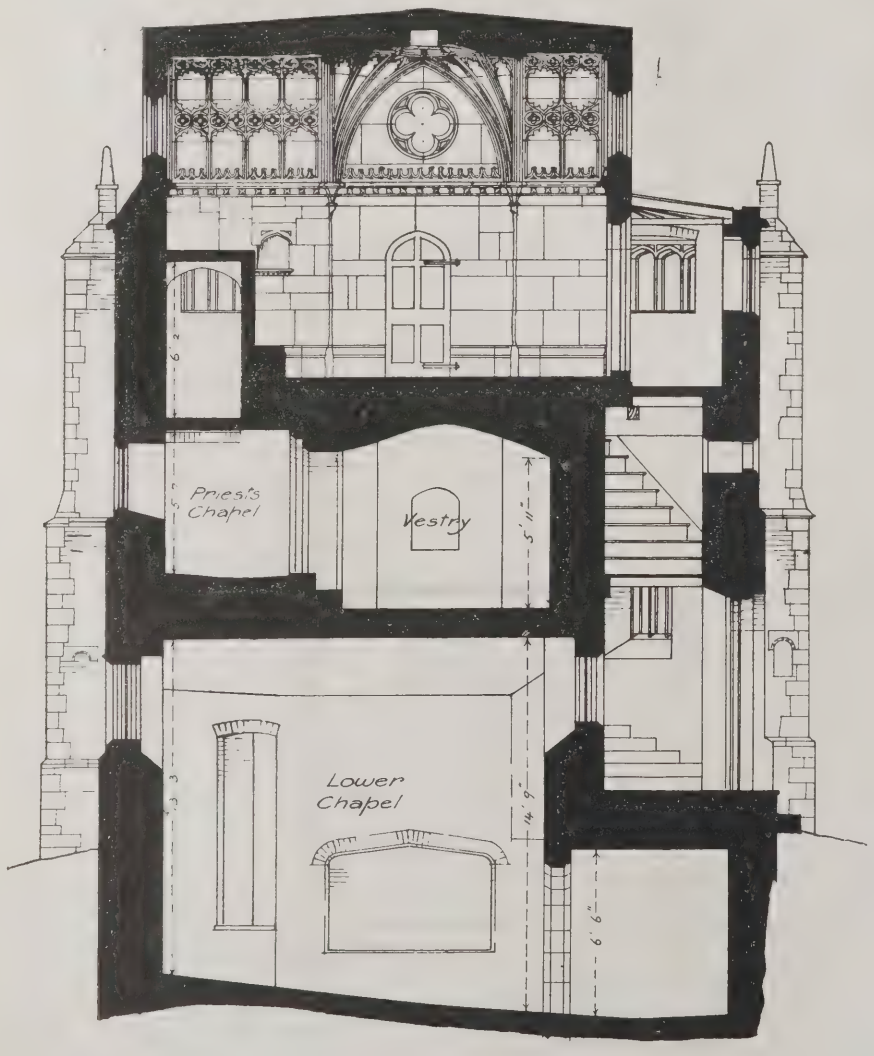
Stained glass differs from almost every other method of decorative painting in that the sheets which provide the ground, provide at the same time both the broad masses of colour and the outlines of the design, and the function of the paint is limited in consequence to producing the details of the design and stopping out the light in places, instead of producing it entirely as in the case of canvas or mural painting. The success of the work depends, therefore, to a large extent on the choice and quality of the glass to be painted, which, in fact, performs two functions—it provides the ground or fabric of the window, and it also provides that inimitable quality of colour and texture which makes stained glass what it is. It was not always so well-recognised as it is to-day that stained glass is painting *by means of* glass rather than on glass. Painting on glass, so characteristic of the work of the seventeenth and eighteenth centuries, is quite discredited at the present time, except for heraldic work on a small scale, for both æsthetic reasons and on technical grounds. It has a certain legitimate scope, but sacrifices the main feature of stained glass—the beauty of the glass itself.

Durability.

Glass must, more particularly, be highly resistent to atmospheric action under extremely trying conditions, being subjected to continual fluctuations of temperature, battered by storm and rain on the outside surface, and continually bathed in moisture containing more or less acid on the inside surface. This requirement



VIEW OF VAULTING IN UPPER CHAMBER, CHAPEL OF THE RED MOUNT KING'S LYNN.



SECTION LOOKING SOUTH

SCALE OF FEET

THE CHAPEL OF THE RED MOUNT, KING'S LYNN. MEASURED AND DRAWN BY RALPH SURRIDGE.

does not exclude the weathering action which gives to old glass one of its chief glories. The best glass ever made will be modified by weather exposure, but the better it is the more weathering will enhance its beauty rather than destroy it. Mr. Heaton produced a piece of glass dating from the close of the 12th century, on which the effect of 800 years of weathering had been merely to etch the surface. In contrast part of a quarry from York Minster, dating from 1310, or 150 years later, had been practically destroyed by pitting, and much of the glass from the same windows had disintegrated. Another example shown illustrated the decomposition of glass resulting in it becoming practically opaque. Mr. Heaton opined that no one would defend a specimen in which the refining effect of time had eliminated the design altogether.

Analyses of Roman glass, the quarry from York Minster and typical modern glass revealed the interesting fact that the composition of modern glass and Roman glass was practically identical. The essential ingredients are 1, silica, 2 an alkali (potash and soda), 3 an earth (lime, alumina or lead). In most cases more than one substance will be found under group 3. Stability depends on attaining a proper balance between the properties conferred by these three types of compounds, respectively. From the analysis Mr. Heaton drew the conclusion that the peculiar decay of Gothic glass is due to an excessive content of lime and magnesia and the presence of a considerable proportion of phosphoric acid. Of the three principal materials used in glass-making, sand, lime, and soda, the last, which is the element of weakness, is by far the most expensive, so that from motives of economy, the modern glass-maker uses as little as he can without raising the fusion point beyond the limits of his furnace.

One Objection to Modern Glass.

Its general solubility for silver is not very great, i.e., it does not stain very nicely. It can, of course, be stained, but not with the rich deep stain of, say, the glass of Peckitt's time, and if fired at the temperature necessary for good hard colour it "metals"—the silver is thrown out of

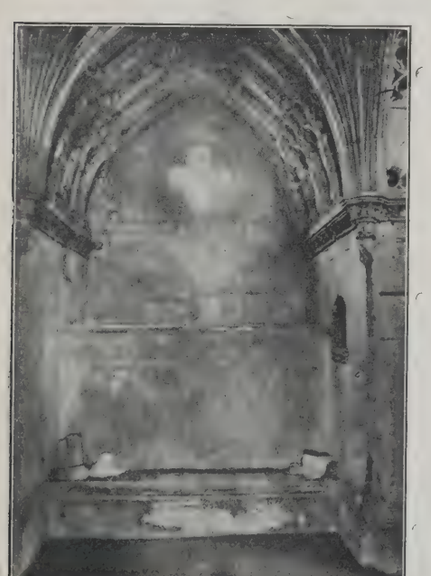
solution too rapidly on heating—and the particles of metallic silver are deposited on the surface in more compact state, giving a dingy and greenish-yellow appearance, instead of the yellow colouration when the finely divided particles remain in suspension in the glass. Mr. Heaton thought this defect an unnecessary one, and one that could be remedied by slight differentiation in the composition of the glass.

Varieties of Glass.

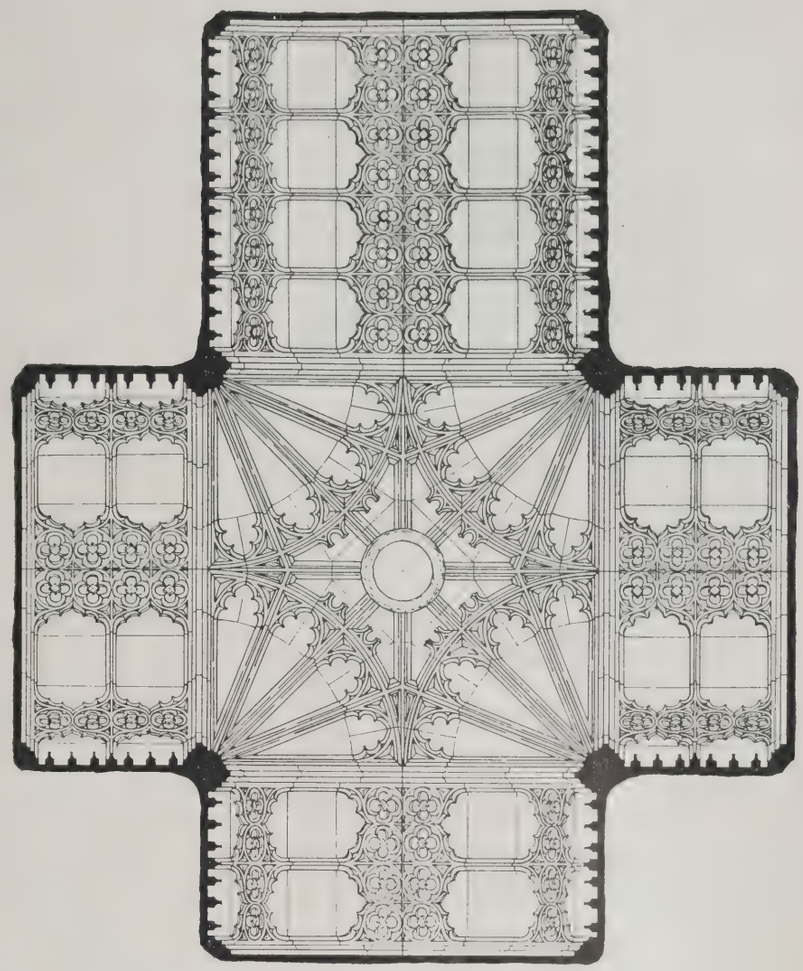
These may be roughly summarised as: (1) Cast or rolled (cathedral, etc.). (2) Blown into cylinder (muff glass). (3) Blown and spun (crown glass). (4) Blown into mould ("Early English" slabs). The three first have been made from the time of the Romans, by whom they were introduced; the last is a modern introduction. The second and third were exclusively used in mediæval times, but the glass produced by these two methods in mediæval times, owing to the primitive character of furnaces and appliances, is very different in character from glass of similar classes to-day.

Paint for Painting Glass.

The paint is made by mixing an intensely coloured pigment with a glass of special composition called a "flux," grinding the two together to an impalpable powder, which can be employed as a paint. The glass painted in this manner being then raised to a red heat, the flux melts and acts as a vehicle to bind the pigment on to the glass precisely as the oxidised oil in a painting or the carbonate of lime in a fresco holds the particles of pigment. This paint, or fusible coloured glass, must fulfil certain stringent conditions which may be summarised thus: (1) Fusibility, or the property of softening at such a temperature that it can be fused on to glass without destroying the texture of the latter. (2) Durability, or the property of resisting the corrosive influence of the atmosphere indefinitely. (3) Opacity, or the property of producing decided opacity in the finest lines, and of retaining this quality through the firing. (4) Working qualities, or the capability of working easily in a brush when made into a paint. (5) Colour, or the property of retaining the same tone in all variations of light.



THE CHAPEL OF THE RED MOUNT, KING'S LYNN: RECESS IN UPPER CHAPEL.



PLAN OF CEILING OF UPPER CHAPEL.



SCALE.

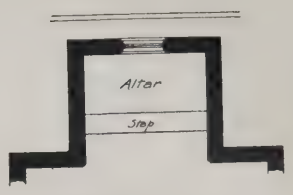
THE CHAPEL OF THE RED MOUNT, KING'S LYNN.

The pigments used in the preparation of this enamel must be such as have a very strong colour, are opaque, and are capable of being raised to a red heat without decomposition and without entering into the composition of the flux. This practically limits pigments to the oxides of the metals; and thus the oxides of iron, copper, cobalt, and manganese are almost invariably employed, either singly, mixed together, or combined together. In the last case chemical combination is the condition, not mechanical mixing; valuable pigments are obtained in this way, which cannot be produced by mere mixing.

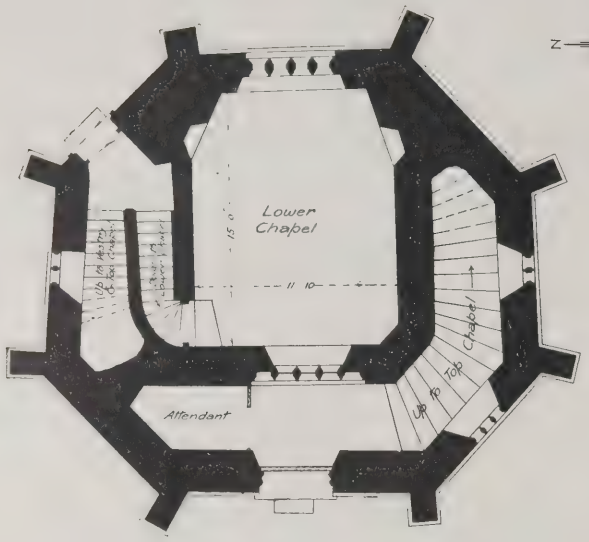
The flux, however, is the most important part of the enamel, since the fusibility and durability depend on it. Some glass painters have been under the impression that permanency depends on the picture; but as the flux binds the pigment to the glass, the pigment is not of much value in the picture unless the flux keeps it where it is put. The actual composition of the flux is a compromise between the two conflicting requirements of fusibility and durability. Generally speaking, the more fusible, the less durable it is, and *vice versa*, so that in practice it is made as durable as possible consistent with making it sufficiently fusible to fire properly. The general aim is to make the composition of the flux as near as possible like that of the glass on which it is to be painted, so that its physical properties may approximate, since it is necessary that the flux, besides resisting decomposition, should expand and contract in harmony with the base glass.

The Importance of a Coloured Flux.

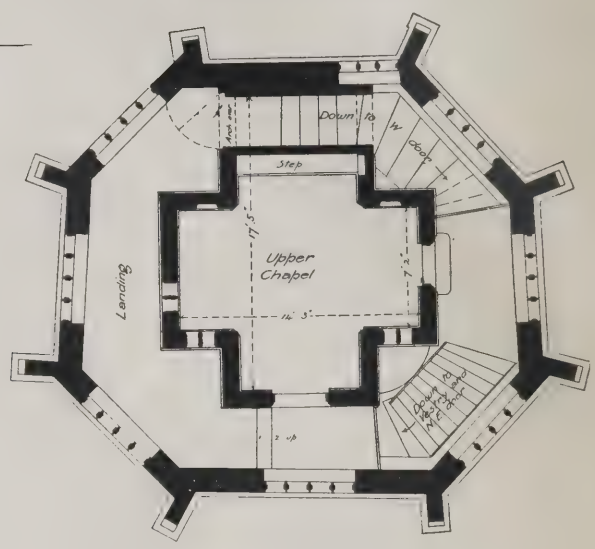
In all published records the flux usually described in the preparation of the enamel is a colourless or transparent glass. This is not the case as regards mediæval glass, for the mediæval workers used as a flux an intensely coloured glass to mix with the pigment. This is a very important difference, and explains the difficulty of the modern glass-worker in reproducing satisfactorily the extremely fine but vigorous lines met with in mediæval examples. The vigour of these fine lines depends entirely on the opacity of the enamel, and if the flux is transparent everything depends on the pigment, so that the painted surface is only partially opaque. But if the flux is opaque, then every portion of the painted surface is opaque. This does not make much difference where a broad mass of the enamel is laid on, but in the case of an



PLAN ABOVE ALTAR.



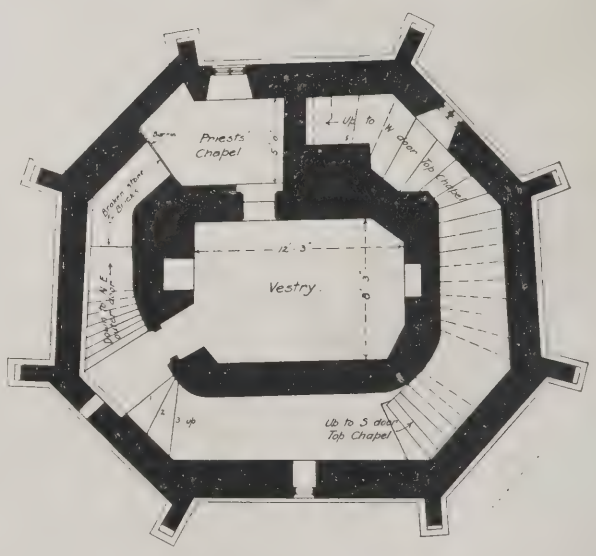
GROUND FLOOR PLAN



TOP FLOOR PLAN



SCALE OF FEET



MIDDLE FLOOR PLAN.

SCALE OF FEET.

THE CHAPEL OF THE RED MOUNT, KING'S LYNN. MEASURED AND DRAWN BY RALPH SURRIDGE.

extremely fine line, where there are only a comparatively few particles, each particle of pigment tends to become isolated and surrounded by a mass of flux. If the flux is transparent, the line becomes "rotten."

Moreover, as the particles of flux are generally somewhat larger in size than those of the pigment, the brush tends to catch up the flux and draw it out. In consequence, the end of the line tails off into transparency. Another value in the opaque flux is that it does not lose its opacity so much in firing. This "firing-away" has always been a trouble, because it results in the painting losing strength in the process of firing, and the finished work is lacking in modelling. This firing-away is largely optical effect. Any transparent substance like glass becomes opaque white when in a state of fine division, owing to the reflection of light from the surface of its particles. If you use a powder of this nature as a paint and fuse it, you reproduce the original transparency and inevitably suffer a considerable loss of opacity. But in the case of an opaque glass the additional opacity introduced by powdering is only a small addition to that already existing, and the inevitable loss on firing is nothing like the same proportion.

The coloured flux also modifies the colour of the enamel so as to obviate the unpleasant change of colour when seen by transmitted as compared with reflected light. This is due to the fact that the warmer colours of enamel are produced by oxide of iron, which is black by transmitted and red by reflected light, so that the painting on a window executed with an enamel in which it constitutes the pigment varies according to the angle at which it is seen. The deep brown colour of the flux neutralises this, because it is black by reflected light but warm brown by transmitted light, one change balancing the other as the angle of view is altered.

Necessity for Both Artist and Craftsman.

Mr. Heaton dealt at considerable length with the composition and manufacture of the flux and the firing of the glass, modern kilns, and other technical details of the craft, and in conclusion indicated that, in his opinion, "division of labour is essential in such a craft as stained glass. The artist cannot be expected to prepare all his materials as some would have him do, nor do I think he would be much better off if he did. It seems to me that stained glass—and, indeed, every artistic craft—is not only an art but also a science. There must be two sets of workers—the artists and those who work for them—but these two must work together to the same end if the best results are to be achieved; and to render this possible, each must understand and appreciate the aims, the problems, and the difficulties of the other. There must, in fact, be co-operation between science and art."

A NEW PUMP.

[The Humphrey Internal-Combustion Pump is an entirely new type of 'pump' self-acting and for which there is likely to be a very large variety of uses, both as a pump and as a prime mover displacing the steam engine. The principles of this pump were described in detail by Mr. Humphrey at a meeting of the Institution of Mechanical Engineers. A simple form of pump of this type and its action is described below; the different applications are manifold, as the reader can readily deduct for himself.]

The pump consists essentially of a full bore pipe from the combustion chamber (C) to the high-level tank (H.L.) at the end of the delivery pipe A. At the upper end of the combustion chamber two valves are fixed, one for the admission of gas and air, and the other for exhausting the burnt products. The exhaust valve is opened by levers connected with the low level tank valve (V), which opens under conditions described later. Gas and air mixture being admitted to the upper portion of the combustion chamber, the gas is exploded by electric spark from the sparking plug K. The water in A and in the lead pipe is rapidly driven towards the high level tank.

As the pressure of the gas continues, so the velocity of the water increases until finally it has a store of energy. This assists the progress of the water towards the overflow at high level tank, the gas expanding until the pressure is equal to atmospheric pressure, less the amount due to the static head of water. The stored-up energy in the water, however, maintains the flow away from the combustion chamber, and creates a partial vacuum, whereupon the valve V opens automatically by the water pressure from lower tank, and more feed water enters the pipe A. This valve also releases the exhaust-valve; and the kinetic energy of the water by this time being exhausted, water begins to return back to the combustion chamber. The partial vacuum in the pipe A having now disappeared, the valve V closes. The returning water forces the burnt products of combustion out of the exhaust valve, but when the water reaches the exhaust valve the force of impact is sufficient to close the valve, a pawl attached to the levers alone locking it fast. The remaining air then acts as an elastic cushion and brings the water to rest, but expanding again drives the water back down the combustion chamber, causing therein a partial vacuum. This allows a fresh mixture of gas and air to enter the chamber through the inlet valve, and the head of water in the delivery pipe causes the water to return again, compressing the newly admitted gas and air and closing the admission valve.

A spark from the plug K then ignites this compressed air and gas mixture, and the cycle of operations is again commenced. This is in short the operation of the pump. Its applications are many. Besides acting as a water raiser it can also be used as a prime mover, for by the insertion of a water turbine in the flow pipe rotary power can be obtained. Of course there are many mechanical modifications in the apparatus necessary in such a case, but the principles are the same.

Dr. Unwin has made tests officially of the pump, and says that the pump tested worked throughout the trials with varying lift automatically without any change. Comparing it with a centrifugal pump driven by an ordinary gas engine and lifting the same quantity of water, he says, gas engine and centrifugal pump uses 120 to 127 cubic feet of gas per p.h.p., Humphrey gas pump uses 83.1 cubic feet per p.h.p.

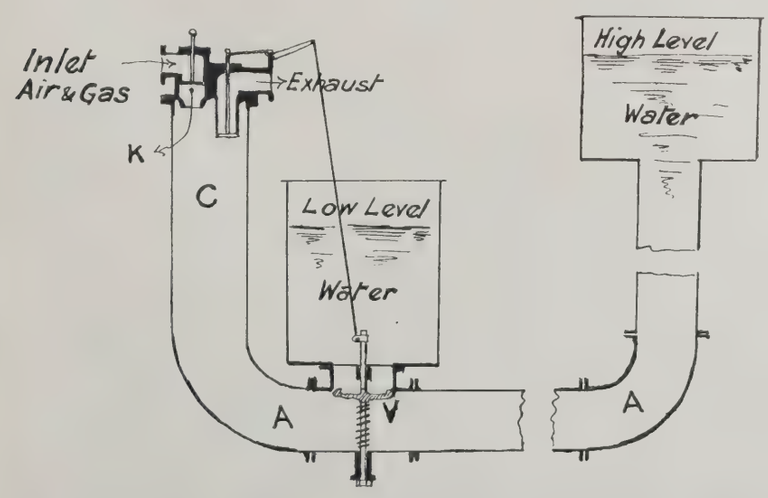


DIAGRAM SHOWING THE PRINCIPLE OF THE HUMPHREY INTERNAL-COMBUSTION PUMP.

WHAT IS A BUILDING?

BY A LEGAL CONTRIBUTOR

The above question may appear, at first sight, to be fairly simple; but there is more in it than meets the eye. Not only has the term "building" acquired a special technical meaning under the London Building Act, 1894, but as used in various by-laws throughout the country it often includes far more than would be imagined by one who was not familiar with the interpretation put upon those by-laws by the decisions of the courts. Again, when one has to consider the effect of covenants relating to light, the meaning of building may be somewhat difficult to arrive at.

Let us first consider the meaning of the term as used in the London Building Act, 1894. Although the Act contains many definitions, "building" is nowhere defined, save that the meaning of the terms "domestic building," "public building," and "new building" is specially explained.

It is of interest to mention, however, that when the London Building Act left the House of Commons it contained the following definition which was struck out by the House of Lords: "Building means an erection comprising a cubical space defined by walls, piers, posts, columns, or other supports or enclosures, and a roof, whether the erection is wholly enclosed or not, and whether it is fixed on permanent foundations or not, and of whatever material the supports, enclosures, or roof may be composed."

Although this definition is not law, every roofed erection enclosing space must now be considered to be a building, as by S. 201 (10) erections not exceeding in area 30 square feet and not exceeding in height 5ft. to the eaves or roof plate are referred to as buildings.

The following have been held to be buildings within the meaning of the London Building Act:—A timber stage of two storeys, the lower of which was fitted with revolving shutters. A timber stage of three floors used for storing cut timbers, enclosed on each side by a party wall, but open at the front and back, the floors being supported upon timber uprights and approached by an internal staircase, the whole being covered by a zinc flat, was held by Mr. Newton, at Marlborough Street P.C. on January 26th, 1893, to be a building, and was ordered to be enclosed on the front and back by proper walls (*Wallen v. Gluckstein*, February 3rd, 1893). In another case (*Mayor of South Shields v Wilson*, 1902), a wooden erection about 20ft. by 20ft. and 12ft. high, to be used as a stable, on private ground, enclosed by a fence excluding the public, has been held to be a "new building" within the Public Health Act, 1875, and must therefore comply with the local by-laws.

The same Act contains certain provisions which affect any "building, structure, or work." With reference to these, if erection is contemplated, the builder or other person causing or directing the work must serve on the district surveyor a building notice. To what kind of erection does this provision relate? It has been decided that a "street box" used for electric lighting and established in accordance with the terms of a provisional order under the Electric Lighting Acts, 1882 and 1888, is a "building, structure, or work" within this section. But neither a removable temporary seating fixed inside a large public hall when required by persons having the hall for show or exhibition, nor a temporary floor in a swimming bath, which did not, and was not likely to, affect the building or swimming bath in which it was constructed, was held to require a notice. In the case of *London County Council v. Humphreys*, 1894, 2 Q.B. 755, it was held that a corrugated-iron and wood building erected not for use upon the spot, but placed there merely for the purposes of sale, and as a specimen of wares sold by the defendant, though a structure of a movable and temporary character, required no licence from the Council under the Metropolis Management and Building Amendment Act, 1882.

That part of the London Building Act, 1894, which relates to the lines of building frontage, also deserves notice in this connection. By S. 22 no "building or structure" shall without the consent in writing of the Council be erected beyond the general line of buildings, subject to the exceptions specified in the section. The decision as to what is or is not a "building or structure" is a question of fact. The following have been held to come within the phrase: A garden wall; a 14-in. wall 11ft. high, built in substitution for a dwarf wall with an iron railing; an iron and glass shelter or portico bracketed out from a building projecting about four feet over the public way. On the other hand, a number of advertisements consisting of metal cases with wood and canvas fronts arranged to be lit by electric light, and fixed by iron supports to the front wall of a house, from which they projected 10ins. beyond the general line, were held not to be "structures."

Coming next to the meaning of the term building in a covenant contained in a deed, much depends upon the surrounding circumstances. Thus the erection of wooden hoardings, for the purpose of advertisement, fastened to the premises, is a breach of a covenant not "to erect or make any building or erection on any part of the demised premises." But the erection of an advertisement hoarding is not a breach of a covenant that any "building" which should be erected on the land should be of a certain height, and have a stuccoed front and slated roof, and be used only as a dwelling house. The

construction of a railway embankment has been held to be a breach of a covenant not to erect any buildings on the land conveyed other than private dwelling-houses; but a covenant to keep land open and unbuilt upon is not broken by making an underground urinal.

In one case (*Boyce v. Paddington Vestry*, 1903, 1 Ch. 109) it was held in the circumstances of the case that a hoarding was not a building. Lord Justice Buckley said: "From the cases I derive no principle other than this, that a hoarding may or may not, according to the contract, be a building."

In a case referred to in "Emden's Building Contracts" (4th edition), p. 663, a deed of conveyance contained a covenant by the defendants to erect certain buildings, and a further covenant to the effect that "no other . . . building . . . shall at any time be erected upon such piece of land, except with the approval" mentioned in the deed. The defendants erected stone steps in substitution for an iron ladder. It was held that this was a substantial alteration which amounted to the erection of a separate building.

Under the Prescription Act, certain rights to light can be acquired by long user for a number of years. It has been held that a permanent structure used for storing and seasoning timber was not a building within this Act, but that a greenhouse was a building. A greenhouse was held to be a building in *Clifford v. Holt*, 1899, 1 Ch. 702, where Kekewich, J., said: "Here we have a greenhouse. If it were a studio—either an ordinary studio, or a photographic studio, or a picture gallery—detached from the house, it would be a 'building.' If it were a conservatory attached to the house, it would be a part of a building. It is difficult to say more than that this is a 'building.' I prefer to leave it an open question what other erection may come within that description."

NEW BUILDINGS.

PROPOSED.

Bacup.—A Local Government Board inquiry has been held at Bacup by Mr. M. K. North, M.I.C.E., into an application of the Bacup Corporation to borrow a sum of £10,000 for the widening and improving of a long stretch of Burnley Road, commencing at Bull's Head Bridge in the centre of the town. The scheme embraces the arching over of the River Irwell for a quarter of a mile of its length, and one portion of it will form the approach to a magnificent new post office, which is to be built on a site at Hempsteads presented by the Mayor, and for which the Government Office of Works have prepared the plans. A portion of the cost of the scheme will be borne by the County Council.

Brentford.—The Finance Committee of the Middlesex County Council has recommended that application be made to the Local Government Board for their consent to the borrowing of, for alterations to the Town Hall, Brentford, the sum of £2,400 for thirty years.—Agreed.

Cardiff.—The Finance Committee has recommended the Council to adopt the scheme for the erection of a public disinfecting station, estimated to cost £2,313 18s. 9d., in Crawshay Lane, off Penarth Road, on the site now occupied by the Mortuary yard.

Croydon.—A central site at the top of Handcraft Road, in the parish of Christ Church, costing £750, has been secured, and it is now proposed to proceed with the building of a Parochial Hall at a cost of £2,000, inclusive of heating and lighting. The new proposed hall will include a large hall to hold 450; a smaller underground hall; and kitchen and cloakroom accommodation. Mr. E. G. Cole, M.S.A., is the architect.

Elstow.—It is proposed to erect a Bunyan Memorial Hall in this Bedfordshire village, where Bunyan was born. The site has been given, and the cost of the building will be £1,800, of which £1,000 has already been raised.

Felixstowe.—Mr. R. H. Bicknell, M.I.C.E., Local Government Board Inspector, has held an inquiry into an application by the Urban Council for permission to borrow £170 for works of street improvement in High Street, Walton, and a further sum of £1,000 for work in connection with the pavilion on the Hamilton Terrace cliffs, and the laying out of the cliffs. Of the £1,000 £400 is for excess expenditure and £600 for new work.

Fife.—The West of Fife Infectious Diseases Joint Hospital Committee have agreed to recommend to the local authorities who are partners in the combination to approve of a scheme for an extension of the hospital estimated to cost £10,306, and to forward plans to the Local Government Board for their approval.

Glasgow.—The Glasgow Corporation is considering a recommendation by the City Improvements Committee to demolish the old properties on the west side of the High Street between Bell Street and the Trongate, and to erect new buildings at an estimated cost of £28,000. It is estimated that a rental of £2,120 would be secured from the new buildings.

Hinckley.—The Guardians have approved the plans of the new infirmary and laundry, the total estimated cost of the scheme being £7,736. Plans have also been prepared for alterations and enlargements to the Boardroom, at an estimated cost of £200.

Pitlochry.—It is proposed to erect a new hall in connection with Pitlochry Established Church, from designs by Messrs. Leonard and Morris, at an estimated cost of £800.

Reading.—Mr. Brook Kitchin, F.R.I.B.A., the Local Government Board architect, has provisionally approved the scheme of the Board of Guardians, to enlarge the existing workhouse, which will include the erection of an aged and infirm block, new committee room, and mortuary, and alterations to the master's office and matron's stores. The special committee recommend that the plans be approved, and tenders invited for the work; and also that Mr. Roland Howell, the Guardians' architect, be engaged to prepare the necessary drawings, etc.

Sheffield.—The City Council has applied to the Local Government Board for sanction to borrow £7,640 in connection with the widening and improvement of Chesterfield Road. The portion of the widening is from Meersbrook Bank Road to Whitehouse Crescent, a distance of about three-quarters of a mile, and the present average width of about 35ft. will be extended to a minimum of 50ft., and a general width of 60ft. The estimate for the purchase of the necessary land is £1,459; the retaining walls are to cost £3,520, streets and other works £2,461, and costs are estimated to amount to £200.

Shipley.—An inquiry has been held by Mr. Courtenay Clifton, one of the inspectors for the Local Government Board, in reference to an application of the Shipley District Council for sanction to the borrowing of £4,010 for the purposes of the public baths and the depot of the Council on the Manor House estate.

IN PROGRESS AND COMPLETED.

Aberdeen.—The Plans Committee of the Aberdeen Town Council has approved of plans of the following buildings:—Tinplate factory, Roslin Place, Mr. John Rust, architect; fishcuring premises, South Esplanade West, for Mr. Harvey Mennie, architect; workshop at Nos. 37-41, Chapel Street, ; fish oil factory on Old Ford Road, Mr. G. F. Anderson, architect; fish oil factory, Russell Road, Messrs. Walker and Duncan, architects; alterations, Royal Army Medical Corps (T.F.) headquarters, Fonthill Road, Mr. A. H. L. Mackinnon, architect.

Ashford.—The contract for the new Drill Hall has been secured by Messrs. G. E. Wallis and Sons, of Maidstone, their price being £5,079. Mr. F. G. Hayward of the firm of Messrs. Worsfold and Hayward, Dover, is the architect. The flooring will be formed of the Kleine patent fire-resisting material, with patent jarrah wood blocks, while the whole of the roof will be covered with special Eternit asbestos.

Bury.—The Paving and Sewering Committee of the Corporation have approved the following plans:—Rebuilding of a portion of Brick House Mill, Wash Lane; Elementary School, Elton; addition to ironworks of R. Roberts, Ltd., Woolfold; boarders' dormitories at St. Joseph's Convent.

Derry.—The Corporation have accepted the tender of Messrs. Henry Laverty and Son, Belfast, for the rebuilding of the Guildhall, which was destroyed by fire on Easter Sunday, 1908. The City Surveyor has prepared the designs, and the accepted tender amounted to £24,584.

Dumbarton.—The engineering and boiler works of Messrs. Denny and Co., Dumbarton, have been largely extended within recent years. Still another important extension is now in process of being carried out. Dumbarton Dean of Guild Court has granted lining to the firm for the erection of a large machine shop, a small machine shop, and a valve shop. The contract for the extension is in the hands of Sir William Arrol and Co, Glasgow, and the cost will be about £50,000.

Dumfries.—The restoration of the Midsteeple, one of the landmarks of Dumfries, has just been completed at a cost of over £1,400. The building, which is 200 years old, now presents a comparatively new appearance. During the time of Burns a portion of the buildings was used for holding meetings of the Town Council.

Dundee.—At a recent meeting of the Dundee Harbour Trustees, the reconstruction of Camperdown West Roundhead was considered, and it was decided to adopt the subcommittee's recommendation to build the jetty 5ft. 6ins. further into the river than the existing jetty. The cost of the work is estimated by the engineer to be £4,600. The engineer reported that the reconstruction in reinforced concrete of the pier at Broughty Ferry had been completed, and that the pier was now ready for traffic. The cost of the work had been £23,000.

Grangemouth.—The new High School, which has been built at a cost of £9,000, has been opened on completion, and provides accommodation for 400 pupils. Messrs. Wilson and Tait, Grangemouth, were the architects.

Hawick.—The scheme for the enlargement and mprovement of Wilton Parish Church has been completed, having been carried out at a total cost of £7,000. To the nave, with its arcade of Caen stone, built by the heritors in 1860 to the design of Mr. J. T. Emmett, London, there have now been added transepts, transept aisles, chancel, and baptistery. The work, which includes early English mural arcading in chancel and baptistery, a font of Caen stone and Iona marble, handsome elders' stalls and open screens carved in oak, and a communion table, also in oak of elaborate design, placed on a pavement of Iona marble, has been designed throughout by the architect, Mr. James P. Alison, F.R.I.B.A., Hawick.

Lancaster.—The Town Council has approved the following plans:—Alterations to two cottages, Fleet Square; new drying kiln, Brunton Road; two dwelling-houses, Redvers Street; new stable, Slyne Road.

Paisley.—The Paisley Dean of Guild Court has passed the following plans:—Pattern shop, works of Thomas White and Sons (Limited), Laighpark; two semi-detached cottages at Arkleston Road; three tenements of four storeys, Dunn Street; additions and alterations to Calside Villa.

Torry.—The plans of the new Roman Catholic Church and Presbytery have been approved of by the Aberdeen Town Council. The church, which will cost about £4,000, will provide seating accommodation for 400 people, and will be of Norman design, comprising a large square central tower and a flight of steps leading to façade. The architect is Mr. Charles J. Menart, Glasgow. The mason work will be executed by Mr. David Weir, the carpenter work by Mr. Mercer, the slater work by Mr. John Durnin, and the plaster work by Mr. Bannochie.

ENQUIRIES ANSWERED.

Correspondents are particularly requested to be as brief as possible. The querist's name and address must always be given not necessarily for publication.

The Editor is willing to answer enquiries from readers who require information on architectural, constructional, or legal matters. Such information must be regarded as the gratuitous advice or information of a friend, and not as the professional opinion of one who holds himself out as possessing expert knowledge on the subject in question. The Editor will, however, avail himself of the assistance of a large staff of experts in the matters above mentioned, but the enquiries sent must be on the express understanding that he is not to be held responsible for any delays, mistakes, inaccuracies, or negligences which may occur.

Enquirers whose questions involve possible legal proceedings are strongly urged to consult their solicitors before taking definite steps in regard thereto.

Answers by post will be sent if the enquiry is accompanied by a postal order for 1s., made payable to Technical Journals, Ltd. and crossed, and stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

This fee of 1s. required for answers by post is in no case to be regarded as payment for the answer given, but merely as a registration fee to meet the extra clerical and other expenses incurred in dealing with these special replies.

The Editor also reserves the right of refusing to reply to any question that he may deem to be unreasonable or unsuitable, and it must be understood that both question and reply will, as a rule, be published in these columns.

Stability of River Wall.

H. S. (VICTORIA PARK) writes: "I should like your opinion as to the stability of the river wall shown on the enclosed sketch [not reproduced]. It is proposed to build the wall in Portland cement concrete, composed of 1 part cement to 6 parts of Thames ballast. In the event of the section shown being either insufficient or too heavy, kindly give a sketch with dimensions of a section suitable for the requirements. I should be glad if your expert would give an illustration and explanation of the method (with the necessary formulæ) for calculating the section of this wall. Can you recommend a small text book dealing with the calculations, etc., relating to retaining walls, and the graphic method of determining their stability and sectional area?"

—The accompanying illustration shows the proposed wall with the thrusts worked out for 1ft. run of the wall. Before any filling is done, the existing surface must be benched out to prevent any tendency to slip, and the filling must be done in layers well rammed. The nature of the material of the filling is not given, but it may be assumed to have a natural slope of about 40 degrees. This angle should be set off as shown, and the line of rupture found by bisecting the angle between the natural slope and the vertical. The wedge of the earth between the line of rupture and the back of the wall is the effective portion in producing thrust. The weight of the wedge, assuming the earth to weigh 100lbs. per cubic foot, will be

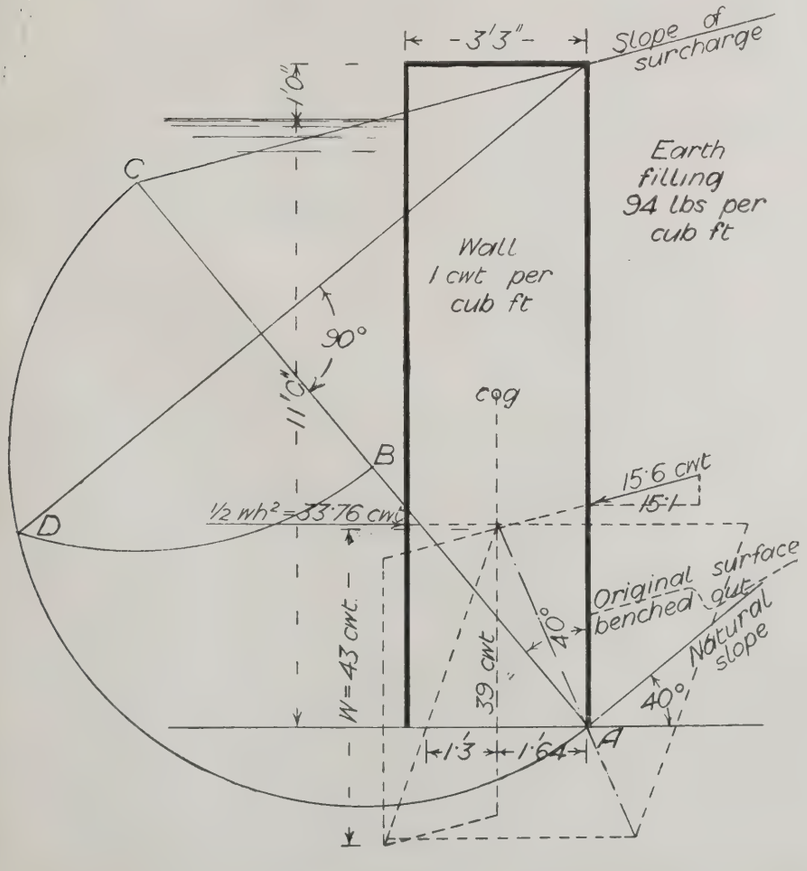
$$\frac{22\times 10{\cdot}5}{2}\times\frac{100}{112}=103 \text{ cwts.}$$

At one-third of the height from lower ground level to upper ground level draw a horizontal line for the position of the centre of pressure, and from the intersection of this with a vertical line through the centre of gravity of the wedge, which in this case will also be the intersection with the line of rupture, set up the weight of wedge 103 cwt., and from the upper extremity draw a line parallel with the line of rupture to cut off a portion of the horizontal line which will be the total thrust from the earth = 50 cwt. Now find the weight of the wall above the lower ground level, assuming it to be of concrete composed of 1 part standard Portland cement, 3 parts clean sharp sand, and 6 parts screened ballast, and weighing, say, 120lbs. per cubic foot $=22\times\frac{8{\cdot}5+3}{2}\times\frac{120}{112}=135$ cwt.

Then find the centre of gravity of this portion of wall and drop a vertical to cut the horizontal line of thrust. From this intersection draw the parallelogram of forces as shown, giving the resultant which produced cuts the base line A B at 1ft. 6ins. beyond the centre. The vertical component of the resultant being 135 cwt., the maximum stresses on line A B at low water will be

$$\frac{W}{A}-\frac{M}{Z}=\frac{135}{8{\cdot}5}+\frac{135\times 1{\cdot}5}{\frac{1}{6}(1\times 8{\cdot}5^2)}=16+18=34 \text{ cw}$$

or 1.7 tons per sq. ft. compression at A, and 2 cwt. or 0.1 ton per sq. ft. tension at B, which will be perfectly safe. To find the stresses at high water, calculate the total pressure of the water upon the face of the wall, thus, $\frac{1}{2}whl=\frac{1}{2}\times\frac{62{\cdot}5}{112}\times 16.5\times 17=78$ cwt., which acts at right angles to the face at one-third the height from lower ground level to high water level. From the intersection of this thrust produced, with the previous resultant, draw a new parallelogram of forces, the resultant of which cuts the base A B at 1ft. inside the centre line. The vertical component of the resultant being 154 cwt., the maximum stresses on line A B at high water will be $\frac{W}{A}+\frac{M}{Z}=\frac{154}{8{\cdot}5}+\frac{154\times 1{\cdot}0}{\frac{1}{6}(1\times 8{\cdot}5^2)}$ $=18+12.8=30.8$ cwt., or 1.54 tons per sq. ft. compression at B, and 5.2 cwt. or 0.26 ton per sq. ft. compression at A. The thrust of the earth tending to overturn the wall will be increased if any building is erected upon the top of wedge, or if water gets behind the wall, but without further particulars no assistance can be given as regards these matters. HENRY ADAMS.



STABILITY OF RIVER WALL.
DIAGRAM ILLUSTRATING ANSWER TO H. S. (VICTORIA PARK).

Right of Light Question.

TRUSTEE writes: "A firm of manufacturers some ten or twelve years ago erected a wall, which was intended to be the outside wall of a proposed future workshop, and to serve, at the same time, a further purpose of reserving their own right to complete a future extension parallel with lately erected cottages, some 14ft. away. These cottages would, in course of time, have secured a right of light and thus prevented any proposed extension of the manufactory in the manner intended. This wall, running parallel with the cottages, on the boundary line of the manufactory, is of sufficient height for three floors with three tiers of window openings, in which were inserted the iron frames without glazing.

"Can the proprietor of the cottages obtain any injunction or damages against the manufacturers, if the latter now complete their original intention of building the remaining walls and roofing over the new extension?

"There undoubtedly has been a small amount of light shed through the top tier of window openings only on to the cottages, and it is upon this that all seems to hinge. If the extension of the building be now completed and roofed in, it would be annulled."

—In order to give a right of action for obstruction of light there must be a substantial deprivation of light, sufficient to render the occupation of the house uncomfortable, or to prevent the plaintiff from carrying on his accustomed business on the premises as beneficially as he had formerly done (*Wilson v. Queens Club* [1891] 3 Ch. 522). The question, therefore, seems to be —Is the amount of light shed through the top tier of windows of vital importance to the occupiers of the cottages? There is no recent case in which this question of limited right of light has been discussed; but Lord Justice Farwell has pointed out that the test whether the stopping up of light is a nuisance is not—How much light has been taken, and is that enough materially to lessen the enjoyment and use of the house? but—How much is left, and is that enough for the comfortable use and enjoyment of the house according to the ordinary requirements of mankind? (*Higgins v.*

Betts, 1905, 2 Ch. 211). Applying this test, it is conceived that, in the circumstances of this case, the occupiers of the cottages could prefer no valid claim for nuisance. B.

Covering for Concrete under Linoleum.

R. G. K. (BRADFORD) writes: "Some floor boards which have been nailed to coke breeze concrete in a dwelling room have been covered with linoleum, and dry rot has occurred in the boards. Can you tell me of a finish to the floors, on which the linoleum could be placed, which would be warm? Cement is complained of as being too cold.

—Coke breeze concrete laid on the ground retains moisture and would cause any floor boards nailed to it to rot even if they were not covered with linoleum. On an upper floor, trouble from damp might be avoided if the floor were given sufficient time to dry, but the covering with linoleum would so shut in the floor boards that rotting would be almost inevitable. Instead of floor boards the concrete might be covered with felt about 3-16ths in. thick laid with butt joints, say, "impregnated felt" made by Mitchells, Ashworth, Stansfield and Co., Ltd., Elmswood Mills, Leeds, or "bituminous hair felt," made by S. Anderson and Son, Ltd., Lagan Felt Works, Belfast, either of these covered with linoleum would give a warm floor.

HENRY ADAMS.

Responsibility for Dealing with Drainage or Sewage.

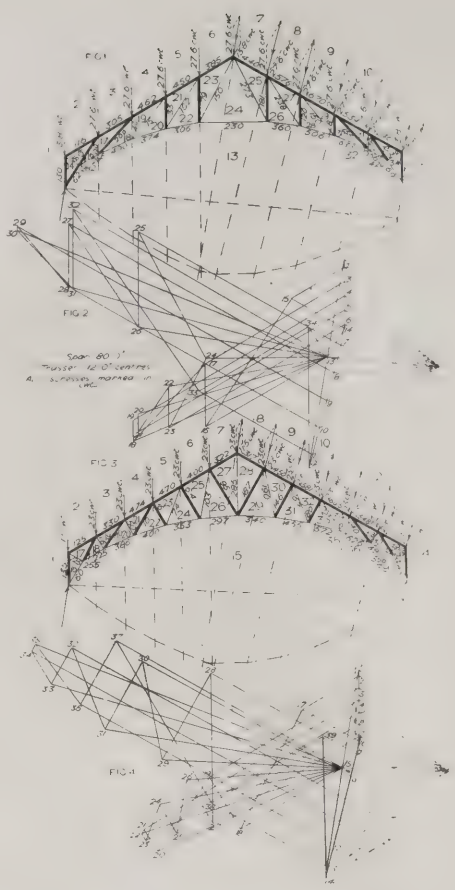
G. E. (BARROW-ON-TRENT) writes: "A, B, and C own a ditch, which discharges on to a high road. Can C, who owns the portion nearest to the road, be compelled to deal with the drainage or sewage? Has he any right to have it connected to an existing drain in the road?"

—The facts are so inadequately stated in the query that it is not easy to answer. It is almost impossible to define the relative rights of A, B, and C, without a very much fuller statement of the case. It would seem that the sewage from the land of A and B flows over that of C. By what right is this? The answer to this question is important, but not vital to the problem now propounded. It is clear that if there is a sewer under the highway, C has a right to connect the ditch with it. But his right may be even more extensive. It would seem that, as the ditch receives effluents from several houses, it is really a sewer, and as such is repairable by the local authority. In the case of *Kirkheaton Local Board v. Beaumont* (1888) 52 J.P., 68, it appeared that several houses and a slaughterhouse of the respondent drained into a road drain which was a sewer and the latter into a ditch in a field of the respondent, where it was a nuisance. The Board wanted the ditch to be covered up, but the respondent contended that it was a sewer, and that it was the duty of the Board to cleanse or cover it up. The ditch was held to be a sewer, and therefore had to be seen to by the Board. "C" should communicate with the local authority.

B.

Calculations for Barley Bins.

K.A.C. (GORLESTON) writes: "Some time back you worked out the various strains in steelwork to barley bins, particulars of which I forwarded to you. I enclose further particulars. Presuming the sizes of joists to be as first indicated by me, i.e., valley joists 12ins. by 6ins. by 45 lbs., purlins 10ins. by 5ins. by 36lbs., could you give the best method of strengthening same to carry the required load? I suggest the method of trussing each joist with steel rods, but am doubtful as to form of truss, sizes of rods, and best method of fixing same, presuming joists to be all fixed in position. Should you know of a better or easier method than trussing, I should be very glad to know of same."



ROOF TRUSS FOR SPAN OF 80 FT. ANSWER TO ENQUIRY BY H. H. (LONDON N.).

—The calculations already supplied for the barley bins show that for the purlins 18in. by 7in. by 75lb. rolled steel joists are necessary instead of 10in. by 5in. by 30lb., and two 18in. by 7in. by 75lb. bolted together for the valleys, instead of one 12in. by 6in. by 44lb. The difference is so extreme that to suggest that by trussing the latter they can be made to answer their purpose is absurd, and shows a total want of appreciation of the conditions of the case.

HENRY ADAMS.

Strength of Brick Pier.

W. J. S. (SOUTH AFRICA) writes: "I was asked to prepare a design for a store, and was to be paid for preparation only. The proprietor, a draper, was to superintend the building. After tenders were called for, the amount of lowest seemed more than the owner was prepared to spend, and his first act was to confer with the builder sending the lowest tender and knock out everything possible to reduce cost. The reinforced concrete beam was one of the parts described by the builder as unnecessary and useless. The owner came to me saying that Mr. So-and-So says it's not necessary, and why waste his money? My reply was: If Mr. M. says so it must be true (in a sarcastic way), as I had had enough of Mr. M.'s suggestions. To substitute this beam they found it was necessary to put something, so recommended an iron bar from front to back, and under the R.S.J. a stone template 2ft. by 1ft. 3ins. by 6ins. They also added to the load by building on a wooden bressummer 4½in. brick walls; also along the R.S.J. a 4½in. brick wall, 12ft. high, forming three rooms, whereas I understand lath and plaster was to be used. The result is the stone template under R.S.J. fractured, and the pier split from top to bottom. Now to get out of it the builder tries to throw the blame on the 'weak pier' specified. I should like your opinions on my original plan [not reproduced], that I may have some other unbiassed opinion. The reason for the brick pier being adopted was a matter of expense—transport more particularly. The whole scheme has been mutilated by the builder in an attempt at smartness, and this first failure will probably be followed by others."

—The information supplied is not sufficient to determine the actual load on the pier which has failed, but apparently the 12in. by 6in. rolled steel joists could not bring more than 13 tons on the pier. Assuming this load to be uniformly spread over the pier it would give a mean pressure of $\frac{13}{1.125 \times 3} = 3.85$ tons per sq. ft. The pier being in cement should, if large enough, be capable of bearing 6 tons per sq. ft., but being less than one-sixth height in thickness, the safe load would only be $W\left(\frac{24-\frac{h}{12}}{18}\right) = 6\left(\frac{24-\frac{13}{1.125}}{18}\right) = 4.2$ tons per sq.ft. or a total of $4.2 \times 3 \times 1.125 = 14.17$ tons. The conclusion is therefore that the pier was just thick enough, but the case is not stated in a sufficiently definite manner to be quite certain. By Gordon's formula the safe load on the pier would be

$$\frac{6 \times 3 \times 1.125}{1 + \frac{2.5}{1 \times 2500}\left(\frac{13}{1.125}\right)^2}$$

= 17.87 tons, supposing the work to be first-class. HENRY ADAMS.

Roof Truss for Span of 80 Ft.

H.H. (LONDON, N.) writes: "I have to construct an economical slate-covered roof, with curved plaster ceiling of about 80 feet clear span, and enclose sketch (not reproduced) of my idea. The roof is to be supported on steel stanchions, which also carry the front of a gallery, and flat roof over same. Will your expert give me a line diagram of the most suitable truss, and any suggestion for a simple method of carrying a fibrous plaster ceiling between the trusses?"

—For economy in a steel roof truss the struts should be at right angles to the principal rafter, as the stress in them is then greatly reduced. If the ceiling is panelled the ceiling joists may be carried on the tie rods, which will then be covered to form ribs. The diagrams herewith show two methods of framing the trusses, with the stress diagram for each. The stresses have been scaled off and marked upon the frame diagrams in cwts. to facilitate the designing. The maximum for either side should be taken in each case.

HENRY ADAMS.

Right of Light.

M.W. (HARROGATE) writes: "It is proposed to build a one-storey *workshop*, as sketch (not reproduced), abutting on *cottage* and *open yard*. There is a bedroom window as shown. The light of this will be *only obstructed laterally by the gable of new workshop*. The open yard will have the end built up. Is there any question of right of light or air involved? The cottage is the end one of seven, to which the yard is common."

—In answer to "M.W.," the proposed workshop can at best only interfere with the light reaching the cottage bedroom window from a lateral direction. That could not amount to an interference with an ancient light. The House of Lords has held that to constitute an actionable obstruction of ancient lights, it is not enough that the light is less than before. There must be a substantial privation of light, enough to render the occupation of the house uncomfortable, according to the ordinary notions of mankind, and (in the case of business premises) to prevent the plaintiff from carrying on his business as beneficially as before (Colls v. Home and Colonial Stores, 1904, a.c. 179). The test is not: How much light is taken? but: How much is left; and is that enough for the comfortable use and enjoyment of the house, according to the ordinary requirements of mankind? (Higgins v. Betts, 1905, Q.a. 211). B.

Valuer of Real Property.

"VALUER" (BOURNEMOUTH) writes: "(a) What is the proper course to take in order to qualify as a valuer of real property? (b) Are there any examinations, compulsory or otherwise, for such a post? (c) What are the best books on the subject? (d) What are the prospects of this profession, and is the remuneration good?"

—(a) Valuers are usually also auctioneers or estate agents, and it is a common course that a learner should be articled to a firm carrying on such a profession.

(b) The "Surveyors' Institution" and the "Auctioneers' Institute" both hold qualifying examination in the early part of each year; and though at present these examinations are not compulsory, the tendency of the times is to insist on some such qualification as these bodies are able to confer. I advise you to write to each for a syllabus of the examinations. The addresses are: "The Secretary, Surveyors' Institution, 12, Great George Street, Westminster, S.W."; and "The Secretary, Auctioneers' Institute, 34, Russell Square, London, W.C."

(c) There are many books treating of the valuation of real estate, and it is a little difficult to choose amongst them all, but perhaps Professor Curtis's "Valuation of Land and Houses," which is published at the Estates' Gazette Office, at 6s., and Messrs. Cragg and Marchant's "Hints to Young Valuers," published by the Land Agents Record, Ltd., at 20s., are most suitable for your purpose.

(d) The prospects and remuneration are, in common with other professions, entirely dependent upon the character of the business engaged in, and the opportunities and abilities of the candidate—there is nothing wrong with the profession.

At the present moment there appears to be some possibility that the Government will require a large number of valuers to carry out the valuation of the whole country under the provisions of the pending "Finance Bill"—a long and costly process if it is to be done.

F.S.I.

Liability for Defects.

A. J. (LONDON) writes: "Has there been any decision given in the courts relating to bad work or structural defects in a building several years after its completion? In such case, is it the contractor or the architect who is liable? Could you give us the name of any book which treats of, or bears on, this subject?

—There have been many cases in the courts where the liability of builders and contractors for defects appearing after completion has been considered. See, for instance, *Hill v. Featherstonhaugh*, 5 M. and P., 541; *Farnsworth v. Garrard*, 1 Camp., 38. These, however, are old cases. The question of liability for defects is now usually avoided by the retention of some part of the contract money, and a clause making the contractor liable for any defects which appear within a certain time. The insertion of these clauses explains the paucity of modern cases on the subject. An article which appeared in our issue of May 5, 1909, entitled, "Dry-rot and Legal Liability," sets forth the law as to liability of a contractor for dry rot appearing long after completion; and inasmuch as this is generally caused by a defect in construction, the cases referred to in the article probably have a considerable bearing on the matters which are troubling our correspondent. There is one case which was heard in the King's Bench Division before Mr. Justice Grantham and a special jury in October, 1909. It is reported in our columns of October 20th, 1909. There both builder and architect were held liable to make good the damage caused by an outbreak of dry-rot which occurred about two years after completion of the work. With regard to text books, mention may be made of "The Law Affecting Engineers," by W. V. Ball, London; Constable and Co., price 10s. 6d., which contains reference to many cases relating to the subject.

B.



BUILDING FOR ONESELF.

By the courtesy of "The Daily Mirror" we are enabled to reproduce a characteristic cartoon by Mr. W. K. Hazelden on the dangers attending the prospective building-owner. "Everybody is full of suggestions about house-construction nowadays. You may set out hopefully to build a house for yourself, but before you have gone far kind friends and relatives innumerable will stop you and show you what you ought to do. At last, with your head full of contradictory advice and conflicting notions, you will sit down in despair and feel like letting them build it for you." Our contemporary in the same issue publishes a sensible leader on Amateur Architects, "the combined business of builder and architect being one of the principal to be bothered by the incessant interference of the Amateur."

TRADE AND CRAFT.

Light and Strong Partitions.

The development of garden suburbs, the demand for the rapid and economical construction of model villa residences, and the swift multiplication of places of amusement, such as skating rinks, bioscope theatres, etc., not only in and around London, but all over Britain and Europe, have rendered obvious the need for a light partition which can be easily and rapidly constructed, but must also possess sufficient strength to support weights without the interposition of a girder or similar support. Such a partititon should possess the further qualities of solidity and fire-resistance, and be proof against the harbouring of vermin. We recently had the opportunity of examining the partition slab manufactured by The Partition Block Company, of New Cross, which satisfactorily fulfils all these requirements. This firm, which has branches in Liverpool, Glasgow, Edinburgh, etc., claim to supply their partition at the shortest possible notice, either delivering to any part of the country, or, if so desired, sending their men to erect and finish.

The sizes made by them are 29in. × 15in. for 2in., 2½in., and 3in. thick slabs, and 13½in. × 20in. for the 3½in. thick slabs, these dimensions having been found to be those which are most convenient in practice, particularly when, in quick building, it is necessary to run in the joints with grout; which, when the joints are comparatively short, sets satisfactorily, so that the partition forms a solid mass, which is a very essential condition for developing the full strength of the partition. When properly erected the partition can be safely used for external walls owing to the ability to carry weight. They resist all weathers, and are eminently sound-proof.

The slabs are manufactured with special plaster and well-washed breeze, and a chemical composition which is guaranteed to contain nothing harmful or unhealthy, but if possible, adds to the sanitary properties of the slab. The material is therefore very suitable for use in hospitals, sanatoria, etc. No sawdust is used in the composition of the slabs, and therefore they do not rot.

This partition is quite selt-supporting, and does not require uprights, rods, or other supports for erection. It is also very light for a partition, capable of carrying weight, as the following figures will show:—22 super yards of 2in. partition, 1 ton; 18 super yards of 2½in. partition, 1 ton; 16 super yards of 3in. partition, 1 ton.

The blocks are supplied either smooth or keyed, in the latter case affording a very good surface for plastering, and any kind of setting coat may be used, and only one setting coat is required. After erection, openings may be cut, or the slabs may be chased for gas and waterpiping. The partition affords a very good grip for nails and screws. Any kind of tiles may be fixed against the partition with lime putty, Keene's or ordinary cement. For outside walls it is advisable but not necessary to finish with a rough-cast face.

The Partition Block Co., after giving careful consideration and making numerous tests of English manufacture, have found a special plaster of English manufacture giving them the same results as plaster manufactured in Paris, and the firm have specially trained workmen, and a competent expert who tests the plaster of every consignment entering their works, ensuring uniformity for every slab mixed and finished. In fixing, as already stated, no rods, stays, or uprights are required, and a partition 37ft. × 14ft. 6in. high is shown to be perfectly stable without any such supports. For door frames, they advise a grooved door frame which allows about 1in. or 1½in. of the whole slab to go into the groove.

For a recent London building, viz., the new Skating Rink, Maida Vale, this Company's blocks have been extensively used. The same slabs will be used at the stand of Messrs. Davis, Bennet and Co., at the Ideal Home Exhibition, this firm's stand being erected by the Partition Block Co., and hundreds of yards of their partition can be seen set in different materials and covered with a variety of tiles.

The firm's works are at Cold Blow Lane, New Cross, London, S.E.

A New Screwdown Tap.

Mr. Garratt's "Ideal" screwdown tap, a smooth piston, which does not turn, but is actuated by the strong coarse screw of the tap, supersedes the usual screwed spindle and loose "jumper." The "Ideal" piston is raised or lowered quite independently of the water pressure, and is therefore equally applicable to high or low-pressure services, and for hot or cold water. The tap cannot be unscrewed at the wrong place, nor jammed or stripped even by excessive force. The seating is held in an internally flanged ring, instead of having, like the ordinary washer, a central hole and a nut on the under side. The old arrangement is to a certain extent obstructive, and weakens the washer; but the new encased seating cannot be jammed off or forced out by any amount of squeezing. Other advantages—that the taps are unaffected by hard or even gritty water, do not get out of order or drip, and may be used for many years without re-washering—are enumerated in an illustrated pamphlet issued by Garratt's Patent Screwdown Valve Co., 11, Queen Victoria Street, E.C., who show valuable testimonials from Mr. F. A. Legge, A.M.Inst.C.E., of the Metropolitan Water Board, Mr. Wm. Dawson, M.Inst.C.E., the engineer of the Leyton U.D. Council, and others. These taps are in use by H.M. Office of Works and Public Buildings for the Royal Courts of Justice, Somerset House, Victoria and Albert Museum, Admiralty Offices, and elsewhere.

Shallow Box Spring Hinges.

Modern construction of floors leaves, in many instances, only a very shallow space for the fixing of floor springs. In order to meet the consequent requirement, Mr. Robert Adams, 3 and 5, Emerald Street, Holborn, has introduced a box which is sufficiently shallow to occupy a depth of only 1¼ins., and is therefore suitable for almost every floor. Such a shallow box has been long a desideratum, but hitherto it has been thought impossible to provide, within so shallow a recess, a satisfactory check-action spring. The firm, however, have invented a check-action which is guaranteed to be strong enough for any possible requirement. There is, moreover, no oil loose in the box, the checking mechanism (which is of so simple a character as to permit of easy repair), and the viscous composition used for the check being contained in a cylinder, which neither permits it to escape and stain the floor, nor admits of the entrance of water, which might damage the springs. These springs are already in use in some of the largest buildings in the country, and are meeting, we are informed, with the entire approval of the users.

COMING EVENTS.

Wednesday, April 6.

CARPENTERS' HALL LECTURES. — Mr. Thackeray Turner, F.S.A., on "The Craft of Repairing Buildings," 7.30 p.m.

ROYAL SANITARY INSTITUTE.—Dr. A. J. Martin on "Sanitary Aspects of Floods and Measures to be taken to prevent epidemics arising therefrom." 5 p.m. Mr. C. Chambers Smith on "Sewage Disposal." 7 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Mr. A. B. Ogden on "The Cleansing of filtering media and materials for constructional work." 8 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION. Associates' Business Meeting.

Friday, April 8.

ROYAL SANITARY INSTITUTE.—Professor H. R. Kenwood on "Water—Composition, Pollution and Purification." 7 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Students' meeting. Messrs. G. H. Hodson and H. M. Gell on the reconstruction and extension of Egremont Ferry Pier. 8 p.m.

ROYAL SANITARY INSTITUTE.—Provincial Sessional meeting at Plymouth (Western Law Courts, the Guildhall). Mr. J. Paton on "The Removal of Town Filth." Dr. O. Hall on "The relative value of disinfectants in the control of disease." 7.30 p.m.

Saturday, April 9.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to the New Markets and Slaughterhouses, Gorgie.

R.I.B.A.—Publication of names of applicants for candidature. Election on June 6th.

ROYAL SANITARY INSTITUTE.—Provincial sessional meeting at Plymouth. Visits.

Monday, April 11.

ROYAL SANITARY INSTITUTE. — Mr. Percy Griffiths on "Water Supply; Sources of Supply and Distribution." 7 p.m.

ROYAL SOCIETY OF ARTS (Cantor Lectures).—Mr. A. B. Searle's first lecture on "Modern Methods of Brickmaking." 8 p.m.

SURVEYORS' INSTITUTION.—Mr. T. A. Dickson on "The Report of the Royal Commission on the Poor Laws." 8 p.m.

Tuesday, April 12.

R.I.B.A.—Finance Committee meets.

Wednesday, April 13.

ROYAL SANITARY INSTITUTE. — Mr. H. Percy Boulnois on "Scavenging; Disposal of House Refuse." 7 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Annual Business Meeting. President's Valedictory Address. 8 p.m.

Thursday, April 14.

R.I.B.A.—Science Committee meets.

SOCIETY OF ARCHITECTS.—Mr. S. Bylander on "Constructional Steel Work," 8 p.m.

ILLUMINATING ENGINEERING SOCIETY.—Discussion on The Measurement of Light and Illumination will be continued, 8 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Anniversary Dinner, Hotel Cecil.

Friday, April 15.

SOCIETY OF ARCHITECTS.—Annual Dinner, Holborn Restaurant, 6.30 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Adjourned discussion on Mr. G. Hughes's paper, "Compounding and Superheating in Horwich Locomotives." Mr. S. N. Brayshaw on "A Research on the Hardening of Carbon and Low-tungsten Tool-steel," 8 p.m.

Saturday, April 16.

R.I.B.A.—Issue of nomination papers for election of Council and Standing Committees.

Monday, April 18.

INSTITUTE OF SANITARY ENGINEERS.—Paper by Mr. A. Alban H. Scott, 8 p.m.

R.I.B.A.—Professor W. R. Lethaby on "The Architecture of Adventure," 8 p.m.

ROYAL SOCIETY OF ARTS.—(Cantor Lecture). Mr. A. B. Searle's Second Lecture on "Modern Methods of Brickmaking," 8 p.m.

LIVERPOOL ARCHITECTURAL SOCIETY.—Annual General Meeting, 8 p.m.

ARCHITECTURAL ASSOCIATION.—Play, "Arctia," Royal Court Theatre, London.

Tuesday, April 19.

R.I.B.A.—Practice Committee meets.

ARCHITECTURAL ASSOCIATION.—Play, "Arctia," Royal Court Theatre, London.

Thursday, April 21.

R.I.B.A.—Literature Committee meets.

ROYAL SOCIETY OF ARTS (Indian Section).—Mr. J. Claude White on "The Arts and Crafts of Tibet and the Eastern Himalayas," 4.30 p.m.

Saturday, April 23.

R.I.B.A.—Council's Annual Report issued.

Monday, April 25.

ROYAL SOCIETY OF ARTS.—(Cantor Lecture). Mr. A. B. Searle's Third Lecture on "Modern Methods of Brickmaking," 8 p.m.

Friday, April 29.

ARCHITECTURAL ASSOCIATION.—Mr. Mowbray A. Green on "The Architecture of Bath." Election of officers. 7.30 p.m.

COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about five days or longer after the date of this issue. Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders. The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

March 29—April 12. **FOREST HALL (Northumberland).**—Erection of a new Council school, to accommodate 370 scholars, at Forest Hall, for the Northumberland Education Committee. Contractors desirous of tendering should forward particulars of name and address to C. Williams, secretary to the Education Committee, The Moothall, Newcastle-on-Tyne, not later than March 29, with a deposit of £2 2s. for specification and bills of quantities. Plans for the work may be inspected at the office of Hope and Tasker ,Architects, Trinity Buildings, New Bridge Street, Newcastle-on-Tyne, and tenders must be forwarded to the Secretary.

April 2-13. **HERNE BAY.**—Construction of a pier pavilion on their new Pier extension at Herne Bay, for the U.D.C. Plans and specifications of the work can be seen and forms of tender obtained by appointment, at the office of the architects, Percy J. Waldram, F.S.I., and Moscrop-Young and Glanfield, 12, Buckingham Street, Charing Cross, W.C. Application for bills of quantities and general conditions should be made to Joseph Jub, clerk, Town Hall, Herne Bay, not later than April 2, accompanied by £1 1s. as a deposit. In the event of a tender being withdrawn, the deposit will be forfeited. Tenders are to be delivered to the Clerk.

April 9—May 3. **DEPTFORD.**—Erection of a branch library on the site in New Cross Road, S.E., for the Corporation, according to the drawings and specification prepared by Castle and Warren, Architects, and to be seen at their offices at Talbot House, Arundel Street, Strand, W.C. Persons intending to tender must send in their names to the Town Clerk so as to be received by him on or before Saturday, April 9, 1910, accompanied by a deposit of £2 2s. Bills of quantities, prepared by Dow, White, and Gee, of 12, Craven Street, Strand, W.C., together with the conditions of contract, will then be forwarded. Tenders must be delivered to the Town Clerk at the Town Hall, New Cross Road, S.E. The contractor will be required to subscribe to the wages clause embodied in the conditions of contract.

April 11. **WITHERNWICK.**—Alterations and additions to the Council School at Withernwick, for the East Riding of Yorkshire C.C. Education Committee. Plans, etc., may be seen, and forms of tender obtained, on application to the Building Surveyor, County Hall, Beverley.

April 11. **CWMAMAN (Aberdeen).**—Erection of two semi-detached villas at Cwmaman, Aberdare, for Mrs. Jones and the trustees of Moriah Aman Chapel. Drawings and specifications may be seen at the office of J. Llewellin Smith, M.S.A., Architect, Aberdare. Tenders to be sent to H. Harris, Esq., Brook Street, Aberaman, Aberdare.

April 11. **SKETTY.**—Erection of a new police-station, for the Glamorgan Quarter Sessions and C.C. Standing Joint Committee. Plans, etc., can be seen, and copies of the bill of quantities and form of tender obtained, at the office of J. Jones Lewis, No. 7, Rutland Street, Swansea, Solicitor, and at Glamorgan C.C. Offices, Westgate Street, Cardiff.

April 11. **ASHCOTT, near Bridgwater.**—Erection of a new Council school, for the County Education Committee. Drawings, specification, and conditions of contract can be seen and further information obtained at the offices of the architects, Cottam and Samson, Bridgwater, from whom bills of quantities can also be obtained. Tenders must be delivered at the County Education Office, Weston-super-Mare.

April 11. **NORTHFIELD.**—Erection of cubicles at their hospital, West Heath, Northfield, for the U.D.C. Plans, etc., prepared by Ambrose W. Cross, A.M.Inst.C.E., of 23, Valentine Road, King's Heath, the Engineer and Surveyor to the Council. Two sets of tenders are required:—(1) Construction of steel glazed sashes; (2) general builder's work. Bills of quantities, etc., may be obtained, and plans, etc., may be seen at the office of the Engineer, on payment of a deposit of £1 1s.

April 11. **CODNOR (Derby).**—Erection of proposed Council school, for the Derbyshire Education Committee, to accommodate 120 infants. Drawings, specification, agreement, etc., may be seen at the office of the architect to the Committee, St. Mary's Gate, Derby. Bill of quantities, specification, conditions of contract, and form of tender can be obtained at the Architect's office upon deposit of £1 1s. Tenders must be delivered to George H. Widdows, A.R.I.B.A., St. Mary's Gate, Derby. The C.C. will require two approved sureties as security for the performance of contract.

April 11. **LINCOLN.**—Construction of a brick and stone tower, 108ft. high to T.W.L., to support a spherical bottomed steel tank, containing over 300,000 gallons of water, and subsidiary works at Westgate, Lincoln, for the Corporation. Drawings may be seen now, and specification, bill of quantities and form of tender obtained at the office of the Engineer, Mr. Neil McK. Barron, Waterworks Engineer, Lincoln upon production of a receipt from the City Accountant for the sum of £5 5s. Tenders, addressed to the Chairman of the Waterworks Committee, to be delivered at the office of W. T. Page, Deputy Town Clerk, Bank Street, Lincoln.

April 11. **YORKSHIRE (East Riding).**—(a) The erection of a teacher's house and alterations to school at South Duffield; (b) for alterations and additions to the Council school at Pocklington; (c) for alterations and additions to the Council school at Withernwick, for the Education Committee of the C.C. Plans and specifications may be seen and forms of tender obtained on application to the building surveyor, County Hall, Beverley. For the convenience of persons desireus of tendering, a copy of the plans and specifications, together with forms of tender, will be deposited at the respective schools. Tenders to be delivered to John Bickersteth, Clerk to the East Riding Education Authority, County Hall, Beverley.

April 11. **WEST HEATH (Northfield).**—Erection of cubicles for isolation purposes at the hospital, situate at West Heath, Northfield, for the U.D.C. in accordance with plans and specifications prepared by Ambrose M. Cross, A.M.I.C.E., of 23, Valentine Road, King's Heath, the Engineer and Surveyor to the Council. Two sets of tenders are required as follows:—(1) Construction of steel glazed sashes; (2) general builder's work. Bills of quantities and forms of tender may be obtained, and plans and specifications may be seen at the office of Ambrose W. Cross as above, on payment of a deposit of £1 1s. Tenders, No. 1 or 2, as the case may be, must be sent to Edwin Docker, Clerk to the Council, 10, Newhall Street, Birmingham.

April 12. **BANBRIDGE.**—Building an addition to Banbridge Technical School, for Banbridge Technical Instruction Committee, according to plans, etc., to be seen at the office of W. W. Larmor, A.Inst.C.E., Banbridge.

April 12. **TIERNASLIGO (Ireland).**—Erection and furnishing of National school buildings at Tiernasligo, County Donegal. Plans and specification can be seen at Londonderry (Victoria) Royal Irish Constabulary Barracks. Tenders must be sent to the Office of Works, Dublin.

April 12. **HAYES (Middlesex).**—Erection and completion of St. Mary's Parish Room, Hayes, Middlesex. Specification and drawings may be seen and forms of tender may be obtained at "Fairfield," High Road, Hayes, Middlesex, upon deposit of £1 1s. Tenders must be delivered at the above address.

April 12. **GILFACH (Glamorgan).**—Erection of new station buildings, goods shed, etc., for the directors of the Great Western Railway. Plans and specification may be seen and forms of tender and bills of quantities obtained at the office of the Engineer at Newport Station. Tenders must be addressed to G. K. Mills, Secretary, Paddington Station, London.

April 12. **SPITALGATE.**—Pulling down ad rebuilding cells with court-room at Spitalgate police-station, for the Standing Joint Committee of the Kesteven C.C. Drawings and specification may be seen and bills of quantities obtained at the office of the County Architect, Jesse Clare, Sleaford, on payment of a deposit of £2 2s. Tenders to be sent to Thos. H. Holdich, Clerk of the County Council, Sleaford.

April 12. **WREXHAM.**—Erection of a telephone exchange, for the Commissioners of H. M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster, Wrexham. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

April 12. **BACUP.**—Covering in of the River Irwell with masonry and brick arch, for a length of about 300 lineal yards, situate within the borough of Bacup, for the Corporation and the Lancashire C.C. Plans may be seen and copies of the specification and bill of quantities obtained at the County Bridgemaster's Offices, 8, East Cliff, Preston, to whom tenders must be delivered, addressed to the Chairman of the Main Roads and Bridges Committee.

April 12. **BATH.**—Taking down and rebuilding retaining walls and general repairs at the following bridges, for the Somerset C.C.:—(a) Nettle Bridge, at Oakhill, on the main road from Shepton Mallet to Bath; (b) East Chelwood Bridge and West Chelwood Bridge, on the main road from Bath to Weston-super-Mare, near Pensford, Bristol. Specifications and bills of quantities may be obtained from H. T. Chapman, county surveyor, Bath. Separate tenders must be addressed to the County Surveyor, Bath.

April 12. **MIDDLETON ST. GEORGE, ETC. (Durham).**—New Council schools at Middleton St. George, Hartburn and Whitton, alterations and improvements at Usworth Colliery and Littletown Council schools, and Consett cookery centre, for the Durham C.C. Sole tenders are invited. Plans, specifications and general conditions of contract may be seen, and bills of quantities obtained as follows:—Middleton St. George, Harburn and Whitton new schools, at the office of W. Rushworth, Shire Hall, Durham; alterations and improvements at Usworth Colliery, Littletown and Consett cookery centre (plans, specifications and general conditions of contract only), at the office of F. E. Coats, Shire Hall, Durham. Tenders are to be sent to A. J. Dawson, Clerk to the Education Committee, Shire Hall, Durham.

April 13. **DARTFORD.**—(See Painting).

April 13. **MORLEY.**—Erection of weaving shed at Valley Mills, Morley, for the Valley Mills Co. (Ltd.). Plans and specifications may be seen, and quantities obtained of T. A. Buttery, F.I.A.S., Architect, Queen Street, Morley, to whom tenders are to be sent.

April 13. **CHESTERFIELD.**—Construction of a raking floor and other alterations to the Corporation Theatre, Stephenson Memorial Hall, for the Corporation. Plans, etc., may be seen and bills of quantities, etc., obtained on application to the Borough Surveyor's Office, Saltergate, on payment of £1 1s.

April 13. **SOUTHOWRAM (near Halifax).**—Erection of eleven houses at Bank Top, Southowram, near Halifax. Plans, specifications, etc., will lay for inspection, and bills of quantities may be obtained at the office of Lister Coates, A.R.I.B.A., Architect, 10, Central Street, Halifax, from April 6 to 13, when tenders must be delivered.

April 13. **SALISBURY.**—Builders desirous of tendering for the erection of a new isolation hospital at Old Sarum, near Salisbury, Wilts, for the Joint Isolation Hospital Committee, must forward their names to Francis Hodding, Clerk to the Committee, Market House Chambers, Salisbury, together with a deposit of £3 3s., when copies of the bills of quantities will be supplied as soon as ready.

April 13. **SANDOWN (I.W.).**—Erection of a coach-house and certain other additions to outbuildings at the Isolation Hospital, Scotchells Bridge, near Sandown, for the Hospital Board. Plans and specification may be seen and all particulars obtained at the office of the Surveyor, C. Cassell, at Gresham Buildings, High Street, Shanklin. Tenders to be sent to R. Jones, Joint Clerk to the Board, Town Hall, Sandown, I.W.

April 14. **LANCASTER.**—Gas Works.—Erection of a workmen's mess-room at the gas works, for the Corporation. Plans, conditions, and specifications may be seen on application at the office of the Gas Engineer, Lancaster. Tenders to be delivered to T. Cann Hughes, Town Clerk, Town Hall, Lancaster.

April 14. **WEYMOUTH.**—Erection of an elementary school for 270 boys at Weymouth, for the Education Committee, from drawings prepared by Crickmay and Sons, architects, 49, St. Mary Street, Weymouth, and Westminster. Applications should be sent to G. P. Symes, Clerk to the Weymouth and Melcombe Regis Education Committee, 9 and 10, East Street, Weymouth. The applications received will be considered, and bills of quantities will be supplied to a selected number on receipt of a deposit.

April 15. **MOUNT PLEASANT.**—Building of two houses at Mount Pleasant. For plan and specifications apply to Thorne Tree Cottage, Mount Pleasant.

April 25. **WATERLOO-WITH-SEAFORTH.**—Erection of a secondary and technical school in Cambridge Road, Seaforth, for the U.D.C. Plans may be seen and bills of quantities obtained at the office of the County Architect, Henry Littler, No. 16, Ribblesdale Place, Preston, by deposit of £3. Tenders must be delivered to John I. Thompson, Clerk to the Council, Town Hall, Waterloo.

(*Continued on next page.*)

April 15. **BOOTLE.**—Erection and completion of a public elementary Council school, in the South-east district of Bootle, according to plans prepared by Messrs. Medcalf and Medcalf, Architects, of 7, Moorfields, Liverpool, for the Corporation. Plans may be seen at the Borough Engineer's Office, and the bill of quantities may be obtained on application at the office of J. Henry Farmer, Town Clerk, Town Clerk's Office, Bootle, on making a deposit of £2 2s. The firm whose tender may be accepted will be required to enter into a contract containing clauses as to payment of the standard rate of wages and the observance of the recognised hours of labour in the trades engaged in carrying out the contract. Tenders must be delivered at the Town Hall.

April 16. **PHILIPSTOWN (Ireland).**—Erection of a new school at Philipstown, King's County, according to the plan and specification to be seen at the Parochial House, Portarlington. Printed forms of tender may be obtained from the Manager, The Rev. James Bergin, P.P., Philipstown, to whom tenders must be sent.

April 16. **LOWER SANDHURST.**—Enlargement of the Council school at Lower Sandhurst, Berks, by three classrooms, for the Berkshire Education Committee. Send names to the Secretary to the Berkshire Education Committee, Market Place, Reading, before April 2, together with a deposit of £2 2s. for bills of quantities. Plans and form of contract may be seen at the school on and after April 4. Tenders must be delivered at the office of the Education Secretary.

April 16. **ISLINGTON.**—Alterations, etc., at Nos. 61 and 63, Hornsey Rise, N. (Receiving Homes), in accordance with plan, specification, and condition of contract, which may be seen on application to the architect, Howard Goodchild, No. 409, Holloway Road, N., for the Guardians of the Poor of the Parish of St. Mary, Islington. Copy of the specification can be obtained upon deposit of £2. Tenders must be addressed to the Guardians, and delivered to Edwin Davey, Clerk, Guardians' Offices, St. John's Road, Upper Holloway, N.

April 16. **HEYWOOD.**—Erection of an addition to the Heywood Technical School for a picture gallery and museum, for the Education Authority. The plans may be seen and bills of quantities obtained at the office of the Borough Engineer, J. Ainsworth Settle, A.M.I.C.E., Municipal Buildings, Heywood, by payment of a deposit of £2. Contractors tendering must pay their workpeople the standard or trade union rate of wages and observe the trade conditions attached to the various kinds of work covered by the contract. Tenders must be delivered to Geo. G. Bouchier, Town Clerk, Municipal Buildings, Heywood.

April 16. **HEYWOOD.**—Erection of an extension to the Heywood Technical School for day secondary school and other requirements, for the Education Authority. The plans may be seen and bills of quantities obtained at the office of the County Architect, Henry Littler, 16, Ribblesdale Place, Preston, by payment of a deposit of £3. Contractors tendering must pay their workpeople the standard or trade union rate of wages and observe the trade conditions attached to the various kinds of work covered by the contract. Tenders must be delivered to Geo. G. Bouchier, Town Clerk, Municipal Buildings, Heywood.

April 18. **CAMBERWELL.**—Contractors intending to quote for carrying out the construction of a new quay wall for the Borough Council are notified that the time for submitting tenders has been extended until April 18, 1910.

April 18. **OLDCASTLE.**—Repairs to the fireplaces, floors, etc., of the various wards of the Workhouse and Fever Hospital, for the Guardians. Specification, prepared by Michael Grace, jun., the Board's Engineer, can be seen at Union Offices, Oldcastle Workhouse.

April 18. **ERITH (Kent).**—Erection of two additional wards and other extensions to the Erith Sanatorium, Little Heath, Belvedere, for the U.D.C. Bills of quantities, general conditions, and forms of tender may be obtained from Harold Hind, Surveyor, Council Offices, Erith, upon receipt of a deposit of £2 2s. Tenders to be delivered to J. Kennedy Allerton, Clerk, Council Offices, Erith.

April 18. **STRETFORD.**—Erection of a public Elementary School at Gorse Hill, Stretford, for the Education Committee. Plans may be seen and bill of quantities obtained on application to the architect, Frank W. Mee, F.R.I.B.A., 32, Victoria Street, Manchester, on deposit of £2 2s. Only those tenders will be entertained in which the contractor undertakes to proceed with the work with the utmost despatch and complete the same within the time set forth in the general conditions of contract. Tenders to be addressed to the Chairman of the Sites and Buildings Sub-Committee, Council Offices, Old Trafford.

April 18. **SOUTH FARNBOROUGH.**—Completion of the superstructure of the extension to workshops at the Balloon Factory, South Farnborough, in the Aldershot Command, for the Secretary of State for War. Plans, specification, and conditions of contract may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., on Wednesday, Thursday, and Friday, April 6, 7, and 8. Those desiring to tender and to receive a copy of the bills of quantities must apply to the Director of Barrack Construction not later than Saturday, April 9. The application must be accompanied by a deposit of 10s. Cheques or orders to be made payable to the Assistant Financial Secretary, and crossed "Bank of England for Credit to Army Funds." Tenders must be delivered addressed to the Director of Army Contracts, War Office, Whitehall, London, S.W.

April 19. **CWMGORSE.**—Erection of a Congretional Chapel at Cwmgorse. Plans and specification may be seen with T. Howell, Postmaster, Cwmgorse, or with W. Beddoe Rees, Architect, 3, Dumfries Place, Cardiff, of whom bills of quantities may be obtained.

April 19. **HAZEL GROVE (Stockport).**—Erection of a new public elementary Council school on land in Chapel Street, Hazel Grove, near Stocport, to accommodate 800 children, with housewifery, laundry, and cookery centres, and caretaker's quarters, for the Cheshire Local Education Authority. Plans and specifications may be inspected and quantities obtained from the architect, C. T. Adshead, Leinster Chambers, 4, St. Ann's Square, Manchester, on payment of a deposit of £2 2s., on and after Tuesday, March 29. Tenders to be sent to J. W. Bain, Clerk, School Brow, Romiley, near Stockport.

April 25. **COVE (Southampton).**—Erection of a new Council school for 140 children at Cove. Plans, specifications, and conditions of contract (no quantities) may be seen, and other information obtained, at the office of W. J. Taylor, County Surveyor, The Castle, Winchester, on and after Monday, April 4. A copy of the plans and specification will also be deposited at the existing school at Cove. Tenders are to be delivered to H. Barber, Clerk of the County Council, The Castle, Winchester.

April 29. **LEYTONSTONE.**—Erection of a new county high school for 300 girls, to be erected at Forest Road, Leytonstone, Essex, for the Education Committee, in accordance with plans and specifications prepared by the architect, W. Jacques, A.R.I.B.A., 2, Fen Court, Fenchurch Street, London, E.C., at whose offices the plans and specifications, together with forms of contract, may be seen on any day except Saturday. Builders and contractors wishing to tender must send their names and addresses, together with a deposit of £5, to the Architect, on or before Monday, April 11, 1910. The contractor whose tender is accepted will be required to give the bond of an approved guarantee society in the sum of £1,000 as security for the due performance of the contract. Tenders to be delivered to R. Dempsey, Clerk to the Leyton District Sub-Committee.

(*Continued on page xx.*)

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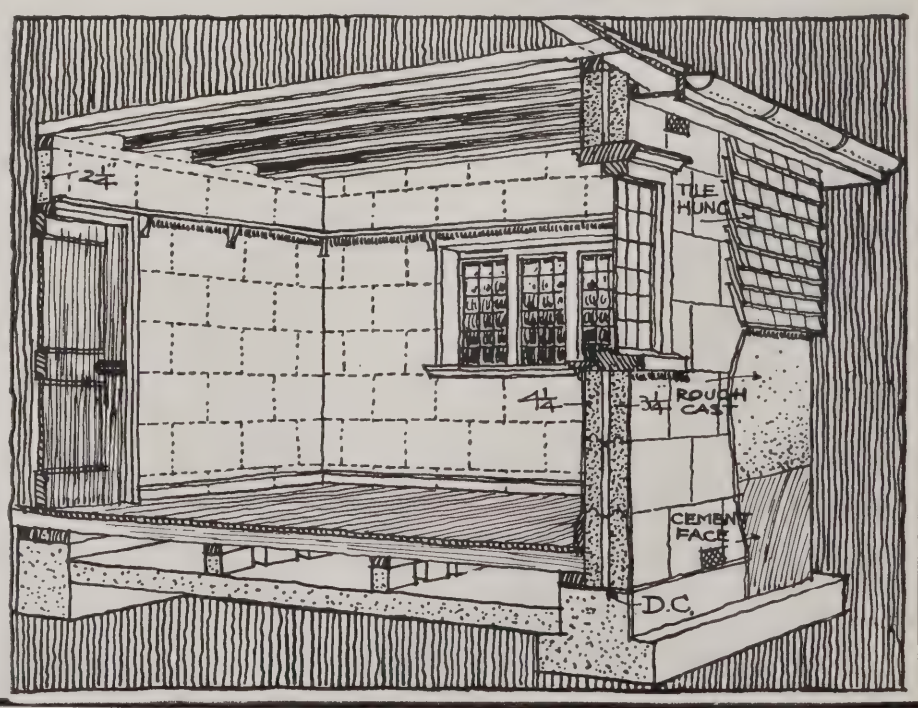
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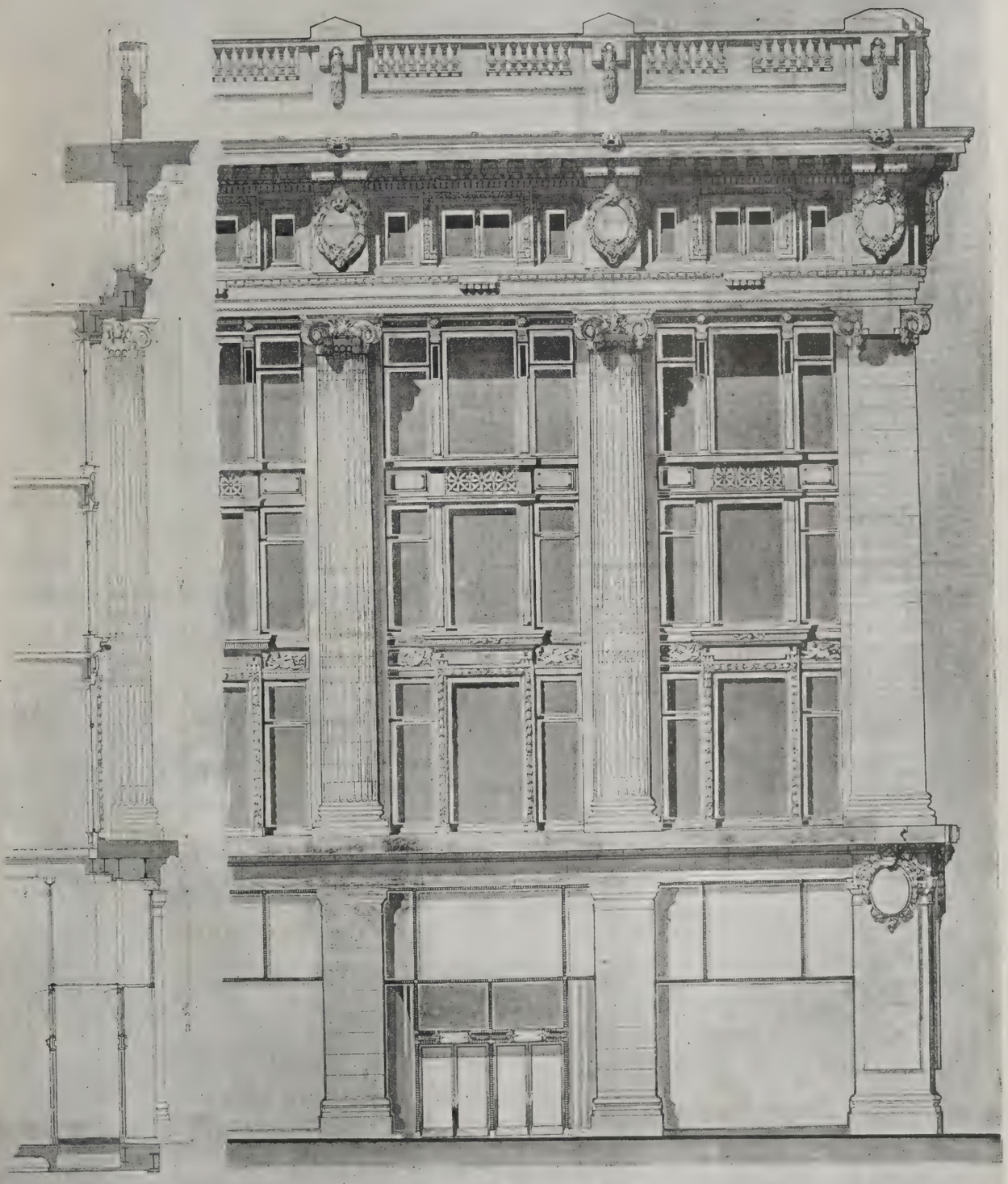
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No date. **CORK.**—Erection of new chemical and physical laboratories, at University College, for the Governing Body. Quantities may be had on payment of a deposit fee of £1 1s. Plans and all particulars may be had on application to the Architect, Arthur Hill, B.E., F.R.I.B.A., 22, George's Street, Cork.

No date. **HOWDEN.**—Brickwork and plastering of a detached house. Bricks provided. Apply for particulars to W. H. Blackburn, architect, Howden.

ENGINEERING.

April 11. **DISS (Norfolk).**—Sinking a trial borehole, for the U.D.C. Specifications may be obtained from the Engineer, W. H. Booth, Caxton House, Westminster, S.W., on deposit of £2 2s. Tenders to be sent to Henry O. Lyus, clerk, Diss.

April 11. **KINGSBRIDGE (Devon).**—Laying 950 lineal yards or thereabouts of 4in. and 1,300 lineal yards or thereabouts of 3in. water main and other work in connection therewith, for the U.D.C. Plans and specifications can be seen during office hours on application at the office of William Beer, Clerk, Fore Street, Kingsbridge. Tenders to be delivered to the Clerk.

April 11. **AYLESBURY.**—Contracts in connection with new sewage pumping station, Mandeville Road, for the U.D.C.:—(1) Construction of building and tank; (2) supplying and fixing two gas or oil engines, and two pumps to pump 5,000 gallons per hour each, net lift 18ft.; and (3) supplying about 279 yards of 6in. cast-iron socket pipes. Plans and specifications may be seen, and bills of quantities and forms of tender obtained on application to W. H. Taylor, Engineer and Surveyor, Town Town Hall, Aylesbury, upon deposit of £2 2s. Tenders to be delivered at the office of Percy A. Wright, Clerk to the Council, Town Hall, Aylesbury.

April 11. **PONTEFRACT.**—Execution of a scheme of sewerage and sewage disposal, comprising the laying of about 1,000 yards of main sewers and manholes, relaying of about 1,500 yds. of existing sewers, alterations to precipitation tanks, construction of continuous bacterial and sand filters, effluent pipe, etc., at Cutsyke Sewage Disposal Works, for the R.D.C. Full particulars may be obtained from the engineers, D. Balfour and Son, Civil Engineers, 3, St. Nicholas' Buildings, Newcastle-on-Tyne, to whom applications must be made on or before March 21, and must be accompanied by a cheque for £5. Tenders must be sent to J. Dickon Smith, Clerk, Union Offices, Pontefract.

April 11. **BATH.**—Construction of the first sections of the intercepting sewers, pumping station, internal sewers, and sewage disposal works, for the City of Bath. The works for which tenders are now required are as follows:—Intercepting sewer contract:— These works will comprise about six miles of deep low level main intercepting sewers through the City, consisting chiefly of 36in. to 18in. cast-iron sewers and some stoneware pipe sewers, with manholes and appurtenances; together with five crossings under the River Avon, 2¼ miles of high level iron intercepting sewers, a deep storage tank under the pumping station to hold about 375,000 gallons, small connecting sewers, flush water mains, and various subsidiary works. Sewage disposal contract:— These works will comprise storm-water tanks, six large dortmund settling and precipitation tanks, 16 large bacterial filter beds containing 34,000 cubic yards of filtering material, two circular humus tanks, effluent culvert pipes, carriers, drains, embankments, and various works for the reception of 12,000,000 gallons a day during storms. These works will be constructed on 57 acres of corporation land at Saltford, about five miles from the City. Stone sewers, No. 1 contract:—These works will comprise the replacement of several old stone internal sewers by new brick and pipe sewers, with appurtenant works. Day-work contract:—These works will comprise the laying of several sewers, connections and other work which cannot conveniently be done by ordinary contract. Tenders will be received, especially from local and other builders, for the supply of the various materials and labour enumerated thereon. Conclusion.—Tenders for a number of contracts will be advertised for later on for the construction of the pumping station, two pairs of cottages, disposal buildings, mess rooms, several stone sewer replacements, laying of five miles of pumping main, and other works required when the first contracts are sufficiently advanced to enable these works to be started. The plans may be seen (except on the dates given below) and quantities obtained at the office of the Engineer, W. H. Radford, C.E., Albion Chambers, Nottingham, on deposit of £3 3s. for each of the first two contracts, and £1 1s. for each of the other contracts. The plans will also be on view at the Guildhall, Bath, on March 30 and 31, and April 1. Tenders to be sent to Fredk. D. Wardle, Town Clerk of Bath, Guildhall, Bath.

April 12. **RYDE (I.W.).**—Construction of 900ft. stoneware pipe sewer in the High Park Road, High Park, Ryde, for the St. Helen's U.D.C. Plans and specification can be seen at the office of C. Pursey, Surveyor, Council Offices, Somerset Road, High Park, Ryde, I.W., to whom tenders must be sent.

April 12. **BURY AND RADCLIFFE.**—Widening of Hardy's Gate (County) Bridge, which carries the main road from Bury to Radcliffe, on the border of the county borough of Bury and the township of Radcliffe, Lancashire C.C., the Corporation of Bury, and the U.D.C. of Radcliffe. Plans may be seen and copies of the specification and bill of quantities obtained at the County Bridgemaster's Office, 8, East Cliff, Preston, to whom tenders must be delivered, addressed to the Chairman of the Main Roads and Bridges Committee.

April 12. **DENTON AND HYDE.**—Widening of Broomstair (County) Bridge, situate on the main road from Denton to Hyde, half in the township of Haughton (Lancashire) and half in the borough of Hyde (Cheshire), over the river Tame, for the C.C.'s of Lancashire and Cheshire, the Corporation of Hyde, and the U.D.C. of Denton. Plans may be seen and copies of the specification and bill of quantities obtained at the County Bridgemaster's Office, 8, East Cliff, Preston, to whom tenders must be sent, addressed to the Chairman of the Main Roads and Bridges Committee.

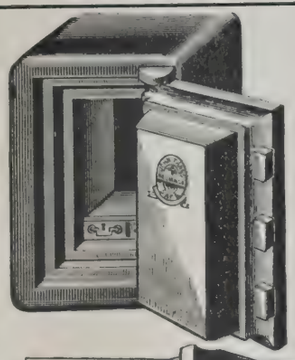
April 13. **BIRMINGHAM.**—Construction of about two miles of 9in. to 21in. stoneware pipe sewers, 200 yards of brick and concrete sewers, 2ft. 3in. and 3ft. in diameter, together with an overflow chamber and manholes in the neighbourhood of Bordesley Green, for the Public Works Committee. Plans and specification may be seen and quantities and forms of tender obtained at the office of Henry E. Stilgoe, City Engineer and Surveyor, The Council House, Birmingham, on deposit of £2. The contractor whose tender is accepted will be required to pay not less than the minimum standard rate of wages current in the district. Tenders addressed to the Chairman of the Public Works Committee, must be sent to the City Engineer at above address.

April 14. **EGYPT.**—Sewage pumping plant, for the Egyptian Government. Copies of the conditions of tender, etc., may be obtained on application from A. L. Webb, C.M.G., Queen Anne's Chambers, Broadway, Westminster, London, S.W., and the Commercial Intelligence Branch of the Board of Trade, London. Copies of the detailed description of work, together with plans, etc., can be obtained upon payment of the sum of £5 2s. 6d. from the office of A. L. Webb.

April 14. **OLDBURY.**—Supply and fixing of gas service at Rounds Green Council Schools, for the U.D.C. Plans and specification may be inspected and form of tender obtained at the office of A. Long, Architect, West Bromwich, on production of receipt for £1 deposit paid to the undersigned. Applications to be made not later than 9th inst. Tenders to be delivered to Sydney Vernon, Secretary, Public Buildings, Oldbury.

(Continued on page xxii.)

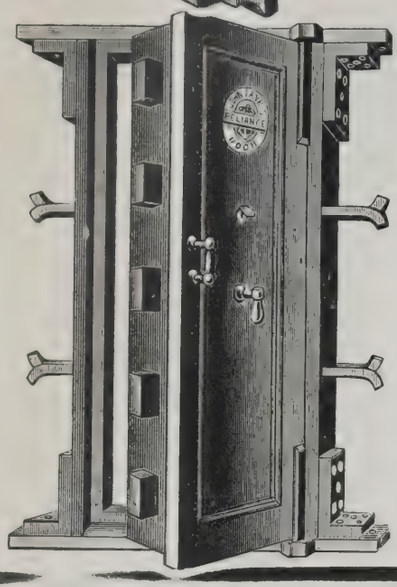
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April 16. **ROCHDALE**—Construction of a covered service reservoir (capacity two million gallons), on land belonging to the Corporation adjacent to Thornham New Road, in the Borough, and about 2¼ and 2 miles respectively from the Rochdale and Castleton railway stations of the Lancashire and Yorkshire Railway, for the Corporation. The drawings may be seen and a copy of the specification and form of tender, with schedule of quantities, may be obtained (on deposit of £5 5s.) at the offices of H. Rofe and Son, Civil Engineers, 8, Victoria Street, Westminster, S.W., and Oxford Chambers, Victoria Square, Leeds. Tenders to be sent to Wm. Henry Hickson, Town Clerk, Town Hall, Rochdale.

April 20. **LITTLEOVER, NEAR DERBY.**—Construction of about five miles of 15in., 12in., 9in., and 6in. pipe sewers, together with manholes, gauge chambers, stormwater overflows, ventilating shafts, and other accessories, for the Shardlow R.D.C. Plans and specification may be seen at the office of the engineers, Shaw, Son, and Fuller, The College, All Saints', Derby, and a form of tender and a copy of bill of quantities may be obtained from them on deposit of £1 1s. Tenders must be sent to J. W. Newbold, Clerk, Becket Street, Derby. The contractor whose tender may be accepted will have to enter into a bond with two bondsmen to ensure his financial ability to carry out the work.

April 20. **ROCHDALE.**—Construction in ferro-concrete of a high level road and coal store in connection with their gasworks, for the Gas and Electricity Committee of the Corporation. Plans and levels of the site may be seen and conditions of tender obtained on application to T. Banbury Ball, the manager, at the Gasworks, Dane Street, Rochdale, from whom any further information may be obtained. Tenders to be addressed to the Chairman of the Gas and Electricity Committee, Town Hall, Rochdale.

April 21. **FISHTOFT.**—Heating the Parochial school by means of the low pressure hot-water system, for the Trustees. The school may be inspected on any week-day on written application to Rev. E. P. Cook, Fishtoft Rectory, Boston, to whom tenders must be sent.

April 21. **LAMBERHURST (Tonbridge).**—Taking up and relaying of about 240 yards of 15in. pipe, and construction of about 400 yards 9in., and 70 yards 6in. stoneware pipe sewer, with 12 manholes, etc., etc., in the village of Lamberhurst, about three miles from Goudhurst Station, for the Tonbridge R.D.C. Plans and specifications may be seen, and bill of quantities and form of tender obtained on application at the office of Frank Harris, Engineer and Surveyor to the Council, Broadway, Southborough, Tunbridge Wells, on deposit of £1 1s. Tenders to be delivered to Neville R. Stone, Clerk to the Council, 23, Church Road, Tunbridge Wells.

April 23. **STROMA.**—Construction of additional works to be executed at Stroma South Pier, for the Caithness C.C. Copies of the plans, etc., may be seen at the office of Mr. James Young, County Clerk, County Clerk's Office, Thurso.

June 1. **MONTE VIDEO (Uruguay).**—H.M. Legation at Monte Video have forwarded copies of the specification, plans, etc., in connection with the invitation, by the Administration of the port of Monte Video, for tenders for the construction of two reinforced cement warehouses and six reinforced cement sheds. Tenders will be received up to 3 p.m. on June 1, at the Oficina de Trafico y Conservacion, Consejo de Administracion del Puerto de Monte Video, Calle Cerrito 185, Monte Video. The above-mentioned copies of specifications, etc., may be seen by British firms at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, London, E.C.

IRON AND STEEL.

April 11. **BOGNOR.**—Supply of 846 angle iron fencing standards, 6 straining pillars, and 16 cwt. four point, galvanised barbed wire, according to sizes and specification, to be obtained from Henry Layton Stafforth, clerk, Council Offices, Bognor, to whom tenders must be sent.

April 11. **LONDON, N.W.**—Supply of about 370 yds. (more or less) of certain wrought iron unclimbable fencing, delivered and fixed complete near their sewage outfall works, Renters Lane, and at the entrance to the Child's Hill Recreation Ground, from the end of Granville Road, Child's Hill, N.W., for the Hendon U.D.C. Specifications and forms of tender may be obtained on application to S. Slater Grimley, Engineer and Surveyor, Council Offices, The Burroughs, Hendon, N.W. Tenders, addressed to the Chairman of the Council, to be sent to Henry Humphris, Clerk to the Council.

PAINTING.

April 11. **ESTON.**—Repainting and repairs to the Congregational Church. Specifications, etc., at the church from 3.30 to 5.30 p.m. on the afternoons of April 4, 5, and 6.

April 12. **LONDON, W.**—Cleaning and repainting stations, etc., at the following places, for the Great Western Railway Co.:—Contract No. 9, Stourport, Bewdley, Hampton Loade, Eardington, Linley, Cressage, Berrington, Lightmoor, Condover, Hanwood, Minsterley, Yockleton, Westbury (Salop), and Middletown; (10) Shrewsbury; (11) Leaton, Whittington, Gobowen, Whitehurst, Llangollen Road, Rhos-y-medre, Johnstown, Gresford, Sun Bank and Llangollen; (12) Worcester, Shifnal, Wellington, Tern Hill, Witney, Oxford, Fairford, Birmingham and Tyseley; (13) Ross, Kerne Bridge, Symond's Yat and Cinderford; (14) Tintern, Tidenham, Redbrook, and St. Briavels; (15) Neath and Carmarthen Junction; (16) Tiverton, Tiverton Junction, and Cullompton; (17) Castle Cary, Athelney, Marston, Taunton and Chard; (18) Morebath, East Austey, Molland, South Molton, and Williton; (19) Bridport, Powerstock, Toller, Upwey and Portland. Specifications may be seen and forms of tender and bills of quantities obtained at the office of the Engineer at Shrewsbury Station for contracts Nos. 9 to 11, at Wolverhampton Station for contract No. 12, at Gloucester Station for contracts Nos. 13 and 14, at Neath Station for contract No. 15, and at Taunton Station for contracts Nos. 16 to 19. Tenders must be addressed to G. K. Mills, secretary, Paddington Station, London.

April 13. **LANCHO (Blackburn).**—Painting outside the reformatory buildings, lodges, cottages, iron rails, and gates. Specification to be obtained from Harcourt E. Clarke, Clerk to the Board, County Offices, Preston, to whom tenders must be delivered.

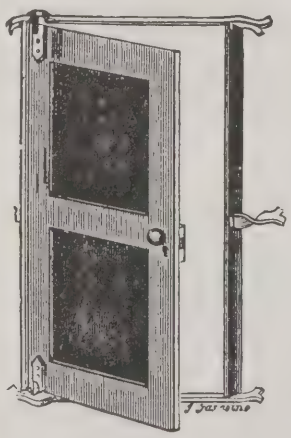
April 13. **DARTFORD.**—Cleaning, painting, and repairs at Gore Farm Convalescent Fever Hospital, near Dartford, Kent, for the Metropolitan Asylums Board, in accordance with conditions of contract and specification prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., Engineer-in-Chief. Conditions of contract, bills of quantities, specification, and form of tender may be inspected at the office of the Board, Embankment, E.C., and can then be obtained upon payment of a deposit of £1. Tenders must be delivered at the office of the Board.

April 15. **WEYMOUTH.**—Painting of the exterior parts of the port Sanitary Hospital and buildings and other work, situate near the Ferry Bridge, Wyke Regis, for the Weymouth Port Sanitary Authority, according to specification, which may be seen at the offices of S. Jackson, Architect, Bridge Chambers, Weymouth. Tenders to be delivered at the offices of the authority, St. Thomas Street (Royal Baths), Weymouth.

April 16. **BATLEY.**—Painting the exterior of the Batley Corporation Baths. For particulars apply to W. B. Lister, baths manager. Tenders to be delivered to J. H. Craik, Town Clerk, Town Hall, Batley.

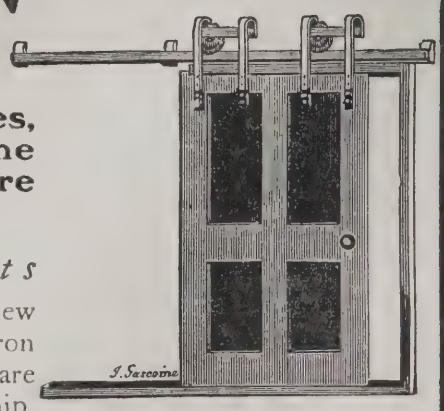
(Continued on page xxiv.)

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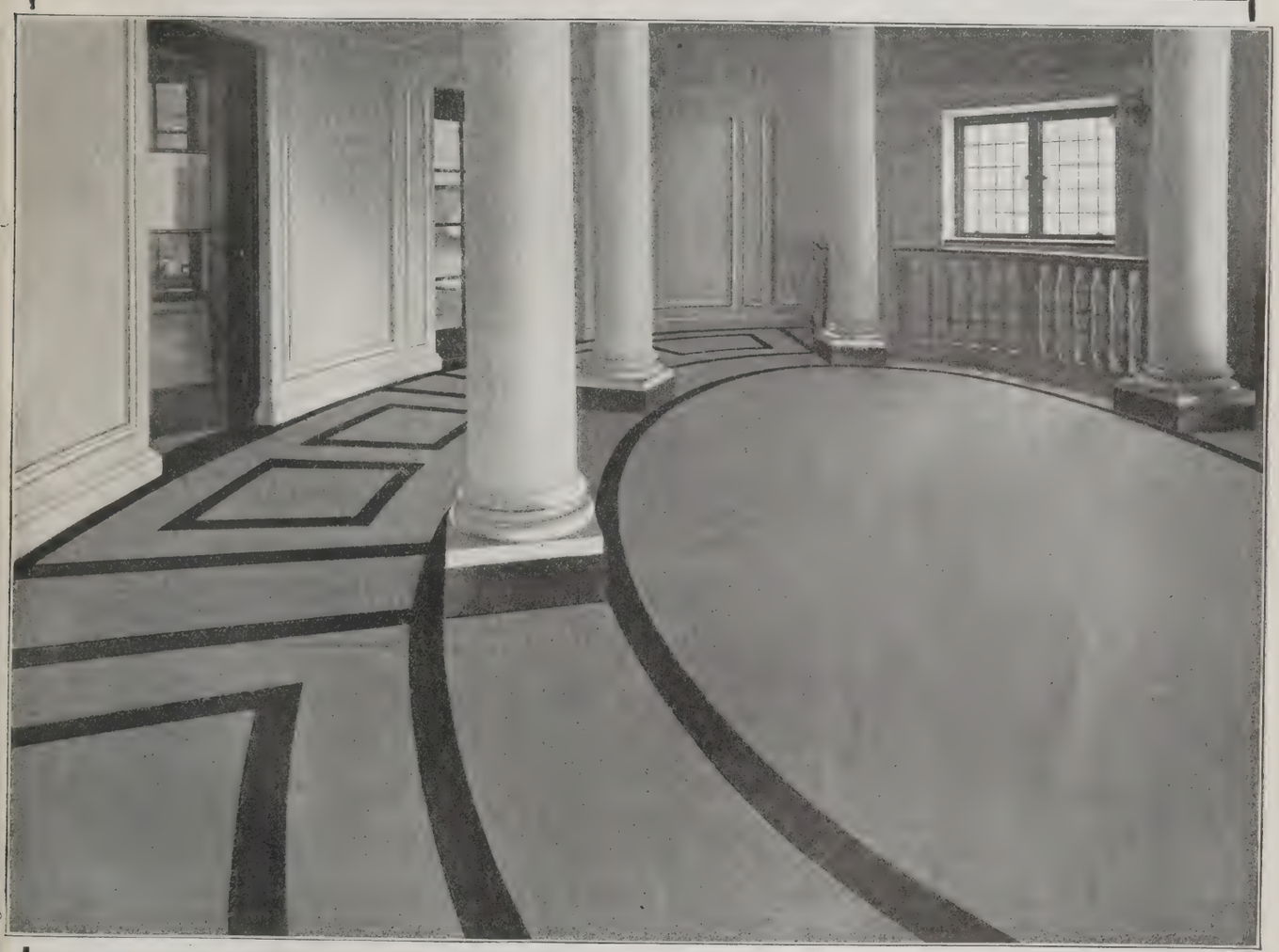
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April 16. **CANTERBURY.**—Painting, etc., in connection with the band stand, for the Dane John Committee. Particulars of the work may be obtained of Arthur C. Turley, A.M.I.C.E., City Surveyor, Guildhall Street, Canterbury. Tenders must be sent to Town Clerk's Office.

April 16. **WORSBRO'.**—Painting required to be done in the various departments for the U.D.C. Schedules of particulars and any other information may be obtained on application to John Whitaker, surveyor to the Council. Tenders are to be sent in to the chairman of the Council, W. Dutson, Saville House, Worsbro' Bridge.

April 18. **BROADSTAIRS.**—Painting work at the Council offices and fire station, the public lavatories, and the bandstand, shelter seats, garden seats, etc., for the U.D.C. Specifications can be seen and forms of tender obtained on application to the Town Surveyor, Howard Hurd, C.E., Council Offices, Broadstairs. Tenders must be delivered at the office of L. A. Skinner, Clerk to the Council, Council Offices, Broadstairs.

April 23. **CARDIFF.**—Cleaning, colouring, and painting children's homes at headquarters, Ely, and in Cardiff and Penarth, according to specification, a copy of which, together with the form of tender, may be obtained from Arthur J. Harris, Clerk, Union Offices, Queen's Chambers, Cardiff, to whom tenders must be sent.

April 26. **DUNDEE.**—Painter work to be executed on Nos. 93 and 95, Commercial Street, for the Water Commissioners. Specification and form of tender may be obtained on application to George Baxter, Engineer and Manager, Water Engineer's Office, 93, Commercial Street, Dundee. Tenders should be lodged with Wm. H. Blyth Martin, Clerk of the Commissioners, City Chambers, Dundee.

No date. **WOMBWELL.**—Painting of two houses now being erected at Wombwell. Also for plastering (labour only). Apply F. B. Ward and Son, builders, Wombwell.

PLUMBING AND SANITARY.

April 12. **RYDE (I.W.).**—(See "Engineering.")

April 18. **HULME (Manchester).**—Sanitary alterations in connection with the following premises. Nos. 3-15, Bank Street, and 25, Great Jackson Street; Nos. 2-8, Rex Street, for the Manchester Corporation. Forms of tender, general conditions, and specifications may be obtained, and plans seen, on application to H. Prescott, manager of the Drainage Department, between the hours of 9 and 11 o'clock each morning. Tenders must be addressed to the Chairman of the Drainage, etc., Sub-Committee, and delivered at the Drainage Office, Town Hall, Manchester.

ROADS AND CARTAGE.

April 11. **WEST SUFFOLK.**—Supply of granite for the main roads, for the C.C. Specification and form of tender can be obtained on application to A. Ainsworth Hunt, County Surveyor, Shire Hall, Bury St. Edmund's.

April 11. **LANCASHIRE.**—Supply of about 10,000 tons of granite macadam, to be delivered at various railway stations in the county. Forms of tender and particulars can be obtained on application to W. H. Schofield, County Surveyor, County Offices, Preston, to whom tenders must be delivered.

April 11. **WOOLWICH.**—Supply of 300 tons of Guernsey granite spalls for breaking, for the Union. Letters, stating price per ton, to include delivery at the Union Workhouse, Plumstead, to be sent to Tom Cutter, Clerk to the Guardians, Clerk's Office, Workhouse, Plumstead. A sample spall must be sent to the Workhouse, Plumstead, by April 11.

April 11. **WANDSWORTH.** — Making up and paving of that part of Copley Park, Streatham, which lies between Streatham Common South and Heybridge Avenue, for the Borough Council. The specification and drawings may be seen, and forms of tenders obtained at No. 56, East Hill, Wandsworth, S.W., upon payment of a deposit of £5 5s. Tenders must be delivered at the Council House, East Hill, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose. Persons tendering must in the case of all workmen employed by them pay wages at no less and observe hours of labour not greater than the rates and hours recognised by the associations of employers and employees and in practice obtained in the district where the work is to be executed.

April 11. **BRIGHOUSE.**—Repaving of a portion of Birds Royd Lane with granite setts on concrete (the setts to be provided by the Corporation). Plans and sections may be seen, and specification and bills of quantities obtained upon application to S. S. Haywood, Borough Engineer and Surveyor, Municipal Offices, Brighouse. Tenders, accompanied by the priced bill of quantities, to be sent or delivered to Jas. H. Rothwell, Town Clerk, Town Clerk's Office, Municipal Offices, Brighouse.

April 11. **BECKENHAM.**—Making-up of Faversham and Shaftesbury Roads, for the U.D.C. The works comprise the following:—130 cubic yards, flint, 1900 lin. ft. second-hand channelling, 735 super. yds., Burgess Hill paving (bricks supplied), together with the remodelling of about 1,500 super. yds. of roadway. Plans and sections may be seen, and bills of quantities, specifications, and forms of tender obtained, on application to John A. Angell, Surveyor, on the production of a receipt from the collector (who attends his office daily from nine to ten a.m. only, except on Tuesdays, when his hours are from nine a.m. to one p.m.), for a deposit of £2. A clause will be inserted in the contract providing that the contractor shall (1) pay to the employees the wages generally accepted as current for workmen engaged on similar work in the town where the work is executed, and (2) to the extent of 75 per cent. at least of the staff required in the execution of such works give preference to and engage such competent workmen of the class required as may be bona-fide residents in the parish of Beckenham, and may offer themselves for employment. Payment under the contract will not be made until six months after the completion of the works. Tenders to be sent to F. Stevens, Clerk to the Council.

April 12. **FAVERSHAM (Kent).**—Supply of hand-picked surface flints, for the R.D.C. Full particulars, the terms of the contract, and form of tender may be had on application to J. E. Chittenden, District Surveyor, Ashford Road, Faversham. Tenders, addressed to the Council, to be delivered at the office of Guy Tassell, Clerk, Faversham.

April 12. **TIPTON.**—Supply of stoneware drain pipes from 6in. to 30in. diameter, as may be required for the U.D.C. Copy of the specification, form of tender, and conditions may be obtained on application to the undersigned, upon £1 deposit. Tenders to be delivered to Wm. H. Jukes, M.E., Engineer and Surveyor, Surveyor's Offices, Public Offices, Tipton.

April 12. **NEW MALDEN (Surrey).**—No. 1, making up the carriage-way, kerbing, channelling, etc., and other works in Albany Road, New Malden; and No. 2, paving with artificial stone slabs the footways of Albany Road, New Malden, for the Maldens and Coombe U.D.C. The drawings may be seen, and conditions of contract, specifications, schedules, and forms of tender obtained on application to the Engineer and Surveyor, Reginald H. Jeffes, A.M.I.C.E., Council Offices, New Malden, upon payment of a deposit of £4 4s. for Contract No. 1, and £2 2s. for Contract No. 2, which in each case shall be by cheque payable to the Council. Tenders to be addressed to the clerk to the Council.

(*Continued on page xxvi.*)

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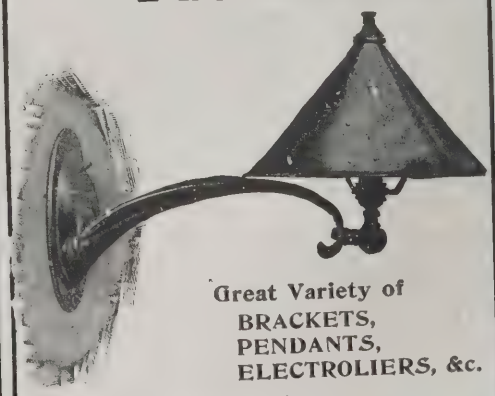
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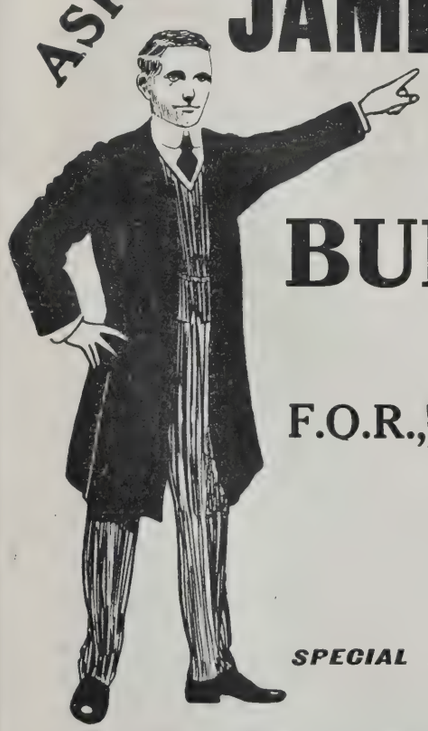
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April 12. **COLWYN BAY.**—Making up of the private street known as Coed Coch Road (part of), Colwyn, for the U.D.C. Plans and specifications may be seen and bills of quantities obtained upon application to the Surveyor at the Council Offices, Colwyn Bay. Tenders to be delivered to James Amphlet, Clerk to the Council, Council Offices, Colwyn Bay.

April 12. **MARGATE.**—Excavating and carting away the chalk, earth, and other material at the Corporation's Low Service Reservoir in rear of Milton Road, and depositing the same at the back of the new sea wall now in course of construction in front of the Fort Green. The quantity to be removed is about ten thousand cubic yards. The work to be carried out to the satisfaction of the Borough Engineer, Ernest A. Borg, the material to be deposited as directed, and the whole of the carting to be completed within a period of three months. Further particulars can be obtained on application at the Borough Surveyor's Office, 13, Grosvenor Place, Margate. Tenders must be sent to Edward Brooke, Town Clerk, Town Clerk's Office, Margate.

April 12. **FAVERSHAM.**—Supply and delivery of 1,060 tons of best Guernsey granite broken to a 2in. gauge and well screened, to be delivered free alongside Faversham Town Wharf, 600 tons; free alongside Conyer Wharf, Toynham, 200 tons; and in trucks at Selling Station, S.E. and C.R., 260 tons; 40 tons of chippings, 1in. gauge, free alongside Faversham Town Wharf. The materials to be delivered at such times and in such quantities as the Surveyor shall direct, between date of acceptance of tender and Nov. 1, 1910, for the R.D.C. A written order for delivery to be executed within 21 days of the receipt of order. Forms of tender and further particulars can be had on application to the District Surveyor, J. G. Chittenden, Ashford Road, Faversham. Tenders to be delivered at the office of Guy Tassell, Clerk, Council Offices, Faversham. Samples of materials to be sent to the Surveyor by April 11.

April 13. **CHELSEA.**—Supply of York paving during the period ending March 31, 1911, for the Borough Council. Forms of tender and information respecting the contract may be obtained from T. W. E. Higgens, Borough Surveyor, between 10 and 12 daily, at the Town Hall. Tenders must be placed in the box provided for that purpose, in the office of T. Holland, Town Clerk, Town Hall, King's Road, S.W.

April 14. **HOUGHTON-LE-SPRING.**—Supplying machine broken blastfurnace slag road metal, slag riddlings and blue limestone for asphalting, for the R.D.C. Full particulars as to quantity, quality, dimensions, and places and times of delivery, with forms of tender, may be obtained from the Surveyor of the Council, D. Balfour, M.Inst.C.E., Houghton-le-Spring, S.O. Tenders must be addressed to the Chairman of the Highways Committee, Rural District Council Offices, Houghton-le-Spring, S.O.

April 14. **WESTMINSTER.**—Paving work within the jurisdiction of the City Council. Conditions of contract, specification, schedule, and tender can be obtained on application at the Town Clerk's Office, Westminster City Hall, Charing Cross Road, W.C. The contractors will be bound by the contract in the case of all workmen employed by them, to pay wages at rates not less and observe hours of labour not greater than the rates and hours recognised by the Associations of Employers and Employees, and in practice obtained in the district where the work is to be executed. The contractors are prohibited from directly or indirectly canvassing members or officials of the Council in reference to any tender, and the tender of any contractor who does so canvass will be rejected. The contract deeds will be prepared at the expense of the Council, and the contractors will be required, together with two sureties, to enter into bonds for the due fulfilment of their contracts, or, in the alternative, to agree to the retention by the Council, during the period mentioned in the form of tender, of certain moneys. Each tender to be addressed to "The Town Clerk, Westminster City Hall, Charing Cross Road, W.C." Tenders may be placed by, or on behalf of, tenderers in a locked box at the City Hall, provided for the purpose.

April 15. **FRODINGHAM.**—Supply of about 1,000 tons of whinstone, to be delivered at Gunness and Frodingham Stations, G.C.R., for the U.D.C. Specifications and forms of tender may be had on application to Joe Green, surveyor, Council Offices, New Frodingham, Scunthorpe, Lincolnshire, to whom tenders must be sent.

April 15. **PREESALL-WITH-HACKINSALL.**—Supply and delivery of materials for a period of 12 months ending March 31, 1911: — 1, limestone, granite, and slag macadam; 2, tarred macadam; 3, kerb stones, setts, and channel stones; 4, stoneware pipes, gullies, etc.; 5, Portland cement; 7, hired carting; 8, road rolling and machined stone breaking; for the U.D.C. Further particulars and forms of tender may be obtained by application, accompanied by a stamped addressed foolscap envelope, to the Council's Surveyor, Francis E. Boaz, A.M.I.S.E. Tenders to be sent to Jos. Cumming, Clerk to the Council, Council Offices, Preesall, Poulton-le-Fylde.

April 16. **RUSKINGTON (Lincs.).**—Supply of granite, slag, and ironstone to Ruskington Station (carriage free) during the season, for the U.D.C. Forms of tender may be had on application to Ernest H. Godson, Clerk, Sleaford. Tenders, with samples, stating price per ton, to be sent to the Clerk, Council Chambers, Ruskington.

April 16. **HAMILTON (Scotland).**—Executing the works of granolithic paving kerb, and channel and causeway crossings in the parishes of Blantyre, Bothwell, Cambuslang, Cambusnethan, Dalserf, Dalziel, and Hamilton, for the District Committee of the Middle Ward of the County of Lanark. Specifications may be obtained on application to Robert Spittal, Road Surveyor, District Offices, Hamilton, and tenders must be lodged with W. E. Whyte, District Clerk, Hamilton.

April 18. **LITHERLAND.**—Widening and improving of Sefton Street for the U.D.C. Plans and specification can be seen and form of tender and quantities obtained on application to A. H. Carter, Surveyor, Public Offices, Sefton Road, Litherland, any morning between the hours of 9 and 11 o'clock, on deposit of 10s. 6d. Tenders to be sent to William Kirk, J. W. Allen North, Clerks to the Council, 15, Lord Street, Liverpool.

MISCELLANEOUS.

April 11. **NEW MALDEN.**—Supply of 120 fathoms of best Swedish board ends, first quality, square edge, to be delivered at the Norbiton Common Farm, Kingston Road, New Malden, as and when required, for the Kingston Guardians. Tenders must be sent to Chas. W. Dash, Clerk to the Guardians, Union Offices, Coombe Road, Kingston-on-Thames. The Guardians do not issue forms of tender for the supply of this wood.

April 13. **DUNSTON (Brentwood).**—Supply of builder's materials for immediate delivery to Laindon Siding, L.T. and S. Rly., for the Branch Workhouse, Sumpners Farm, Dunton, nr. Brentwood, Essex, for the Poplar Board of Guardians. Form of tender, containing full particulars of contract, may be obtained by personal application at the office of G. Herbert Lough, clerk to the Guardians, Guardians' Offices, 45, Upper North Street, Poplar, E., or on request will be forwarded by post. Tenders must be sent to the clerk at this address.

April 20. **HORSHAM.**—Tar paving of the playgrounds and incidental work at the Horsham Southwater Council school, for the West Sussex Local Education Authority, situate about three miles from Horsham and within half a mile of the Southwater Railway Station (L.B. and S.C.R.). Specifications and forms of tender will be forwarded on application to Lionel Thompson, Secretary, Education Offices, Horsham, Sussex, to whom tenders must be sent.

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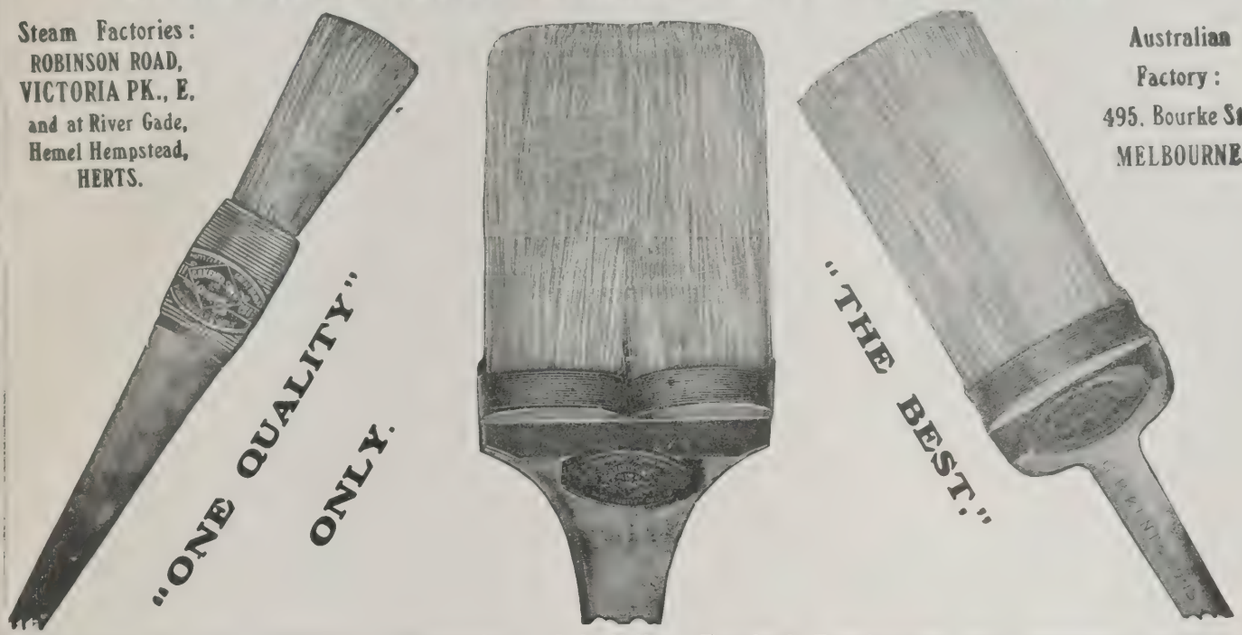
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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, ARCHITECTS' AND BUILDERS' JOURNAL, *Caxton House, Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Althorpe and Keadby (Lincs.).—For additions to Althorpe and Keadby Council School, in the county of Lincoln, for the Lindsey County Council Education Committee. Messrs. Scorer and Gamble, architects, Bank Street Chambers, Lincoln.

H. J. Thompson, Gilliatt Street, Scunthorpe	£1,183 0 0
A. J. Elmes, North Street, Gainsborough	1,168 10 3
F. Scarborough, Upper Moor Street, Lincoln	1,144 11 0
Wright and Son, Park Street, Lincoln	1,137 0 0
G. F. Waite, Epworth, near Doncaster	1,114 0 10
Hollingsworth Bros., South Killingholme, Grimsby	1,076 10 10
Stacey, Fishlake, Doncaster	1,072 10 6
Moody Bros., West Stockwith, Gainsborough	1,060 16 0
B. Pumfrey, Gainsborough	1,060 0 0
Teanby,* Althorpe, Doncaster	1,057 10 0

*Accepted.

Brighton.—For erection of eight double tenement houses, Tillstone Street, for the Borough Council.

J. and W. Simmonds	£3,832
R. Cook and Sons	3,775
C. Hudson and W. J. Weeks	3,730
A. M. Read	3,478
W. J. McMillan,* 13 and 14, Western Street, Brighton	3,459

*Accepted.

Broadstairs (Kent).—For erection of a new home of rest in Stone Road, Broadstairs, for Miss Cobb.

E. G. Holbourn	£1,250 0 0
G. Miriams	1,240 0 0
R. S. Goodburn	1,200 0 0
C. B. Philpott	1,197 10 0
J. T. May	1,182 0 0
G. H. Deene and Son	1,160 0 0
W. W. Martin	1,125 0 0
J. E. White,* Ramsgate	1,028 0 0

*Accepted

Barry (Wales).—For carrying out the following works, for the Barry Local Education Authority: (1) Alterations and additions to Holton Road infants' school, Barry; (2) plumbing work in connection with such alterations and additions. Mr. G. A. Birkenhead, architect, 102, St. Mary Street, Cardiff, and St. Nicholas Road, Barry.

Alterations.

W. H. Evans, Cardiff	£1,875 0 0
D. Davies and Sons, Cardiff	1,750 0 0
H. Fisher	1,584 15 0
Gibby and Cleak	1,571 15 0
D. W. Davis and Howell, Cardiff	1,565 0 0
Lloyd and Tape	1,561 8 5
Vickery Bros.	1,506 7 5
E. D. W. Evans, Cardiff	1,460 0 0
Price Bros., Cardiff	1,437 0 0
H. S. Rendell	1,381 9 4
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Plumbing.

E. Perman, Newport	£247 7 7
E. H. Newman, Cardiff	246 8 3
D. Davies and Sons, Cardiff	230 0 0
H. Fisher	227 15 0
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G. Radcliffe	210 4 1
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D. W. Davies and Howell	200 0 0
Gibby and Cleak	199 16 7
W. H. Allen, Cardiff	186 12 3
H. R. Paul and Son	184 19 2
G. Motton*	170 14 2
Price Bros. (withdrawn)	165 0 0

Rest of Barry.

*Accepted.

Hartshill (Staffs.).—For alterations and additions to the laundry block at the North Staffordshire Infirmary. Messrs. R. Scrivener and Sons, architects, Hanley. Quantities by the architects.

Colley and Liddop	£3,850
W. Grant and Sons	3,725
C. Cornes and Son	3,575
J. Poole	3,499
T. R. Yoxall	3,445
S. Heath	3,339
T. Godwin,* Hanley	3,280
S. Wilton, jun.	3,200
Meiklejohn and Son	3,140

*Accepted.

Holmes Chapel.—Accepted for alterations at "The Hermitage," Holmes Chapel. Messrs. Maxwell and Tuke, architects, Manchester.

Birchall Bros., Middlewich, £416 12s. 7d.

(*Tenders continued on page xxx*



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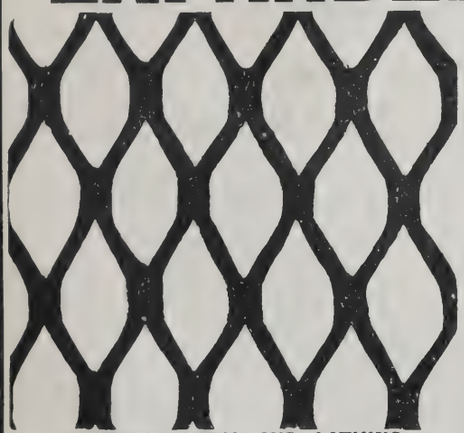
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(*Tenders continued from page xxviii.*)

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Coleman	900 0 0
A. W. Hoole	869 0 0
W. Bains,* East Kirkby ...	850 0 0

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F. Sage and Co., Ltd. ...	2,385 15 1
Woollaston Bros.	2,043 0 0
W. Hussey	1,894 0 0
M. McCarthy	1,769 0 0
S. Squire	1,748 14 6
A. H. Inns	1,728 7 6
L. Kazak	1,689 0 0
J. S. Fenn	1,652 18 3
B. E. Nightingale	1,597 0 0
Vigor and Co.,* 15, King Street, Poplar	1,387 0 0

*Accepted.

Llanbadoc, near Usk (Mon.).—For pulling down and rebuilding the "Britannia" Inn, at Llanbadoc, near Usk, for Mr. J. Williams. Messrs. Smalwell, and Havard, architects, 202, Dock Street, Newport, Mon.

D. Bowen, Sunny Bank, Mamhilad, near Pontypool ...	£1,153 10 0
T. Kirby, 43, Williams Street	1,124 0 0
H. Leadbeter, St. John's Road	1,095 0 0
J. Jenkins, Ltd., Clifton Road	1,089 0 0
F. W. Powles, Charles Street ...	1,077 0 0
J. Charles, Shaftesbury Steam Joinery Works	1,045 0 0
G. Prosser, West Market Street	998 10 0
E. F. King and Co., Prince Street	998 0 0
G. F. Leadbeter, 226, Chepstow Road	945 0 0
C. H. Reed,* 1, Malpas Road ...	944 0 0

*Accepted

London, N.E.—For cleaning, painting, and repairing work at the Eastern Fever Hospital, Homerton Grove, E., for the Metropolitan Asylums Board. Mr. W. T. Hatch, engineer.

F. Sage and Co., Ltd. ...	£2,140 15 1
W. Reason	1,997 0 0
T. Carr	1,980 0 0
J. R. Johnston	1,846 0 0
F. and G. Foster	1,798 0 0
Woollaston Bros.	1,640 0 0
M. McCarthy	1,539 0 0
B. E. Nightingale	1,526 0 0
Barrett and Power	1,487 0 0
J. S. Fenn	1,469 10 7
R. Woollaston and Co., ...	1,450 0 0
L. Kazak	1,380 0 0
W. Hussey	1,377 0 0
S. Squire	1,369 4 1
Vigor and Co.	1,286 0 0
A. H. Inn	1,246 8 10
J. Oram and Son,* Waltham Abbey	1,191 16 9

*Accepted.

Slough.—For alterations to shops, No. 144, High Street, Slough, and converting premises at rear of same into a cinematograph theatre, for the Theatres Contract and Finance Co., Ltd. Messrs. Moscrop, Young and Glanfield, architects, 20, Brook Street, Bond Street, London, W.

Building Contract.

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J. Deverill	939 10 0
H. Street	981 0 0
J. Goddard and Son	950 0 0
H. D. Bowyer*	909 0 0

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G. Aston and Sons	£121 10 0
British Challenge Glazing Co.	82 7 0
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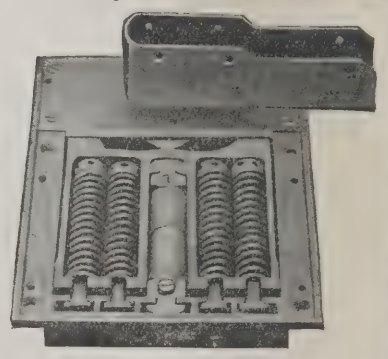
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THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
APRIL 13th, 1910.

Volume XXXI. No. 793.



THE WOODLANDS MINING VILLAGE, NEAR DONCASTER. PERCY B. HOUFTON, ARCHITECT.



This entrance is at the corner of the Rue de la Banque, and the Rue des Petits-Pères. It is the work of a distinguished French Architect, and is particularly admirable in its solution of the difficulties which a corner entrance involves. The scale below will give the illustration some practical value.

CORNER ENTRANCE TO A COMMERCIAL BUILDING, PARIS. H. NENOT, ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

APRIL 13, 1910. *CAXTON HOUSE, WESTMINSTER.* VOLUME 31. No. 793

Note: The List of Contents will be found on Page V of the front advertisments in this and subsequent issues.

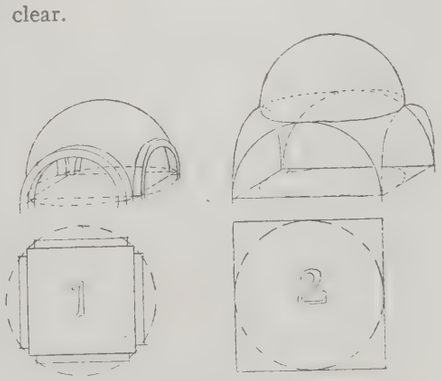
A Paradox in Architectural History.

IN our last issue we endeavoured to combat the idea that seems to have taken hold of some people's minds, that there was no value in books and writings on architecture, and pointed out some uses of books, the value of some special books, and the possible usefulness also of the more ephemeral form of journalistic writing. And now there comes a book—large, learned, and profusely illustrated—which seems calculated to cut both ways; a book full of information, containing an immense array of illustrations, in many cases of little-known buildings, and obviously the outcome of a quite unusual degree of study and observation of buildings at first hand; and yet all this learning is directed towards proving a paradox—recommending what appears to us to be a falsification of a great chapter in the history of architecture.

This work of Signor Rivoira's, which now comes to us in an English translation,* is entitled "Lombardic Architecture," and seems at first sight a very large book to be devoted to what we have generally regarded as a local school of architecture. But it appears that what the author calls "Lombardic architecture" means what has generally been understood as "Romanesque architecture," a word having a far wider meaning, and that his thesis is that the architecture of Lombardy was the centre from which sprung the whole of mediæval architecture; that (in the second volume, which treats of the "derivatives" of Lombardic architecture) such buildings as Rheims, Lincoln, Norwich, Oxford Cathedral, etc., are to be grouped under the title "Lombardic"; in fact, that the centre of Gothic architecture is to be shifted to Lombardy. But this is not all; the book commences with Byzantine architecture; and this also is to be regarded as entirely derived from Italy. In short, Signor Rivoira seems to be an enthusiastic Italian student of architecture, who is determined to find that his native soil is the birthplace of all architecture worth speaking of since the Christian era.

The question whether Byzantine architecture owed its origin to Roman or to Eastern influences has been debated before now, and other writers have affirmed that St. Sophia was the outcome of the Roman examples in domical structure. But such a conclusion ignores entirely the essential structural difference between the Roman dome and the Byzantine dome. With the Romans the dome was an obvious manner of roofing in a circular plan. There is not an example of a Roman dome erected over a square plan; to accomplish that, on a large scale, was the special triumph of the architects of St. Sophia, and Rome gave them no hint for it. And Byzantine detail speaks for itself; there is not a hint of anything Roman about it. It may rather be described as Greek detail modified by Asiatic influence and taste; that is the story which its internal evidence tells us. But Signor Rivoira goes further than the Romanisers of Byzantine style. He is determined that San Vitale at Ravenna was the origin of St. Sergius and St. Sophia. It has been generally considered that St. Sergius, as a small church with a low dome lighted at the base, was a kind of precursor of the greater effect of St. Sophia; and that after the latter was built, with its beautiful and characteristic detail, San Vitale at Ravenna, when that city had some under the rule of Justinian in 540, was the outcome of the great architectural triumph at Constantinople, repeating to some extent the plan of St. Sergius, and the detail of St. Sophia. But Signor Rivoira will have none of this. On the basis of a sentence of very doubtful meaning in an ancient Latin chronicle, he will have it that San Vitale was founded in 426, before St. Sergius, and that the latter was an imitation of San Vitale. On this point he is so determined that he never mentions San Vitale without adding in brackets "(A.D. 426)." And so, as the result, San Vitale is the precursor of St. Sophia. No manipulation of dates can make one believe that. It is the tail wagging the dog.

The author will not even give Anthemius the merits of his great pendentive construction. No; the pendentives, too, came from Ravenna, from the tomb of Galla Placidia. Now to say that is to assimilate two constructions which are essentially different. Galla Placidia is merely an imperfect dome cut into by four vertical arches, which leave the intermediate slices of the dome coming down into the angles of the apartment. Those are not pendentives in the true sense. Anthemius's pendentives are portions of a dome whose diameter is the *diagonal* of the square over which it was built, carrying a complete dome whose diameter is the *width* of the compartment, within the confines of which it is inscribed. The annexed small diagrams ought to make the difference clear.



No. 1 represents the Galla Placidia type, in which an incomplete domed surface is squeezed between vertical arches; No. 2 is the Byzantine type of complete dome on pendentives.

For the thesis which includes all Romanesque work, or what we have been accustomed to call so, as "Lombardic,"

*Lombardic Architecture: its origin, development, and derivatives. By G. T. Rivoira. Translated by G. McN. Rushworth, M.A. With over eight hundred illustrations. London: W. Heinemann, 1910.

there is more to be said. The round-arched vaulted basilica, with its thin strips of quasi-buttresses, was evolved first in Lombardy, and there is sufficient resemblance to this in the Rhenish Romanesque to excuse the title "Lombard-Rhenish." But we refuse to accept "Lombard-Norman," or to regard Mont St. Michel or Jumièges as in any sense Lombardic in style. It is true that there are superficial resemblances in exterior work; in the flat buttresses (wider, however, in Norman than in true Lombard architecture) and the small round-headed windows. But the difference is one of general style, and of possibilities of development. In the buildings on Italian soil there never was any power of development into the appearance of growth of one part from another, which is the essential quality of Gothic. Italian architecture, even when it developed into pointed Gothic, was under the dominion more or less of Classic tradition, and always preserved a certain horizontality of character, as of one storey placed upon another. Compare two of the illustrations in this book, the interior of San Miniato and the ruined interior of Jumièges. They do not differ much in date; the author gives "San Miniato 1013—1062," and "Jumièges 1040—1066." But San Miniato is in its general character a Classic interior, while at Jumièges there are all the makings of Gothic already obvious. The difference lay in the architectural genius of France, which was totally different from that of Italy.

This book is, in short, one huge paradox; but as long as the reader keeps clear of being led away by that, it is in its way a splendid production, giving hundreds of comparative illustrations of buildings of a period when mediæval architecture was in the making; illustrations which one does not often find combined in one publication, and some of which are of buildings little known and illustrated; and as they are nearly all from photographs, there is no question as to their accuracy. The author has, we gather, visited every building himself; a conscientious method of study which inspires one with respect for himself and envy of his opportunities. He would have produced a still finer work if he could have been content to deduce his theory from facts, instead of setting out to make the facts fit into a preconceived theory, which was to make Italy the centre and cradle of Gothic architecture.

The "Licentiate R.I.B.A."

WE have received from the Secretary of the Royal Institute of British Architects a copy of a letter which has been sent to the Presidents of the Allied Societies on the subject of the new "Licentiate" class which, under the new Charter, is to be formed in connection with the Institute.

The letter is as follows:—

DEAR SIR,—We have the honour to invite the attention of your society to an important development in the constitution of the Royal Institute of British Architects which has lately been sanctioned by the grant of a Supplemental Charter and new by-laws by His Majesty the King and the Privy Council.

A new class of members, having the chartered right to the designation of Licentiates of the R.I.B.A., has been created. This class is open to all practising architects of good standing who have attained the age of 30 years and either (a) have been engaged as principals for at least five successive years in the practice of architecture, or (b) have been engaged for at least ten successive years in the practice or the study of architecture.

Candidates for this class are not required to pass an examination or to submit to election by the general body, but must satisfy the Council of the Royal Institute that they are fit and proper persons to be admitted to this class.

Under the provisions of the Supplemental Charter of 1908 *candidates for the class of Licentiates will only be admitted during the twelve months from March 23rd,* 1910, *to March 23rd,* 1911.

Under His Majesty's Charter any Licentiate who is eligible as a Fellow may at any time before December 31st, 1920, be admitted for nomination to the class of Fellows when he has passed an examination to be prescribed by the Council.

Licentiates will be required to make an annual payment of one guinea to the Royal Institute, and for this they will be entitled (1) to use the affix Licentiate R.I.B.A., (2) to receive the "Journal," the "Kalendar," and other publications of the Royal Institute, (3) to use the Institute premises, and (4), subject to the Charter and by-laws, to attend the meetings of the Royal Institute.

In view of the necessity of closer organisation of the members of the architectural profession throughout the Empire, both for the advancement of the art of architecture and for the promotion of the interests of the profession by means of Parliamentary or other action, it is highly desirable that a knowledge of this new means of becoming associated with the work of the Royal Institute should be spread as widely as possible among those architects who are at present outside its walls.

Any action which may be taken in the future to secure a higher standard of professional attainment and a greater security for properly qualified architects can only be successful if it is based upon the support of a substantial majority of the practising architects of the Empire, and the Council of the Royal Institute hope that your society will do all in its power to assist the efforts that are now being made to obtain this support.

We have pleasure in sending you herewith a packet of nomination papers for Licentiates, and we shall be glad if you will take an early opportunity of making an official announcement and of taking effective steps by sending by post to all the architects in your province a notice of the creation of this class, drawing special attention to the fact that it is only open for twelve months, and informing them that the above papers are in your hands and may be obtained on application at the offices of your society.

We feel that it is the duty of the Institute and its allied societies to get into touch with all architects in the Empire, and we are sure we may count on your zealous personal assistance to this end.

This new class created under the Charter has of course been much canvassed and criticised, especially on the ground that it amounts to inviting architects who are in practice to join the Institute in what seems a kind of inferior position to that of the Fellows and Associates.

But the matter should be considered, not in a merely self-regarding spirit, but in view of the general good of the profession. The argument seems to stand thus: There are many reputable architects who have been some time in practice, and who, it is thought, could not reasonably be asked to go through an examination for entrance, in view of their present professional position. But in order that the Institute should be able to act effectually in the interests of the profession generally, it is essential that it should represent the general body of architects more completely than it does at present; and the general acceptance of licentiateship by practising architects who are not at present members of the Institute would greatly strengthen the hands of the Council in this respect, and enable it to act as and for the whole profession. We would therefore appeal to architects who are not members of the Institute to accept this offer of the Licentiateship, by which they will certainly gain something for themselves, and assist the interests of the whole profession. That is, we think, the right way to look at it; and in that light the scheme deserves success. The Institute could thus claim to represent the whole architectural profession, and not merely a section of it.

Flowers and Architecture.

THE writer who defined dirt as matter in the wrong place is paralleled by a leader-writer in the "Times," who defines the term weed as a bad name for a plant that we do not want, and in a discourse on "Weeds and Ugliness" draws an amusing analogy between flowers and architecture, comparing the old cottage garden flowers to Gothic, and the extreme formalism of the geranium bed to Classic. And the cause of all this ingenious fulmination is the antagonism to dandelions of the average gardener, who cannot see beauty in them because his conventional ideas will not permit him to "see beauty that is not part of his own design." The dandelion is a "weed"—a word of reproach—just as at one time "Gothic" was a word of reproach, signifying the production of an ugly and a barbaric era; while "Classic" was the product of a great age of civilisation, and therefore assumed to be beautiful. "The power of association perverted the eye of the critic." And when "Gothic," with the swing of the pendulum, came again into favour, "when"—as our critic puts it—"the beauty of Gothic was discovered, the same mistake was made all over again." The works of the Gothic revival "were admired, not because they were beautiful, but because they were Gothic." This is rather less than the truth. The Gothic revival was carried on the tide

of the Oxford Movement; and it was the association of Gothic as the *Christian* style in the public mind, in contradistinction to the Classic or *pagan* style, that established for it a veneration in the hearts of a generation that had been stirred to an aspiration for piety. Even in recent years the Liverpool Cathedral competition made known the fact that there are some who still regard 13th Century Gothic as the only possible style for a church. We fear that the dandelion cannot ride into favour on the mount of a false analogy. It is not until the decline of Gothic, and the early dawn of the Renaissance, till the days of the Elizabethan poets and Bacon the essayist, that we begin to hear of the well-ordered garden. The Jacobeans endowed us with our formal parterres; the Eighteenth Century with the delightful Georgian houses and walled gardens; and it was our grandfathers and great-grandfathers of the neo-Classic period who delighted in the straggling borders of "old-fashioned gardens, as opposed to the formal beds, geranium cult, wriggling paths, and Paxtonian landscapes that marked the height of the Gothic revival in the middle of the 19th Century. It is our modern architects who, reverting to the Georgian Domestic tradition, have revived moderate formalism, herbaceous borders, the rock and wall gardens, and other delights of horticulture. We fancy the geranium cult is more easily explainable by the rise from obscurity of the merchant princes, whose taste in matters horticultural was, generally speaking, that of their gardeners. The love of strong, showy colours, particularly red, is fairly characteristic of the imperfectly educated mind, and probably the somewhat crude taste of both master and man found in formal beds of geraniums the satisfaction which it needed, and of which it could hardly be surfeited.

The Perfection of Imperfection.

A VERY cursory study of Art will quickly reveal how much the final effect of a great work is gained through its imperfections. In a recent issue we published some remarks of Mr. Armitage criticising the extraordinary technique of the modern wood-carver, which makes one feel, he says, "that the grain of the wood spoils the effect, or, to put it in another way, one feels that the work would look better in a perfectly homogeneous substance, such as cheese." If we follow Mr. Heaton we find that Gothic glass obtains a beauty through its manifest imperfection. It is the old cry for Ruskin's "pleasing roughness," which we may assume is the satisfaction of our imperfect vision. One would suppose that if a man planes a board, the more nearly he attains to mathematical accuracy in its final dimensions the more satisfactory will be his work. Yet the advantage his handiwork retains over the mechanical saw and the steam plane is just the very inaccuracy which the human effort cannot overcome. The old Greeks curved the lines of the Parthenon to meet the visual defects of its beholders. If we are to believe Mr. Goodyear, the Mediævalists were not behindhand in securing effect by deliberate inexactitudes in the setting out and construction of their buildings. We see the same feeling in many other directions. The increasing demand for handwork, the love of "hammer-marks," the request for play in colour, for rough surfaces in materials, for the individual notes in drawings, for character in handwriting, are all indications of it.

Machine-made work gains in esteem with the public in proportion as, by clever jugglery, it simulates the inexactness of handwork. And from this we may judge that mathematical accuracy is repellent to the human sense, and that perfection in form is only attained by the imperfection which is inseparable from the work of human hands. But it must be real and unconscious imperfection; simulated imperfection, unfortunately not unknown, is a gross travesty of Art, usually betrayed by its innate self-consciousness. But with the extraordinarily brilliant technique of the present day the whole question threatens to become one of increasing complexity as time goes on.

Garage Design.

ARCHITECTS in the United States, as well as in our own country, appear at length to have made up their minds that the design of the motor garage is worth special consideration. The public or commercial garage is of course a thing apart, and, generally speaking, it is loathly to look upon; but the private garage must harmonise with the dwelling to which it belongs. In many instances it is merely a converted stable; but where it is a specially constructed building, the architect, after making due provision for the requirements of sheer utility, has a free hand as to the design. He has therefore a splendid opportunity of originating something that is comely and appropriate. Is he making the best of it? Hitherto he has proceeded tentatively, as one who, so to speak, has not yet fully inhaled the fine fragrance of the motor spirit, and the result is so characterless that on beholding his building when its doors are closed, one would not feel quite sure whether, if they were thrown open, a horse or a motor would emerge from them—that is, unless one's sense of smell is rather keen, when, in either case, the characteristic odour might settle the temporary doubt. But surely either building should present other strongly characteristic features besides the odour. As for labelling a building with legible lettering, "GARAGE," that may serve the turn of the tradesman, or tickle the vanity of the proud private owner; but in the latter instance it is a sorry expedient, which ought to be rendered entirely superfluous by investing the design of the building with some architecturally distinctive character. But before the general type or series of types can be fixed, it will be necessary to have the means of assembling and comparing the more or less tentative designs that are now rapidly accumulating.

St. Bartholomew-the-Great.

THE announcement of a concert for which the Duke of Sutherland lent the use of Stafford House, the object being the liquidation of the debt on the restoration fund of the Church of St. Bartholomew-the-Great, West Smithfield, has been the occasion of several newspaper articles recalling the interesting history of the old church; concerning which one of the writers nevertheless declares that "there are comparatively few Londoners who know enough about the church, one of the most ancient and noble in England, to care about preserving it from decay." The priory church, as most of our readers are aware, has passed through extraordinary vicissitudes. The original building was erected by Rahere, a Canon of St. Paul's, and a favourite at the Court of King Henry I. His tomb, richly carved and gaudily coloured, is conspicuous on the north side of the sanctuary. Henry VIII. sold the monastic buildings to Sir Richard Rich, who pulled down the nave and converted the Lady Chapel into a dwelling-house. The brick-turreted tower was built in the seventeenth century, when the fifteenth-century crypt was used as a coal-cellar. In the eighteenth century a Nonconformist school was established in the triforium; in the nineteenth century there was a fringe factory in the Lady Chapel, and a smithy in the north transept. In 1863 the Rev. J. Abbis began to set the house in order; the late Sir Borradaile Savory, with the help of Sir Aston Webb, brought the work very near completion; all that remains to be done, or, rather, all that it is now thought practicable to do, being the restoration of the Early English gateway forming the entrance to the churchyard. There should be no difficulty in raising the £300 or so still required to complete the work; for even those who have no feeling for antiquity should be touched to sympathy by the story of the courage, determination, and ultimate triumph of the successive enthusiasts whose indomitable perseverance—sometimes against almost hopeless odds—has restored to something like its pristine state this very interesting relic of mediævalism.

St. George's Hall, Liverpool.

FROM a rough illustration in the Liverpool *Daily Post* we get an idea of a proposal by Professor S. D. Adshead for a new treatment of the open space of ground at the back of St. George's Hall. The history of this piece of ground is curious. It was the site formerly of an old eighteenth century church, which stood at an oblique angle to St. George's Hall, and was rather an eyesore. This was removed with the intention of making the ground the site for the Liverpool Cathedral, and the designs in the first competition for the cathedral, a good many years ago, were made for this site, which was somewhat confined for the purpose, and had an effect on the designs, in inducing short and compact plans. It would, however, have been a grand site for the cathedral, the west front of which would in that case have stood boldly at the top of a steep slope. When the first cathedral scheme was abandoned, the ground was left in disorder, and subsequently treated as a kind of public garden in a rather crude manner. Mr. Adshead proposes to have it laid out now in a more spacious and formal manner, and with direct relation to St. George's Hall. The upper part, next the hall, is to be a terrace, with a continuous flight of steps parallel with the Hall, and from the ends of this are to branch two semicircular terraces, with steps down at intervals, embracing between them the rest of the open space, in which are to be two fountains. The upper terrace, next the hall, is shown with a statue on a pedestal as a central object, and a small circular columned temple (one may call it) near each end. The object of, or the excuse for, these is that the back elevation of the end wings of the Hall is rather uninteresting, as in the original state of the ground Elmes did not suppose it would be much seen, and it is considered that it would bear being masked a little by some decorative erection in front of it. There is something in this, though we cannot agree that if Elmes had foreseen the clearing of this site he would have placed the front of St. George's Hall towards it instead of the back. He could not have *backed* the Hall and the main street and principal railway station; but he might have thought it worth while to treat both sides as of equal importance. Mr. Adshead's scheme, as far as we can judge from the rough illustration alluded to, seems a fine one, and will be a public improvement worth carrying out.

New French Building Law.

THE French Chamber of Deputies has just adopted an important proposition, which, put forward by MM. Raynaud Desplas, Puech, Paul Beauregard, and Adrien Veber, will considerably modify the existing practice of the Conseil d'Etat with regard to the expropriation of lands required for public improvements. Under the law of May 26, 1852, the administration had the power to acquire any lands which they considered necessary for the enlargement, improvement, or formation of streets, when it was considered that such extensions were essential to salubrity. They could also expropriate any property that, being outside the alignments, was deemed desirable for the extension or improvement of existing roads. The decree of June 18, 1876, restricted those powers by compelling the administration to obtain, in the latter instance, a Conseil d'Etat decree. The Conseil d'Etat, however, has, in such instances, nearly always refused permission to acquire such property. The new law adopted by the Deputies (and the Senate is not likely to reject it) provides, in effect, for the compulsory acquisition of lands and buildings required under a scheme of town planning or street improvement; and there is an express condition that if there remain outside the limits fixed for the execution of the plan any enclosures or parcels which, either because of their smallness or by reason of their situation, are not desirable sites for buildings, such lands may be expropriated for the purposes of the general scheme.

Hampstead Heath.

THE Heath, the whole Heath, and nothing but the Heath is demanded by the Hampstead Heath Protection Society, who held last week their thirteenth annual meeting. In the annual report which was then presented, it was stated that the committee had called the attention of the London County Council to the deposit of clay and other builders' refuse on the Heath; to the disfigurement of the East Heath through the cutting of the turf by order of the Council; to the destruction of plants by children during the holidays; and to the suggestion of the Hampstead Borough Council to cement the bottom of the lakes, which the committee contended would destroy the rural character of the ponds. Upon this last point the Society have received the assurance of the London County Council that the cementing will not be carried out. Sir E. Durning Lawrence, in moving a resolution urging upon the London County Council the imperative necessity of strictly carrying out their statutory duties under Section 16 of the Hampstead Heath Act, 1871, maintained that the Heath should be preserved, not for Hampstead alone, but for London at large. They did not want it "parkified," and he urged them all to preserve the Heath "as God made it." Lord Eversley was re-elected president of the Society for the ensuing year.

The Bridge at Hampton Court.

THE uncovering of the buried bridge in front of the west entrance to Hampton Court Palace, and the excavation of the moat, have, we are assured, immensely improved the appearance of the main entrance to the palace. As Mr. Ernest Law—to whose active interest in the matter the art-loving section of the public are greatly indebted—remarks in his description of the excavations, "the whole aspect [of the palace] will be rendered more interesting, more picturesque, and more characteristic of its age." The stone bridge which has now been revealed to full view, and has not only so signally justified the labour and cost of the operations by means of which it has been rescued from oblivion, but is also seen to vindicate the taste of its designers, was built by Henry VIII. in 1535, and had been buried since 1700. Mr. Law rejoices in "the wonderful transformation" thus simply effected "in this old Tudor façade, whereby it will be invested once more with that charm and romance of which William III. and Wren deprived it." We must confess that it is always painful to find Wren in association—actual or alleged—with anything that savours of vandalism. The excuse for him in this instance, and perhaps in some other cases, seems to us to be found in his intense modernity. In his day there was a breaking away from the old feudal traditions. The Englishman's house was no longer to be his fortress, but his home, suggesting peace rather than strife. But now, remote as happily we are from the "old, unhappy, far-off things, and battles long ago," a fortress pleases rather than pains us; and hence the restoration of Hampton Court Palace to a more complete realisation of this grim character is altogether delightful.

An Ardent Archaeologist.

WITH the eccentricities of the perfervid archæologist architects are only too well acquainted. He has broken out in a fresh place; or, rather, he has broken in. The remains of the Roman villa at Brading, in the Isle of Wight, are, for their better preservation, enclosed within a corrugated iron structure, which, it is understood, "the pure and simple-minded take," in quite a remarkable number of instances, to be itself the Roman villa. Sixpence (the charge for admission) stands between many a Cockney visitor and the correction of his very natural first impression. The holiday-making Dutchman is not so easily daunted. On Easter Sunday a visitor from Holland vindicated the repu-

tation of his countrymen for robust appreciation of art values. Denied admission by the door, he got in at the window, and he left behind him this polite note: "I wanted to see and appreciate that famous Roman art. I was so unfortunate to come here from Holland on Sunday. You refused me to enter on account of it being Sunday. I did everything I could to convince you, in vain. Nothing was left to me than to see it in a manner which is not the regular one. I climbed on the roof, but could not see through the windows. So then I broke this window. I give the sixpence (price of admission) to the poor of the isle.—Excuse me." The chief point that seems to strike the reporter of these strange doings is that, up to the time of going to press, nobody answering to the description of "a poor of the isle" had confessed to receiving the payment—the method of tendering it being "not the regular one"—of the price of admission; but for our part we feel more concerned at the omission by the enterprising Hollander to provide a reasonable indemnity for the breakage of the window.

"Loose Competitions."

WHAT are euphemistically termed "loose competitions" in American architectural circles come under the comment of our overseas contemporary "The Western Architect," so that the evils which we frequently decry about competitive work are not confined, apparently, to our own sea-girt islands. Some fifteen practitioners from four different States gathered recently at a certain town in Kansas, in response to an advertisement for high-school plans. A polite request to the School Board that entries be closed was responded to by an intimation that the Board would receive entries as long as it liked, and with a more impolite intimation that the Board knew its own business. "It might be unkind," says our contemporary, "to say that these architects 'got just what was coming to them,' but that is pretty near the fact." A competition of so loose and irregular a character should never have been touched by them. "School Boards, when they are made up of otherwise intelligent and honest men, are both densely ignorant and technically dishonest when it comes to an estimate of what an architect's services mean." Our contemporary opines that "both school boards and private individuals would have learned long ago that it was useless to try to get something for nothing," if the individual members of the profession pursued a proper line of conduct. This comes home to us very nearly, and is what most thinking men have said about competitions in this country at one time or another. What is it that makes reputable men foolish in their individual capacity and dishonest in a corporate one? If we knew that we should be able to solve the competition trouble instanter.

The Velasquez Dispute.

MR. GREIG, when he wrote to the "Morning Post" that he had discovered initials on the Rokeby Velasquez which were not those of the master, might well have said within himself, like Launcelot Gobbo, "Mark me! Now will I raise the waters." After the efforts which were made to raise the sum necessary to secure the picture for this country, such a suggestion comes as a painful blow to our national credit in picture-dealing. Our impression is that, in the words of one of the disputants, Mr. Greig's alleged discovery is a mare's nest, and that the supposed signature is an accidental mark of some kind. Several very competent pairs of eyes have examined the canvas closely, and cannot see what Mr. Greig asserts is there. But that does not settle the question. When the picture was exhibited many years ago at the Royal Academy Loan Exhibition, under the name of Velasquez, its authenticity was much questioned by painters, who admitted, nevertheless, that it was a very fine work. Sir William Richmond denies altogether that it is either by Velasquez or worthy of him, and he urges, with unquestionable force, that the opinion of a practical painter is worth more than that of people who only write about painting. On the other hand, Mr. Clausen, a very capable painter indeed, considers the principal figure to be by Velasquez, and a very fine piece of painting, though the accessories may have been painted in by another hand. Our opinion is in favour of Velasquez, in consequence mainly of the fine modelling and the anatomical suggestion of the framework of the body in the painting of the back. The argument as to the evasion (as is suggested) of the drawing of the hands and feet does not amount to much. But we are afraid the authenticity of the picture will always be regarded as somewhat open to question. The moral of the whole incident is the same as that which Mr. T. G. Jackson suggested, in a letter to the "Times," in the famous matter of the wax bust, viz., that people think too much of the name attached to a work of art, and too little of its intrinsic merits. In the case of the picture under discussion, there is (or ought to be) no question that a very fine work was secured for the National Gallery when the Venus was purchased. But there is no doubt that the bulk of the price was paid for the name of Velasquez, and it seems doubtful whether we got what we paid for.

Classic or Gothic for Churches.

THE Architectural Association Journal contains the report of a discussion on this subject at the Architectural Association Debating Society, the Classic side being upheld by Mr. A. E. Bullock, and the Gothic by Mr. W. G. B. Lewis. On a vote being taken at the close there was a majority of four on the side of Gothic. In the light of present-day views of architecture as the art of free expression in building, rather than of archæological reproducing of ancient types, it seems almost a question whether such a point should be debated at all. A church is a church, and there does not seem any innate necessity that it should be either Classic or Gothic. Admitting, moreover, that an architectural tradition should be followed, it may be pointed out that the Classic tradition for church-building is much older than the Gothic. It is almost impossible to discuss the subject without touching on questions outside of architecture. It is odd to find a well-known church architect, in the discussion, arguing that Gothic was more suitable for churches, "because that particular style is the product of the Christian religion." Surely Mr. Fellowes-Prynne had curiously forgotten history. The Basilica church was the product of Christianity, and that was to all intents and purposes a Classic form of building. The Gothic church is the product, not of Christianity, but of the version of it accepted by the mediæval church, the feeling of which is in reality perfectly different from that of early Christianity. The mysticism of the mediæval church is well expressed in the Gothic building; and that mysticism was a beautiful thing in itself, and was specially valuable in an age of rapine and violence, when people felt the church (both spiritual and material) to be a refuge from the violence and squalor of actual life.

But there was no such element of mysticism in early Christianity; the mysticism was a mediæval growth over Christianity; and Gothic is only a church style, not a Christian style in the larger historic sense of the word. At the same time, we should agree that an interior like St. Paul's, for instance, is somewhat cold and realistic in effect as a building for religious worship. It is partly a question of plan, too. The Byzantine type of plan, with its wide central area, is really more suited for congregational worship than the mediæval plan, which is essentially a processional plan; and the richness of Byzantine detail seems to present something more sympathetic with Christian worship than the comparative coldness and precision of Classic detail. We suggest that the ideal modern church architecture might be found, not in either Classic or Gothic tradition, but in an evolution from the Byzantine type, with a detail and decoration permeated with Christian (not mediæval) symbolism.

NOTES AND NEWS.

The Layman and "The Orders."

A Manchester correspondent draws our attention to an article in the "Daily Dispatch" of that city, upon the six columns that still rear themselves forlornly out of the wreckage of the old infirmary. The writer discourses most pleasantly and poetically over these "*Corinthian* Columns." Unfortunately the columns are *Ionic;* and the date of the issue in which the article appears is April 1st, though we hesitate to make the obvious connection. Our correspondent takes exception to the statement that "in destruction their beauty came"; for, he says, "they were beautiful before, and formed a part of one of the few nice pieces of work in Manchester." He thinks also it would be safer for the newspapers to adopt the word "Classic." We agree.

The Site of the Duke of York's School.

A question by Lord A. Thynne, in the House of Commons last week, elicited from Mr. Hobhouse a statement that shows the Government are not likely to be turned from their present intention of selling the site of the old school for building purposes. The question was evidently intended to suggest or request a delay in the scheme, so that the London County Council might have further opportunities of making representations to the Government on the question of keeping the site as an open space. Mr. Hobhouse, however, said that regard being had to the exceptionally large area of open space in the neighbourhood, there was no ground for anticipating any prejudicial effects, as suggested, to the health of the community. Replying to a question by Mr. Hoare on the following day, Mr. Hobhouse stated that the Government were advised that in the event of a sale the purchase money should be applied in the provision of a new school, and any surplus dealt with as provided by the Crown Lands Act, 1829. Incidentally, the cost of the new Duke of York's School at Guston, Dover, was given, the figure being £215,986, £185,600 being absorbed by the cost of buildings and laying out the grounds.

The R.I.B.A. By-laws.

We are informed by the Royal Institute of British Architects that "the Privy Council have approved the By-laws, as revised by the general meetings of the 7th and 15th February, 1910, with the exception of the new By-law 24. They have substituted for this the old By-law 22, with the addition of the Licentiates, and they have asked the Council to submit an amended form of words with reference to the action to be taken towards members who take part in competitions against the wish of the Council. This amendment will be taken into consideration by the Council without loss of time, and then recommendations will be submitted to the General Body."

Obituary.

At the last meeting of the Royal Institute of British Architects, the Hon. Secretary, Mr. Henry T. Hare, announced the deaths of the following gentlemen: Mr. William Mansfield Mitchell, R.H.A., Past President, Royal Institute of Ireland, of Dublin; Mr. Jesse Horsfall, F.R.I.B.A., Manchester; and Mr. Charles Albert Munday, A.R.I.B.A. We also regret to announce the sudden death of Mr. William Owen, F.R.I.B.A., of the firm of William and Segar Owen, Warrington, on April 5th.

National Parks.

Discussing the proposals that have been made from time to time for the establishment of a British national park, a "Times" leader-writer concludes that the preservation of a number of comparatively small areas, each for the sake of its own local features, is the policy which is dictated in this country alike by natural and economic conditions. This policy is as applicable to areas set apart for the sake of their indigenous wild life as to spots distinguished for their scenic beauty or unique historical associations. More can be done in this country by watchfulness to prevent the extermination of birds, animals, and plants in small separate areas than by any attempt to create a kind of artificial Garden of Eden, with all creatures dwelling together under the eye of mankind in disregard of their natural habits. Though we cannot in this country set aside a single area for the preservation of all our rarest and most beautiful species, there is no reason to prevent our extending to them equally full protection on a more widely distributed basis. This is a question that town-planners are taking into serious consideration, and any serious contribution, such as the "Times" writer's, towards the solution of so interesting a problem is very welcome.

The Auld Brig of Ayr.

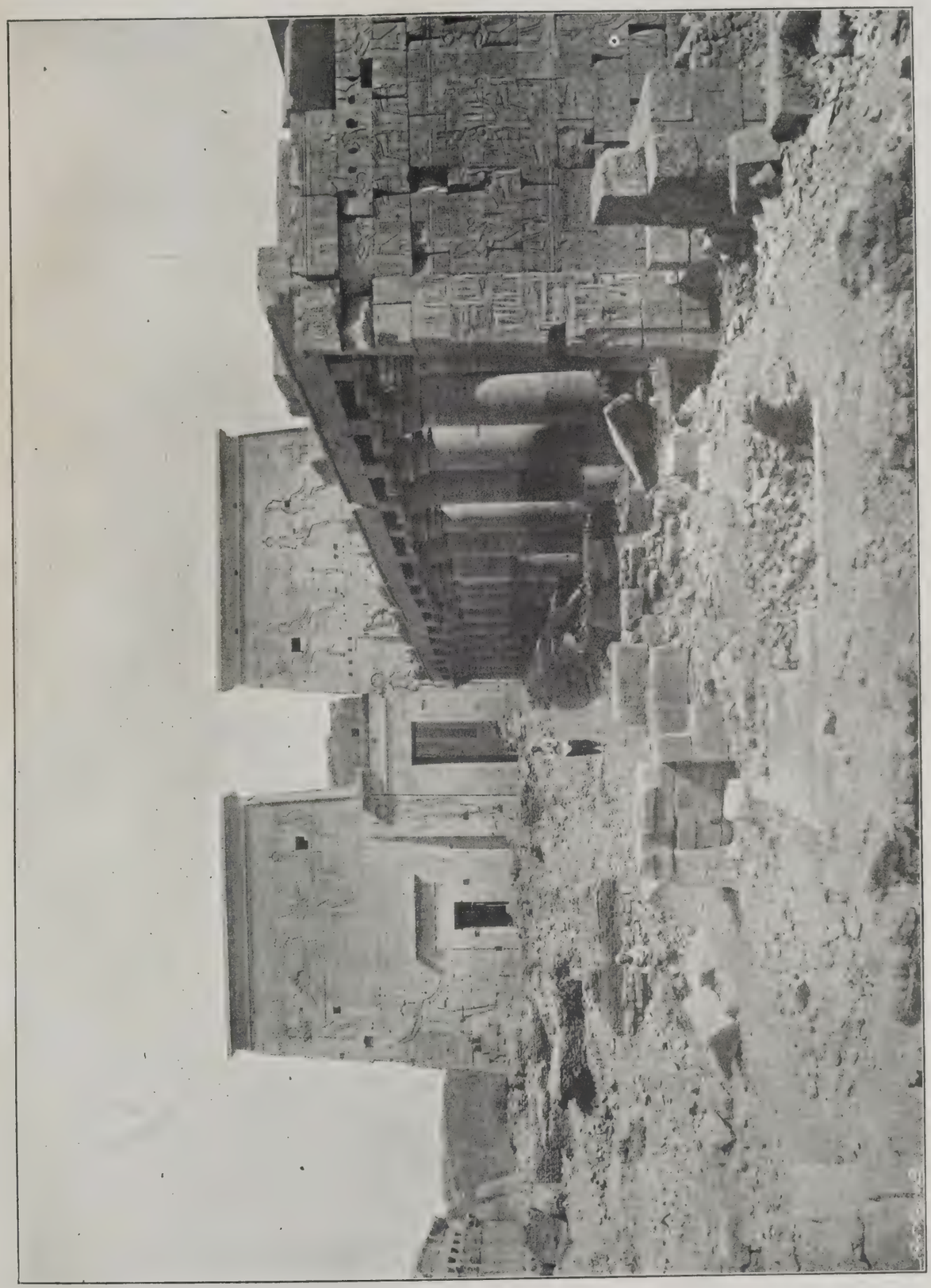
The works for the preservation of the Auld Brig of Ayr, which have been going on for three years, are now practically complete. Five years ago a great effort was made to save the old bridge, which had become unsafe, and was about to be rebuilt. Lovers of Burns were much alarmed, the engineering profession was so much moved that many engineers voluntarily surveyed the bridge, and Lord Rosebery uttered an earnest plea that it might not be wiped out of existence. The movement, thus powerfully supported, was, happily, crowned with success. The Town Council's first intention was reversed, and the bridge, which will be thrown open to the public this summer, is Burns's Auld Brig of Ayr, instead of a new bridge, which would have merely marked the site where the Auld Brig had been. There is, says the "Scotsman," no material change in the outward aspect of the bridge, but the fact that there is so little show for the expenditure of over £11,000 may be taken as an indication of the judicious manner in which the experts have carried out their work. Every stone in the structure was examined and probed, and every joint was cleaned out to an unusual depth and filled in with strong cement. The contours of the old bridge have been preserved, and even the broken-backed south arch is untouched, and it retains its abnormal appearance. The stone in the east parapet with the now almost obliterated outlines of two heads, said to be those of two ladies who originally built the bridge, is in its old position, and the undulations of the roadway also, to some extent, remain as before. The operations have brought to light the rudiments of an old gatehouse or watch-house on the east side. It is not considered probable that the Auld Brig of recent historic times is the original bridge, but there can be no doubt that it is the Auld Brig that Burns immortalized, and it is still substantially the structure that he knew. The whole work of preservation has been carried out under the personal superintendence of Mr. W. S. Wilson, C.E., Glasgow, and Mr. J. A. Morris, F.R.I.B.A., with whom was associated Mr. John Young, Burgh Surveyor, of Ayr.



Photo G.P.P.

Some 300 of these statues are being completed for the festival for which extensive scenes, reproducing St. Paul's, Westminster Abbey, London Bridge etc., are being constructed.

STATUES FOR THE FESTIVAL OF EMPIRE AT THE CRYSTAL PALACE.



This gives a very good idea of the Egyptian incised figure sculpture as portrayed in complete profile.

PHILAE: THE OUTER COURT OF THE TEMPLE OF ISIS, LOOKING NORTH.

(Sculpture as Applied to Buildings.)

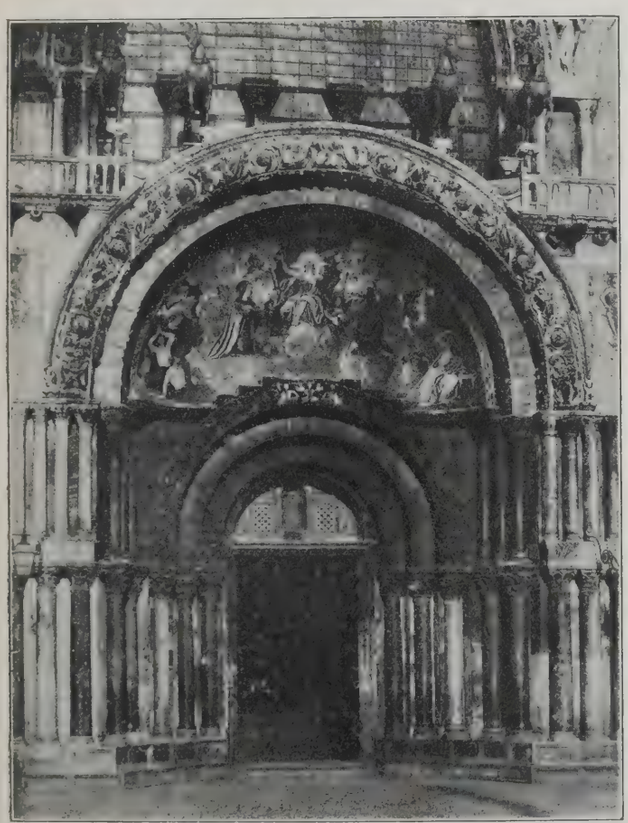
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SCULPTURE AS APPLIED TO BUILDINGS.

By F. W. POMEROY, A.R.A.

[*This interesting and descriptive lecture formed one of the series given at the Carpenters' Hall. Mr. Pomeroy, in face of the immense field covered by his title, gave a general survey from the earliest times to the present day, illustrating each period by examples shown on the screen.*]

IT is quite impossible in one lecture or in a series to give you an adequate account of figures and sculpture in connection with architecture; all I can do is to draw your attention to certain qualities which are necessary. First I would draw your attention to certain terms used among sculptors. Sculpture is derived from the word *sculpo*, "I carve," and is applied to all imitation of natural forms, whether modelled in clay or wax, carved in wood or ivory, or hewn in marble or granite. Sculpture is divided into two classes: (1) All complete figures, whether single or grouped, seated, standing, or recumbent. (2) All figures placed in a flat plane, called bas-reliefs. This second division is distinguished further as: (a) Bas-relief where figures are in low relief, only projecting slightly. (b) Mezzo-relief, when figures are half in the round. (c) High-relief, or alto-relief, where figures are standing well out, but slightly attached to the flat background. In Renaissance and modern work we find all these types. The management of relief work requires great skill. Simplicity is one of the most necessary conditions of fine bas-reliefs. Bas-relief work has some of the principles of painting, and some of the finest sculptures existing are of this type. The ancient Egyptian sculptors, of whom the Greeks learnt so much, placed their figures on their bas-reliefs in complete profile, and the Assyrians also adopted this plan. Now take sculptured figures in the round. When a statue or figure is rather above natural size it is called "heroic." This is from eight to ten feet in height. The Greeks used 8ft. 4in. for their figures in the tympanum of the Parthenon. When they are above this height they are called colossal, and when half life size "statuettes." Material is a great consideration; whether it be hard or soft it influences the design and treatment. We will begin at the period of which we have actual record. By these examples we shall see that the early progress of art was a gradual one.



THE MAIN WEST DOOR, ST. MARK'S, VENICE. AN EXAMPLE OF ROMANESQUE SCULPTURE.

("*Sculpture as Applied to Buildings.*")



Photo: Mansel

DETAIL FROM THE FRIEZE OF THE PARTHENON IN THE BRITISH MUSEUM.

("*Sculpture as Applied to Buildings.*")

Periods of Sculpture.

We will divide sculpture into five periods:

(1) Early Egyptian and Assyrian.

(2) Antique, by which we comprehend Greek and Roman to the end of the fourth century, namely, from 700 B.C.—400 A.D.

(3) Mediæval sculpture, embracing all the periods from the sixth to the fourteenth centuries.

(4) Period of style of the Renaissance, or new birth, from the fourteenth to the close of the seventeenth century.

(5) Dating from the close of the seventeenth century to present times.

Egyptian Sculpture.

The early Egyptians had a wonderful knowledge of sculpture, and used granite, porphyry, and other materials, and their carvings have come down to us as perfect as when they were carved. They had the power of impressing the beholder with finely conceived masses.

Greek Sculpture.

At the fall of Nineveh, B.C. 606, early Greek work was in its infancy. At about this time attempts were made to take records of the victors in the Olympian games. In these statues much more attention was paid to a man's body and limbs than to his face, as a man was known more by his limbs than his face. In the early period of Greek art the gods were only distinguished from one another by their dress, and both in sculpture and painting had their names written on them.

In the best period of Greek art these attributes become of little importance and are sparingly introduced. Slides were shown of the pediment with tympanum of sculptured figures from the temple at Aegina. These Etruscan figures were quite detached from the background, this being essentially a potter's work. It is also interesting that the figures in the pediment follow up the line of the columns underneath. Views of the Acropolis followed, with details of the fragments of the figures from the pediments of the Parthenon, together with larger scale details of each figure separately, these being, the lecturer said, the finest things the world has ever seen. Several metopes, and various views of the great frieze which runs all round the building within the peristyle, were also shown, and in all of these latter the front plane

carving should be noticed, that is, that the surfaces are cut back from the front. The Madeleine, Paris, was shown as an illustration of how imperfectly the tympanum is filled. The sculpture itself is very beautiful, but only shows that the sculptor should be called in to advise earlier in the day.

One of the Caryatide figures from the Erectheum, that masterpiece of Greek art the Nike of Samothrace, a piece of the frieze from the Mausoleum of Halicarnassus, and a piece of the frieze from the Temple of the Wingless Victory completed the examples of Greek art.

Roman and Romanesque Sculpture.

The Romans were not so artistically inclined a people. They began by conquering the Greeks and copying much of their work. They also derived much of their art from the Etruscans, who introduced the round arch, brought from Asia Minor, and, using this as a powerful means of support, it became a great factor in their buildings. The toga was also originally derived from the Etruscans. The Romans first contented themselves with copying Greek work, but in the reign of Augustus they gave themselves over to portraiture, and some very fine examples were produced. The figure of Hadrian, an Etruscan tomb of terra-cotta, and some tanagra figures from the British Museum were shown. The Romanesque or Byzantine period commenced when the seat of the Roman Empire was removed in 320 A.D. from Rome to Byzantium, and the Church of St. Sophia at Constantinople is the most typical example of this type of architecture. St. Mark's at Venice and a church at Ravenna are also fine examples of Byzantine architecture. The use of mosaics became general in the Byzantine churches.

Mediaeval Sculpture.

At the beginning of the Christian era sculpture was in a parlous condition, and it was not until the twelfth century that the art of figure sculpture can be said to commence. Some early sculpture was shown from a church at Arles, in the south of France, Chartres Cathedral, whose long lines of figures harmonize so well with the architecture, and Rochester Cathedral. The sculpture of the Early English period in England from Wells Cathedral is equal in beauty of decorative effect to anything on the Continent. Some interesting tombs from Exeter, showing the slab-like treatment, were shown, and also some carving from the choir stalls at Amiens Cathedral, and one of the famous bronze statues at Innsbruck.



The Romanesque churches show decorations with mosaic rather than sculpture.

INTERIOR, ST. APOLLINARE IN CLASSE, RAVENNA.

("*Sculpture as Applied to Buildings.*")

The Renaissance.

The Renaissance really began by Nicolas Pisano, who, in 1278, had to design a pulpit for the cathedral at Pisa, and who derived his studies for the carving on the pulpit from a Roman sarcophagus in the Campo Santo at Pisa. A specimen of marble pattern on a flat surface was contrasted with a modelled surface by Giovanni Della Robbia, and the famous statue of St. George by Donatello was also shown. Every period of art generally contributes to the progress of art in two ways: (1) New things are created, and (2) old things are devised in a new way. The Colleoni statue, Venice, the statue of Lorenzo de' Medici by Michelangelo, were shown,



The two figures on the sarcophagus are "Dawn" and "Twilight"—Dawn being represented by the female figure on the right; Twilight by the demi-god figure on the left.

SCULPTURE AS APPLIED TO BUILDINGS: THE TOMB OF LORENZO DI MEDICI, SACRISTY OF SAN LORENZO, FLORENCE, BY MICHELANGELO.

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CHARTRES CATHEDRAL: SCULPTURE ON THE WEST FRONT
(Sculpture as applied to Buildings.)



Photo: Mansell.
STATUARY GROUP, "LA RÉSISTANCE," ON THE ARC DE TRIOMPHE, PARIS. ANTOINE ÉTEX, SCULPTOR.
Sculpture as applied to Buildings.)

and then a fountain in Vienna, showing the appropriate use of figures on a fountain.

Modern Sculpture,

The lecturer remarked that there were few good fountains either in England or France, but drew attention to the beautiful one in Piccadilly Circus, which would be much improved, he said, if the bad architectural setting around it were removed. Groups from the Arc de Triomphe and the Opera House, Paris, and the tomb of Alexandre Dumas, with sculpture by Gustave Doré, which showed, Mr. Pomeroy said, how not to do it, as this example contained all the vicious qualities of sculpture; some work by Rodin, a specimen of work by Flaxman, who received little patronage from his fellow-countrymen, and the Wellington Monument in St. Paul's Cathedral by Alfred Stevens, who died practically



Photo: Mansell.
STATUARY GROUP, "LA DANSE," ON THE FACADE OF THE OPERA HOUSE, PARIS. JEAN BAPTISTE CARPEAUX, SCULPTOR.
(Sculpture as applied to Buildings.)

broken-hearted, owing to the lack of appreciation for his talents in this country; and, lastly, a group, "Hounds in Leash," by the late Harry Bates, finished the lecture. Bates also died young, and though he had very little training was a most wonderful sculptor.

Of the illustrations accompanying this report of Mr. Pomeroy's paper, the view of the Outer Court of the Temple of Isis at Philae will be of interest, not only because the recent barrage schemes on the Nile have now obliterated this beautiful relic of ancient Egypt, but also because it illustrates very clearly the profile presentation of Egyptian sculpture. The detail view of the centre west doorway at St. Mark's is not often seen; that of Chartres is fairly familiar. The group, "La Résistance," on the Arc de l'Étoile, or the Arc de Triomphe, as it is popularly called, at Paris, is by Antoine Etex; the most famous of the groups there is by François Rude, and is frequently illustrated.

BRUNELLESCHI AND THE RENAISSANCE.

By PROFESSOR BERESFORD PITE, F.R.I.B.A.

[*This is the second and concluding part of a short abstract from a long and interesting paper read before the Architectural Association. The first part appeared in our issue of last week. A considerable portion of the paper consisted of historical references, extracts from contemporary documents, biographies and critical studies of the Italian Renaissance, which helped admirably towards an understanding of the times and events which influenced Brunelleschi and his contemporary artists. Exigencies of space compel us, however, to confine our summary to the more important events and works of this great master as set forth in Professor Pite's paper.*]

The Board of Consuls appointed four additional citizens as assessors to assist them in deciding, and spent some months in anxious deliberation upon the models. Brunelleschi presented a report which has been preserved in the pages of his biographer and Vasari. The latter depicts the author as previously discussing with the committee in such growing heat at their inability to understand him that they ordered him to leave the room which, he refused to do, and was removed, though, ultimately, as we have seen, he was appointed with two colleagues.

Brunelleschi's Report.

The report is of sufficient clearness to guide us to an understanding of his scheme, and may be cited at some length.

The difficulties of this erection being well considered, magnificent signors and wardens, I find that it cannot by any means be constructed in a perfect circle, since the extent of the upper part, where the lantern has to be placed, would be so vast that when a weight was laid thereon it would soon give way. . . . I have, therefore, determined to turn the inner part of this vault in angles according to the form of the walls, adopting the proportions and manner of the pointed arch, this being a form which displays a rapid tendency to ascend, and when loaded with the lantern each part will help to give stability to the other. The thickness of the vault at the base must be three braccia and three-quarters; it must then rise in the form of a pyramid, decreasing from without up to the point where it closes and where the lantern has to be placed, and at this junction the thickness must be one braccia and a quarter.

A second vault should then be constructed outside the first to preserve the latter from the rain, and this must be two braccia and a half thick at the base, also diminishing proportionally in the form of a pyramid in such a manner that the parts shall have their junction at the commencement of the lantern, as did the other, and at the highest point it must have two-thirds of the thickness of the base. There must be a buttress at each angle, which will be eight in all, and between the angles in the face of each wall there shall be two, sixteen in all; and these sixteen buttresses on the inner and outer side of each wall must each have the breadth of four braccia at the base. These two vaults, built in the form of a pyramid, shall rise together in equal proportion to the height of the round window closed by the lantern. There will thus be constructed twenty-four buttresses, with the said vaults built around, and six strong and high arches of hard stone, well clamped and bound with iron fastenings, which must be covered with tin, and over these stones shall be cramping-irons, by which the vaults shall be bound to the buttresses. The masonry must be solid, and must leave no vacant space up to the height of five braccia and a quarter; the buttresses being then continued, the arches will be separated. The first and second courses from the base must be strengthened everywhere by long plates of hard stone laid crosswise, in such sort that both vaults of the cupola shall rest on these stones. Throughout the whole height, at every ninth braccia, there shall be small arches constructed in the vaults between the buttresses, with strong cramps of oak, whereby the buttresses by which the inner vault is supported will be bound and strengthened; these fastenings of oak shall then be covered with plates of iron, on account of the staircases. The buttresses are all to be built of hard stone, and the walls of the cupola are, in like manner, to be all of solid stone bound to the buttresses to the height of twenty-four braccia, and thence upward they shall be constructed of bricks, or of spongite, using the lightest. Eight ribs of marble shall be formed at the angles of the external surface of the cupola of such thickness as shall be requisite; these shall rise to the height of one braccia above the cupola with cornices. Thus the cupola shall be constructed after such manner as shall be determined by the masters who may have to build it, since practice teaches us by what methods to proceed.

This remarkable document shows actually the parting of the ways between rib-vaulting and domical construction. The horizontal linking together of the buttress ribs with lateral arches, the provision of double vaults, and the clear perception of the effect of putting weight upon a semicircular vault, all evidence an intelligent discerning analysis of the Roman examples.

The design included a great bond of timber near the base, bound with iron ties, to encircle the dome and collect any outward thrusts; this was completed in August, 1423. The position, intention, and design of this tie is interesting in connection with the Italian practice of relying upon ties to their Gothic arches; this bond timber has answered its purpose fully, and, realising that the whole stability and success of the vault consisted in maintaining a horizontal system by means of the connecting arches between the buttresses, we regard this timber bond as an additional precaution illustrating the same principle.

We cannot stay to dwell upon the interesting story of Brunelleschi's relationships with the Guild properly charged with building, who actually once locked him up for being a blackleg, or his professional difficulties with Ghiberti, whose appointment resulted in nothing but unpleasantness. Brunelleschi's mechanical and organising genius found ample scope in the design of flying scaffolds and screens, after that the vault had risen to a point where it became dangerous to the workmen, but consistent perseverance with the system of horizontal binding by arches, the wooden bond, and series of stone cross-ties between the two vaults succeeded, so that at length, on June 12, 1434, the cupola closed over the central space. The lantern still remained to be its crown. For this Brunelleschi had made a model, but the co-operative idea was so strong that other designs were invited and considered, among them one by an adventurous but aristocratic lady.

Meetings and discussions ensued, and on December 31, 1436, the Board unanimously decided "that the said lantern should be constructed and built according to the model of Philip Master Brunelleschi, and that the ordering and execution of the work should be committed to Philip."

The procuring of marbles for this work and some years of delay ensued, together with war, plague, and contentions. The funds fell off, Brunelleschi's salary was reduced one-half; for three years there is no record of work. In 1445 it was resolved that "Philip, who said that he could do the work," be appointed "sole overseer for the term of his life"; with the extraordinary qualification but "no longer," at a salary of 100 florins annually.

Brunelleschi was now 69, and died on April 16, 1446, without seeing the completion of the lantern.

Brunelleschi's Other Work.

Brunelleschi's life-work was not, however, confined to or limited by the completion of the Duomo; in 1420, the year of the model of the cupola, he began the erection of the Mortuary Chapel for the Pazzi family in the cloister of Santa Croce, a small rectangular apartment covered by a most interesting convoluted dome supported upon pendentives; this work exhibits with fullness the charm of Brunelleschi's power as a draughtsman and designer. The elegance, refinement, and originality of the whole are wonderfully fascinating and characteristic. The original vigour of the vaulted atrium, with its delicately moulded attic storey and beauteous frieze, the delicacy of the doorway, and the entire freshness and grace of the relief and treatment make this work a gem of Renaissance, as it indeed is its first full architectural flower.

In 1421 he designed the portico to the Foundling Hospital, which has the celebrated bambinos of della Robbia, a work characterised by the same delight in graceful proportions and refined mouldings, qualities which, it may be noted, were not derived first hand from Classic precedent, but infused by his own genius.

Other Churches.

In 1426 the foundation of the great church of San Lorenzo was laid; in the simplicity of this plan and the great success of the order and arcade, the same quality of refined grace is working upon a basis, well laid, of early basilican planning. The late Roman tradition is laid aside, and the architectural value of the order demonstrated without pedantry or antiquarianism.

The sacristy, the older one, of San Lorenzo, the Medici Chapel, with the monuments by Michelangelo being called the New Sacristy, is also one of the most remarkable and successful buildings of Florence. The dome is employed upon properly developed pendentives over the square apartment, and again over the altar recess. The fresh originality and freedom is very interesting, the architect evidently feeling his way to originality in dealing with his problem, reflecting with ease and pleasure the fruits of his classic studies.

The Church of San Spirito was begun in 1428, and follows San Lorenzo very closely both in plan and effect; these make a remarkable pair of churches, like sisters resembling each other with a charming family grace and elegance.

No work of Brunelleschi's after the Pazzi Chapel has such a direct appeal to an eye jaded with the later richness of the Renaissance as the Badia at Fiesole, illustrated and described with enthusiasm by Mr. Anderson. It illustrates remarkably that the discovery of the inexhaustible store of Classic ornament, and of its luxurious use, had not in any way corrupted a strict and almost Puritan taste in the employment of decorative features. The cloister, the chapel, and the refectory are simply delicious in their delicacy, and in the complete value accorded to each ornamental feature and element. The



This figure is part of the monumental doors for the Museum of Decorative Arts at Paris, on which M. Rodin has been engaged for a great number of years. The whole work suggested by Dante's Inferno is called "La Porte de l'Enfer." "Le Penseur" is seated in a recess above the actual doors, and dominating the whole.

SCULPTURE AS APPLIED TO BUILDINGS: "LE PENSEUR," BY AUGUSTE RODIN.

proportions are not guided by any convention, and are fresh and natural to the building. The carving evidences the fastidiousness of a goldsmith in dealing with a rare opportunity in a precious metal.

The civil buildings that fell to Brunelleschi are neither few nor unimportant. His reputation brought him private patrons, for whom he designed the immense Pitti palace; the setting out of the immense façade to the Piazza is his, though the front to the Boboli Gardens is after and by Ammanati.

What the Renaissance movement owes to Brunelleschi it is not easy to estimate; the debt is at once so great and so involved with the completion of mediævalism.

Mr. H. H. Statham remarked upon the glamour that surrounded the name of Brunelleschi, and the remarkable foresight that characterised his work. An example of this was the insertion of the requisite ties in the dome. Lack of these had almost proved the downfall of the dome of St. Peter's at Rome. He wondered why Brunelleschi had not made a circular dome with small pendentives. It would be interesting to know the method by which the dome was constructed. The delicacy and restraint with which the moulding were treated was admirable; and quite a different effect from the usual Renaissance form was produced. He always inclined to the spherical dome as being a thing of greater beauty than the octagonal form.

Mr. Allen Potter observed that they had had two personalities before them—Brunelleschi and Professor Pite. Until two years ago the construction of the dome without the aid of centering had been to him (Mr. Potter) an entire mystery. A suggestion had then been made by a gentleman in Florence that the inner shell of the dome was the permanent centering of the dome. Just as the circular dome on pian was built on an arched wing, so was constructed a dome of eight sides on eight flat arches, which created a thrust at the angles. What were usually said to be ribs were really buttresses to the shell. Brunelleschi went to Rome with a definite ambition—to learn how to dome the Florentine cathedral. With Brunelleschi details were details, and not features; and the supreme importance of constructional accuracy was always the prevailing consideration. Mediæval influence was evident in the plan, which expressed monasticism converted into terms of a Roman Christian church of the time of Constantine. Replying to Mr. Statham, who then asked whether each face was a flat arch, Mr. Potter replied yes, but he thought not visibly so.

Mr. H. P. G. Maule emphasized the importance which Brunelleschi attached first and foremost to construction, and allowed effect to take a secondary position. The lecture illustrated admirably the vital necessity of solving constructional problems.

The Chairman. Mr. C. Wontner Smith, wondered that the great weight of the lantern imposed upon the top of the dome had not forced the sides out. It was curious that domes should cause so much sensation. Perhaps in the case of Florence the reason was to be found in the fact that this was the first dome to be constructed with an inner as well as an outer face.

The Lecturer. Professor Pite, in reply, said evidence proved that Brunelleschi had had special bricks made for the construction of the dome. Mr. Statham asked whether Vasari had not mentioned bricks with a rebate on top for the purpose of fixing. Mr. Pite agreed that it might be so, but Vasari was a somewhat unreliable authority. Mr. Potter's point was by no means new; and with regard to the creation of a dome with pendentives, this was rendered impossible by the height that had already been reached when Brunelleschi commenced operations. A model had been built at the time demonstrating the height to which a dome could safely be constructed of bricks. The cone of St. Paul's dome, London, Professor Pite recalled, was built of brickwork without centering. Brunelleschi insisted, and rightly, that the more weight placed on the dome the more stable it would become.



Photo: Mansell.

THE CHURCH OF SAN LORENZO, FLORENCE. FILIPPO DI SER BRUNELLESCHI, ARCHITECT,

(Brunelleschi and the Renaissance.)

DISCUSSION.

Mr. Spencer Beckwith proposed a vote of thanks and observed that what greatly interested him was the spaciousness of the Italian churches. Gothic was introduced by the Franciscans to fill a great need of the day, namely, that of preaching; and it seemed reasonable to assume that the style was imported from France. He believed that it was the really great personality of Brunelleschi that made him in architecture what Giotto was in painting, and Donatello in sculpture.

Mr. Walter Cave seconded the vote of thanks, and said that the great point of the lecture was the individuality of Brunelleschi. History showed that architecture came gradually from the East to the West; and when, therefore, Gothic went to Italy, it was going back, and was doomed to failure. He wondered whether it was correct that Brunelleschi and Ghiberti considered only the internal appearance and the construction of the dome, and had no regard for external effect.



This view is of special interest as showing the model by Stevens for the equestrian group in position on the monument, as he intended it. The finished bronze based on this model is being prepared under the supervision of Mr. John Tweed, Sculptor.

THE WELLINGTON MONUMENT, ST. PAUL'S CATHEDRAL. ALFRED STEVENS, SCULPTOR.

ARCHITECTURE ON THE EASTERN SIDE OF THE ADRIATIC.

By GEORGE HUBBARD, F.S.A.

[This is a short abstract of an article read before the R.I.B.A. Mr. Hubbard concludes that it is not the Turk or the Serb who has left the lasting memorials on this side of the Adriatic, but the Latin races and their descendants. Those to the north appear to be mainly of Venetian origin or influence; towards the south the remains are mainly Roman.]

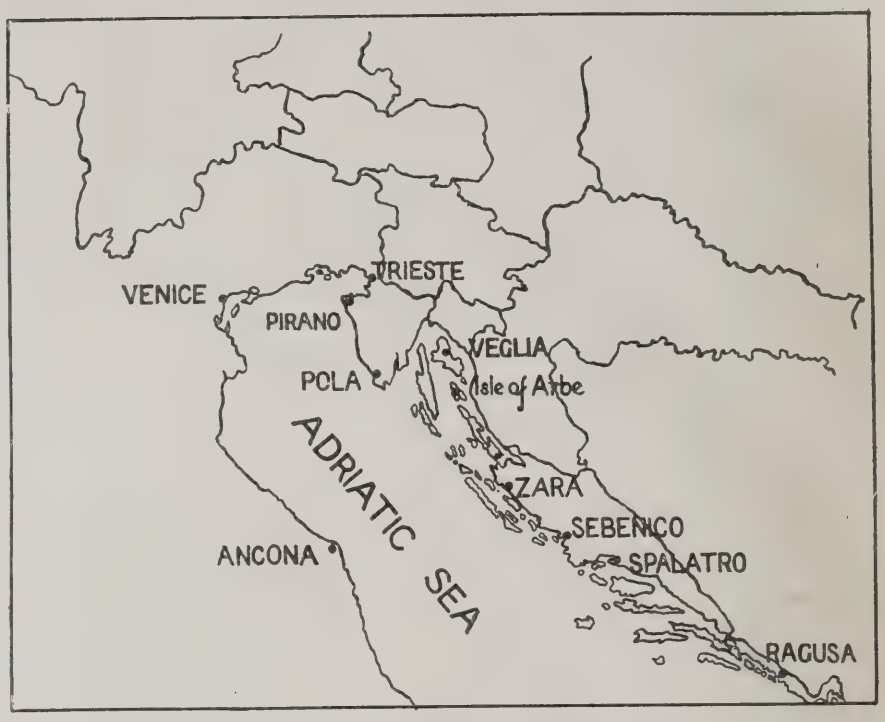
Island of Veglia.—Present walls were built circa 1133, and at the ancient Porta Pisana, under Venetian rule, the Duomo is a twelfth-century building, Byzantine in the main, with a flavouring of Romanesque. The columns, of irregular lengths, appear to have come from some older building. The capitals were made to fit these columns, the irregularity being adjusted in the abaci, so that springing of the arches should be at one level.

Isle of Arbe.—Was under Venetian rule. The Venetian Campanile, circa 1200, is a fine example, 20ft. square at the base and 90ft. high exclusive of the spire.

Pirano.—Has no particular interest, but city walls and towers on the land side are picturesque.

Pasenatico.—An out-of-the-way town, 12 miles inland, and rarely visited by travellers. Church of San Lorenzo was formerly seat of the Venetian Governor of Istria. The building possesses the germs of the Romanesque. So crude is the church that the nave arches are of different heights. Capitals appear to be debased Roman, but bear a Byzantine character, with the large impost blocks. One window, never glazed, in apse of south aisle, is purely Romanesque, and covered with a rough tracery of interlacing circles.

Parenzo.—The Duomo was built between 535 and 543. It is as fine as Sant' Apollinare in Classe at Ravenna or Santa Fosca at Torcello, and in the completeness of its plan with its atrium and baptistery it surpasses them. This Byzantine basilica of the first period has fortunately been spared to us almost wholly in its original state. In 1881 it was necessary to lay a new floor 12 inches above the old one. I saw a still earlier floor 3ft. 9in. below the present one. This may be late Roman work, a floor in fact of a Roman building which stood on the site. The capitals supporting the arches around the atrium are deeply cut, showing in fine relief the rich Byzantine tracery on their convex outline. In some cases the columns appear to have come from an earlier building, as they do not in all cases fit the capitals they support. To the west of the atrium is an octagonal baptistery, with a sinking in the floor where probably a marble lined piscina previously existed. To the west again of the baptistery stands a fifteenth-century Venetian campanile. The perfection of Byzantine art is realised in the interior. The episcopal throne is at the east end of the nave apse, and the marble seats for the clergy are placed right and left of the throne around the sweep of the apse, the ends of the seats being terminated by dolphins. The chief glory of the east end is in the early Byzantine mosaics of the sixth century, which form a high dado above the seats of the clergy. To modern ideas the combination of materials that have been employed in this mosaic may seem incongruous. Burnt clay of a dull deep red colour, obscure glass, polished marbles, and flat oyster shells have all been employed; but combined together they give such an effect as would be impossible of attainment in glass alone. The oyster shells still keep their gleaming pearly whiteness, and give peculiar emphasis to the design. The centres of the panels are sometimes polished slabs of porphyry. On the centre panel, over the episcopal throne, is a gold cross on a ground of serpentine and mother-of-pearl.



MAP ILLUSTRATING THE POSITION OF SOME OF THE TOWNS MENTIONED IN MR. HUBBARD'S PAPER.

It is Mr. Hubbard's contention that it is neither the Turk nor the Serb who has left last memorials on the eastern side of the Adriatic, but the races of Latin descent. On the north, the remains are chiefly Venetian; on the South, Roman.

Pola.—An Austrian naval base, must have been an important Roman town. The shell of a great Roman amphitheatre stands outside the city boundaries. The theatre would hold 21,000 spectators, besides 10,000 who might take part in the performances. This great elliptical hollow shell now forms a mighty enclosure to grazing grounds. At the terminals of the long and short axes, projecting towers have been built. In the windows of these towers curious tracery exists. The tracery is formed by piercing stone slabs and sometimes by the building in of square balusters. Besides the amphitheatre there is the Porta Gemina. Within the town, however, stand two Roman temples, one of which is still perfect.

Zara.—Approached through the Porta Marina, a Venetian structure. Circular Church of St. Donato of the type of San Vitale, Ravenna, or the Cathedral of Aix-la-Chapelle. It has a circular space in the centre rising to the roof, and a two storeyed circular aisle surrounds it. The amazing interest of this church is, however, revealed in its foundations. The earth over a portion of the interior has been excavated to a depth of perhaps four feet, and the foundations exposed. Here, lying in a perfectly promiscuous manner, are great blocks of Roman entablatures, the drums of marble columns, and classic fragments

The cathedral is basilican in plan. This Romanesque building, with its arcaded west front, is considered by Fergusson to be superior to San Michele or San Martino at Lucca, or the Cathedral at Pistoja or Sta. Maria at Arezzo. Its simple west porch, with its members of the arch truly corresponding with the shafts, is very correct in detail. The west front was built in 1324. Another fine example is St. Grisogono, with external arcaded apse and delicate colonnade. It is very doubtful whether anything finer of its kind could be found among the Lombard churches of Italy. Its date is 1175. The west front dates probably from the beginning of the fifteenth century.

Sebenico.—The cathedral is unique in construction, everything being constructed of stone, marble, or metal. The walls and roof are of stone, neither timber nor tiles being employed. The whole construction of the roof over the nave, aisles, and tower is equally apparent, whether viewed from the interior or exterior of the building. The west end and nave were designed in Italian Gothic style by Master Antonio, and built between 1431 and 1441, when Master Giorgio Orsini of Venice was engaged to complete the work. The latter's work exhibits the Renaissance influence.

Trau.—The Duomo is an important building, begun about 1200, and various parts bear dates as completed. The body of the church was completed in 1440; lower part of the tower is dated 1421, but the whole was not finished until 1598. Church is pure Romanesque with basilican plan and a beautiful Galilee porch, perhaps the most perfect Romanesque example that exists. The carved work of this narthex is finished with a marvellous perfection of execution. On either side of the west doorway are great archaic lions, standing on classic consoles; they project out boldly at a height of perhaps six feet from the ground. They support brackets on which Adam stands on the south and Eve on the north, nude figures, life-size, having some of the imperfections of the period when they were executed.

Spalato.—The famous palace of Diocletian is familiar from Adam's monumental work on it, published in 1764. It is a rectangular building, the four walls defended by square and octagonal towers; on the south front, towards the sea, is what Adam called the great cryptoporticus, having a frontage of over 500 feet. From this gallery, or cryptoporticus, some of the royal apartments could be entered. The royal apartments were to the south, and they were flanked on the west and east by an elaborate system of baths. The octagonal building in the south-east section is called by Adam the "Temple of Jupiter," but it is suggested by Dr. Arthur Evans that Diocletian intended the edifice to be his mausoleum. The building is now, however, converted into the Cathedral of Spalato. The small temple in the south-west section was referred to by Adam as the "Temple of Aesculapius." The principal entrance was on the north, which is still called by the ancient name "Porta Aurea" or Golden Gate. The east gate was the "Porta Aenea" or Bronze Gate, and the west gate "Porta Ferrea" or Iron Gate. Anderson and Spiers show four striking departures from true classic in the buildings, which exhibit the decadence of Roman architecture, though Spalato is not the first to exhibit any of them. These four are: (1) The arch over a wide central intercolumniation. (2) Capitals carrying an arch without intervening entablature. (3) Columns carried on corbels. (4) The accentuation of the Roman relieving arch over a lintel by enriching it with mouldings.

Salona was a mighty city, destroyed by the Avars. It was surrounded by a wall in which traces of eighty-eight towers have been found. At one of the city entrances three arches stood, the centre one for vehicular traffic and the side ones for pedestrians. The paved roadway here, as at Pompeii, shows worn ruts some 6 inches deep. Within the ancient walls are a great amphitheatre and the remains of a curious Christian basilica. A vast number of stone sarcophagi were being unearthed by Professor Bulié when I was there.

Ragusa is surrounded with massive walls which climb the mountain side. They are stupendous; their very magnitude conveys the impression of impregnability. Great towers stud the circling mighty walls which crown the verge of an inaccessible precipice. The town is approached over a drawbridge. The most interesting building in Ragusa is the Palace of the Rector of the Ragusan Commonwealth, and its complex history has been most cleverly unravelled by Mr. T. G. Jackson, and those who wish to know more about it should read his account of it.

DISCUSSION.

Mr. T. G Jackson proposed a vote of thanks, and said that he knew the country which formed the subject of the lecture better than any other except his own. It was now twenty-eight years since he first saw Dalmatia, and since that time many improvements had been effected. There were now greatly increased travelling facilities — more steamers and more railways—and even Cook's conducted tours were frequent and usual. It was not, however, a tourist country. The roads were atrocious, being mostly mere tracks over stony heaths. There were no guide books when he went; and the sketches by Professor Freeman, whose interest ceased at about the eleventh century, were of no practical use. He had the country almost to himself. Its history, of which there was no proper record in existence, was very curious, and really dual in character. The towns and the country were quite distinct. In the former one saw the embodiment of the old municipalities of the Roman Empire, and the inhabitants spoke in the Latin tongue. The country outside the towns, however, was peopled by Slavs. Government went on, and laws were made with towns without reference to a supreme authority as Hungary or Venice. Each was entirely independent and they dealt with one another quite without external intervention. It thus came about that the history of every town had to be studied separately. Where archives were accessible it was usually found that they had been carefully studied, usually by some local authority. The Dalmatians travelled very little, and had, therefore, a strong patriotic feeling of citizenship. The people had always striven to surpass their neighbours, and this was undoubtedly the secret of the fine monuments which were everywhere found. An almost exact replica of the lancet window at San Lorenzo, to which Mr. Hubbard had referred, was, curiously enough, to be found in Northamptonshire. An extraordinary wealth of treasures in the forms of embroideries, church vestments, silversmiths' work, such as chalices, etc., was preserved in the country. Most of the latter work was of Venetian origin, and in some cases beautifully enamelled. The Slavs themselves produced very little architecture. There were Slav artists, but all were Latinised. The art of the country really came from the Latin population of the cities. Mr. Jackson then concluded his remarks with brief reference to some of his own drawings which had been lent for the occasion, and expressed his hearty appreciation of Mr. Hubbard's paper.

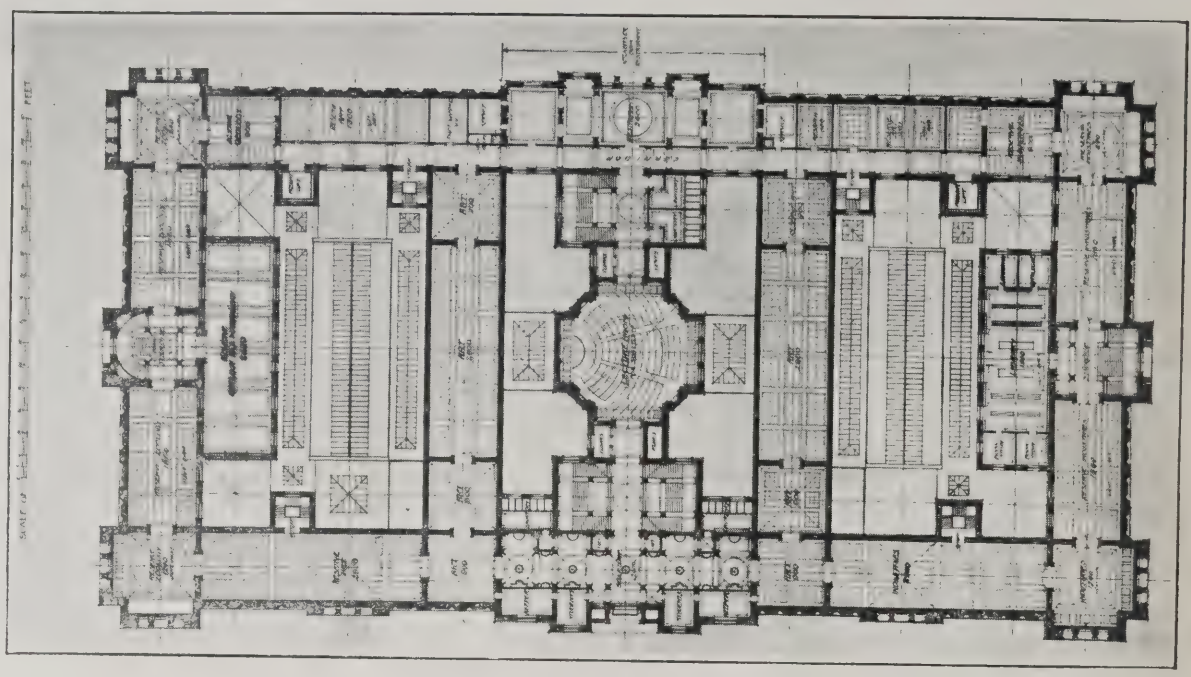
Mr. R. Phene Spiers seconded the vote of thanks, and said that Freeman was not acquainted with much of the work that had now come to light. He then commented upon four features of the Palace of Diocletian, in regard to which some misunderstanding was current, and illustrated his points with lantern views.

Dr. Arthur J. Evans supported, and observed that it was necessary to bear in mind the fact that the architecture was dependent on the physical and geographical conditions of the country. On the coast of Dalmatia civilised life had existed four or five centuries B.C. They had then the Roman conquest; and when Rome passed away the interior relapsed into barbarism. Dialect, wind, and weather, all seemed somehow to fit in with the architecture of the country.

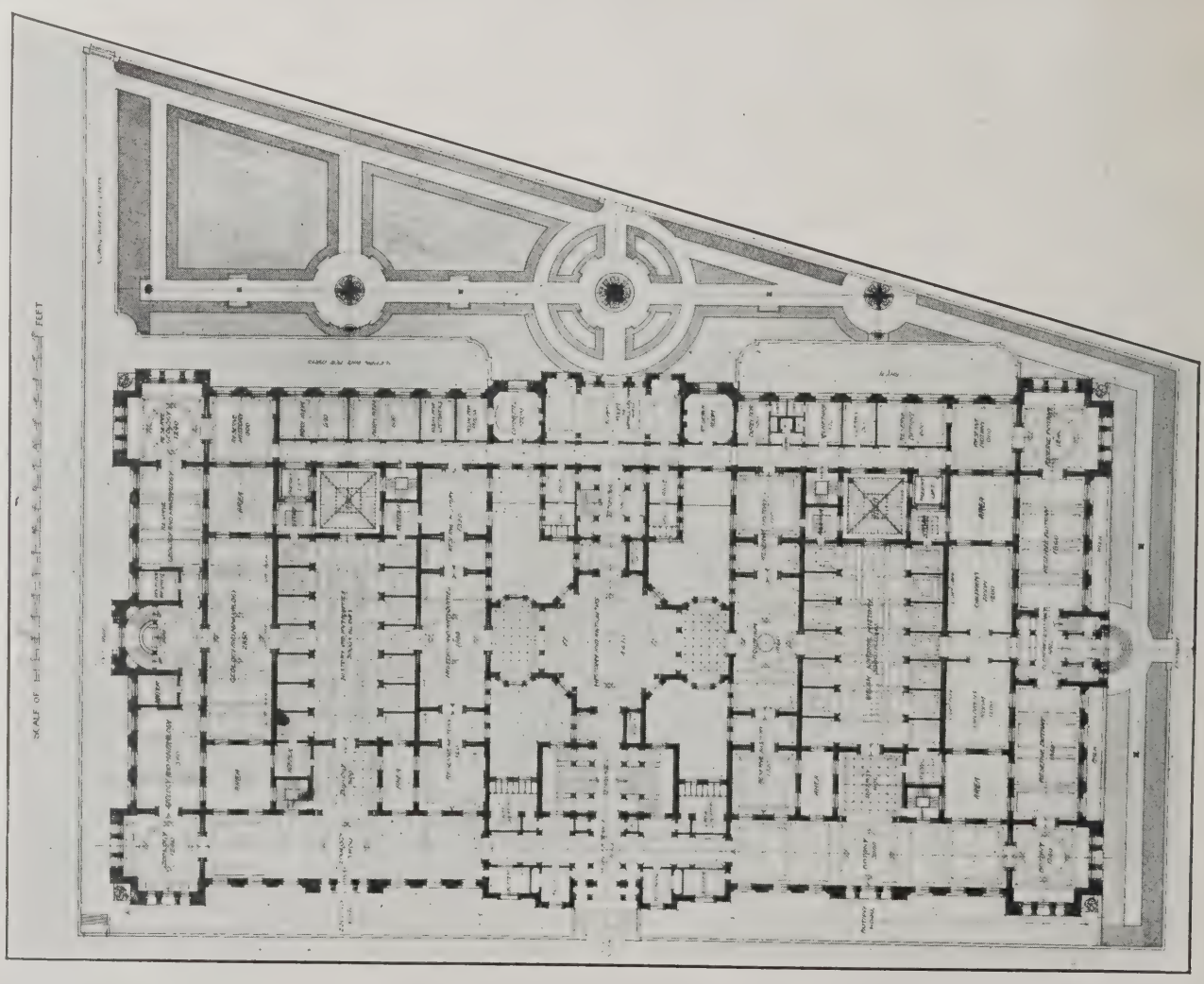
The Lecturer. Mr. Hubbard made a brief reply, and drew attention to an exhibition of costumes, etc., from the Balkan States, which was being held in an adjoining room. He was told that the work was extremely fine; it was all done entirely by hand, no machine being employed.



THE WELSH NATIONAL MUSEUM COMPETITION: DESIGN PLACED SECOND.
T. L. VESPER, ARCHITECT.



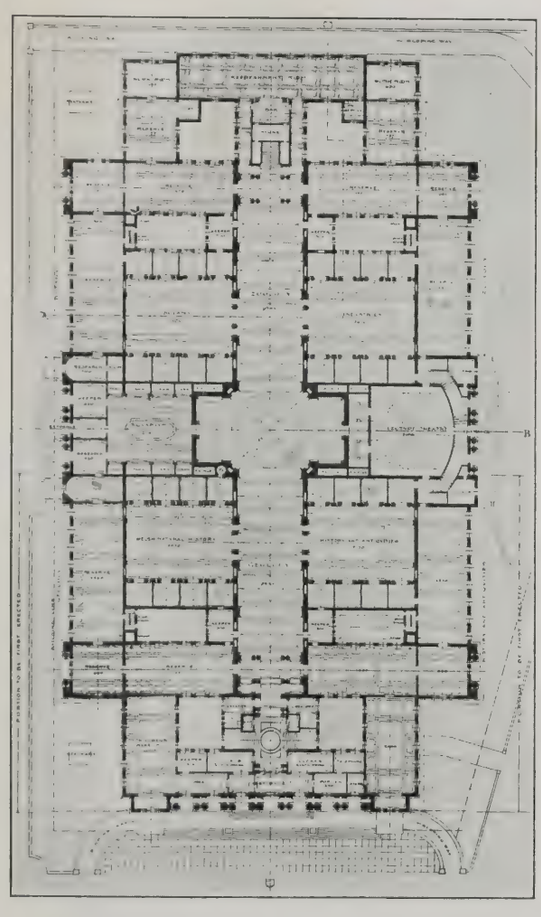
Second Floor Plan.



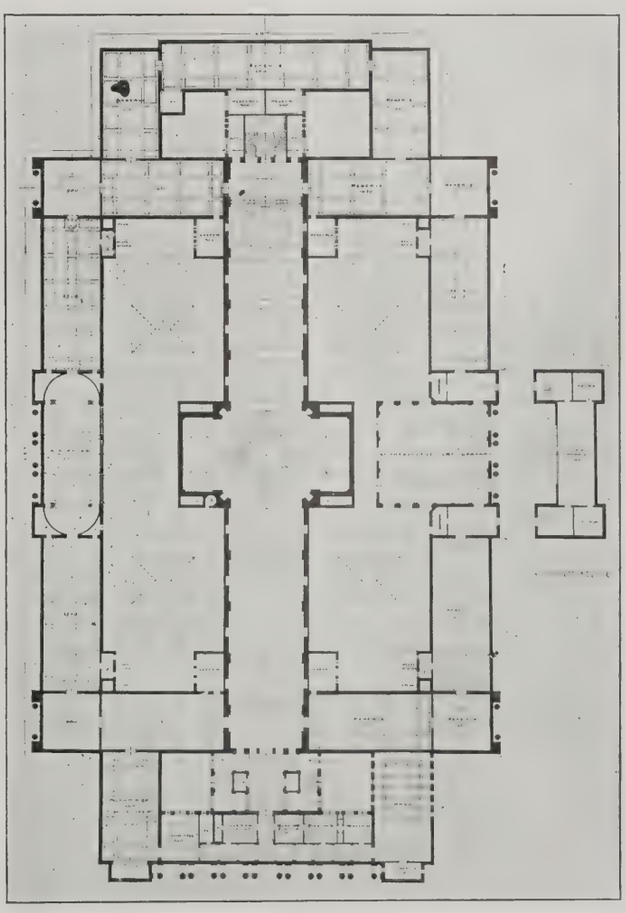
Ground Floor Plan.

THE WELSH NATIONAL MUSEUM COMPETITION: DESIGN PLACED SECOND. T. L. VESPER, ARCHITECT.





Ground Floor Plan.



First Floor Plan.

THE WELSH NATIONAL MUSEUM COMPETITION: DESIGN PLACED THIRD. HENRY T. HARE, F.R.I.B.A., ARCHITECT.

BOOKS.

THE MANOR HOUSES OF ENGLAND.

The Manor Houses of England. By P. H. Ditchfield, F.S.A. Illustrated by Sydney R. Jones. London: B. T. Batsford; 1910.

What is a Manor House? The author quotes from Mr. Scargill-Bird ("Guide to the Public Records"), the definition of a Manor, as follows:—

"A circuit of ground granted by the King to some baron or man of worth, as an inheritance for him and his heirs, with the exercise of such jurisdiction within the said compass as the King saw fit to grant, and subject to the performance of such services and yearly rents as were by the grant required."

The manor house, therefore, was the principal house on the estate, the dwelling of the person thus dowered by the King. It was not a mansion or a palace, but essentially a dwelling-house, built (in Bacon's phrase) "to live in and not to look at," and built almost invariably with the materials nearest to hand, and with local labour. Hence those old manor houses which are still remaining are not only most valuable historical records of the methods of planning and building dwelling-houses in the country at different periods, but they are examples, mostly, of simple and unpretending architecture, in which the effect arises from the natural disposition of the plan and the windows, and in which the details are in general those which were the vernacular of the country craftsman of the period.

About such buildings there is a great charm, and we entirely sympathise with Mr. Ditchfield in his love for them, and in his desire to collect illustrations of many of those which remain, some of which possibly may not remain much longer. But he writes a little too much like an antiquary, who sees in these old houses, because they are old, a charm which, it must be remembered, is to some extent the effect of time. All these houses were brand-new once; in most cases they were probably not regarded as picturesque nor intended to be so—by the men who built them. There are occasional exceptions to this (one or two of which we shall have to note); but in most instances they were practical house-building for a practical purpose, and if we could have seen them as they were when they were just finished, we should perhaps realise that a good deal of the glamour about them arises from the effects of weathering, and from the mere fact that they represent the work of a day long past, which has always an added interest of association. Nor can it be claimed that these simple houses represent architecture in the fullest sense of the word, or that, in admiring them, it is necessary to sneer, as the author does, at the great Elizabethan and Jacobean mansions. We shall continue, in spite of Mr. Ditchfield, to admire Wollaton and Burghley, and Hatfield and Longleat, and to think them worth more than many manor houses, with the advantage that we can admire both types of house in their several ways, while the author's devotion to the manor house seems to leave him no room for appreciating the mansion.

We regret to find, too, in Mr. Ditchfield's pages, the repetition of that gibe at the architect which is so common now among a certain class of dilettante writers, who would persuade us that in the (presumed) absence of the architect lies the secret of the charm of these old houses. The Tudor squire, he says, himself superintended the building, kept the accounts, and arranged the plans and the conveniences of the house according to his liking. "When we, in these days," says the author, "wish to build a house, we engage an architect. We tell him some of our ideas and vague notions, but we leave the whole matter in his hands. We order a house as we would order a motor-car or a portmanteau." Some architects, whose patience has been much tried by clients with "vague notions" which they were unable to define, but which, nevertheless, they were insistent on realising, would be only too glad if the client did in reality "leave the whole matter in their hands." But Mr. Ditchfield, with his evidently archæological turn of mind, forgets that the planning and designing of a house in the present day must comply with modern requirements of convenience and sanitation, and that it is much more of a scientific matter than it was in the days when the old manor houses were built. The happy-go-lucky method of carrying out a house after the whim and under the personal direction of the owner leaves it with the charm of naïveté, no doubt, besides that charm of age and weathering already referred to; but a modern owner who planned and sanitated his house no better than this would be laughed at and considered a "crank" by his friends who came to dine or stay with him. The days of naïveté in house-planning are past, except with some few architects who seem to think that small windows and buttresses in unexpected places will atone for any inconvenience in planning.



WEST BOWER FARM, NEAR DARLEIGH, WEST SOMERSET
(From "The Manor Houses of England.")

Apart from this prejudiced view of the subject the book is very well done, though the chapter on "The Evolution of the Manor House" sums up the subject rather too briefly, and with two few examples for so comprehensive a title. The view of Studley manor house, with its formal design and the roof concealed by a parapet, is effectively placed at the end of the chapter, as an example of the loss of character in this formal type of exterior for a small house, as compared with the earlier examples; though it is very likely a better house in interior design. But the real value of the book is in the amount of illustration of houses and workmanship in the following chapters on "Materials of Construction," "Exterior Details," and "Interior Details"; and Mr. Sydney Jones's sketches are excellent.

In treating of materials used, the author comments very well on the influence of material on the design and character of the house, at a time when materials were not sought for from a distance, and the sole object was to use them as well as possible for the work in hand. Among the stone houses illustrated, West Bower Farm, in Somerset, is one of those rather exceptional ones which seem to have been consciously designed to produce an effect, with its two octagonal turrets with windows round them in the upper portion, flanking the original entrance. We agree in thinking that the portion with a lean-to roof, whereby the entrance door is pushed out to the outer plane of the turret walls, is a later addition,

and a disfigurement compared with the probable appearance of the original building. This is a late fourteenth-century house, or perhaps early fifteenth, with pointed windows in the turrets. The plan has probably been too much altered to be worth giving in this case; but in a general way there are too few plans, the houses being mostly illustrated only as to their perspective effect. Oakley Hall, of the late domestic Gothic type, is an instance of that pleasing feature, the large mullioned window marking externally the position of the hall, which is almost a characteristic of the houses of this period. We should certainly have liked to have a plan of this house; also of Shipton Hall, in Shropshire, to have seen how the picturesque square tower works into the plan.

In the division on timbered houses one would have liked some more constructional details in addition to the charming sketches of various picturesque exteriors; in particular, a detail plan of one or two of the posts and the precise method of filling in between them (where brick was not used); though, no doubt, it would be difficult to get that without "making incision," in Touchstone's phrase. These timber houses look charming in sketches, and often in reality; but unless the posts and their filling were much thicker than seems generally to have been the case, they must have been must still be, where unaltered—very cold in winter. The author notices, in connection with Bradley Hall, the chimneys "wide at the base so as to afford a pleasantly large ingle-nook which is probably combined with an oven"; but we may suggest that this provision for the ingle-nook was possibly an indirect outcome of the timber construction, as providing a corner where one could, at any rate, be warm in frosty weather. The overhang of the upper storeys in this house, especially in the wing in which the overhang appears to be supported by the projecting bay beneath (a fancy so often adopted in the designs of modern architects), may perhaps be numbered among the features that were introduced for effect, since it is unnecessary in a house with plenty of open ground round it. In a mediæval walled city the overhang was a practical necessity, to get larger rooms without encroaching on the narrow street; but there sems no practical motive for it in the country. Possibly the general practice in the town originated the liking for it in country houses.

Among the brick houses illustrated, Barnham Broom (Norfolk) shows a piece of deliberately designed effect not arising out of the plan, in the two-staged octagonal turrets or buttresses at the angles of the entrance wing, with their odd little stone finials surmounted by a small cross. A few sketches of brick details from East Kent are interesting, as showing how much may be done with the ordinary square bricks. The house called "The Great Lyth," near Shrewsbury, seems to be a fine specimen of a completely brick house, but the outline of the gables, if seen in a modern house, would be thought very ugly. The illustration, however, may serve as a text for an exhortation on the superior effect of complete brick treatment over the medley commonly called "brick with stone dressings." This is not, of course, to condemn the use of brick and stone in the same building; but stone with brick filling is one thing; brick with stone dressing is another.

A good many good pieces of detail are illustrated in the sections on panelling, ceilings, and ironwork. In regard to the panelling, we do not see why the "linen pattern" should be praised merely because it is old. It is a poor and pointless way of decorating a wooden panel, after all, and was followed out everywhere at one time as an almost mechanical fashion.

The lesson to be learned from the study of the class of old houses illustrated and described in this book is the satisfactory effect that may be obtained from a simple treatment of buildings in a manner arising naturally out of the requirements of the building and the character of the materials used. But this is not to say that the same effect will be got by building in imitation of the old manor houses and taking them as models in a realistic sense; that would only be an archæological affectation. The requirements of the present day are different, especially in regard to plan. The one thing that remains the same is the good effect, especially in regard to stone buildings, of using the materials of the district, which are likely to harmonise best with the landscape. In these days of railway carriage, materials from a distance can be got at little extra expense; and in the case of large and palatial buildings, this may be often desirable and even necessary. But for smaller and more homelike houses, which are to form, as it were, part of the landscape, local materials will generally produce the best result.



THE OLD HALL, BARNHAM BROOM, NORFOLK.

(From "The Manor Houses of England.")

MAGAZINES.

The Fortnightly.

In the "Fortnightly Review" Mr. T. B. Firth has a thoughtful article on "Water Transport or Rail," of course in reference to the recent Report of the Royal Commission on Canals and Waterways. He sums up against the chance of making canals play any important part in transit in this country, in spite of their success in Germany and France. The conditions are different; we have not so much flat country nor such large rivers to supply the canals; and the replies from great trading associations as to the extent to which they would use a canal system, if 17 millions of public money had been laid out in developing it, were anything but promising. Canal traffic is very cheap in a sense, but it is very slow, and in modern trade supply it is increasingly the fact (and nowhere more so than in building operations) that time is money. Mr. Firth thinks that many of those who support the improvement of the canal system do so mainly in the hope that it will have the effect, by threatened competition, of lowering railway rates, "and the trader would then be the rejoicing third party."

Gazette des Beaux-Arts.

The "Gazette des Beaux-Arts" contains a long and important article, which we can only glance at here, on "Le Louvre et les Plans de Lescot," by M. Batiffol. Two

reproductions are given of Lescot's original plans for the Louvre. The main point of the article is that Lescot has not received credit enough for the general conception of the Louvre, of which he only carried out a portion. The author maintains that his portion is the part best constructed and carried out: "il est difficile de trouver bâtiments plus achevés, plus soignés dans le détail, que les siens. On sent qu'il a choisi chaque pierre: les joints sont invisibles; tout est demeuré svelte, cambré, intacte"; and the author compares this with the hurried building of the modern portions under Napoléon III. This article should be read by those interested in the history of French Renaissance work.

The Century.

"The Century" gives illustrations of four decorative paintings, symbolic of Law, painted by Mr. Blashfield for the Mahoning County Court House at Youngstown, Ohio. These are in the spandrels of arches, and in engraved form look very well, but we have aways felt Mr. Blashfield's design to be more favourably represented in black and white than in colour.

Harper's.

In "Harper's" Mr. Ford Madox Hueffer writes "Some pre-Raphaelite Reminiscences"—of Rossetti, Madox Brown, and others, which are interesting reading.

The Burlington.

In "The Burlington" is an article on and illustrations of "Ancient Peruvian Pottery," which is somewhat too grotesque to find its proper place in an art journal (indeed, Mr. Read, who writes the article, seems to think some apology necessary for it); it is of some interest, however, to find the Greek fret and the Greek wave ornament (as it may be called) in a crude form in this barbarous work. Two illustrations are given of the early mosaic of "The Discovery of the Body of St. Mark," in St. Mark's, Venice. The treatment of the architectural background in these is very curious and interesting.

The Antiquary.

This contains an illustrated article by Mr. A. C. Fryer on the interesting subject of "Fonts with Representations of the Seven Sacraments."

The Architectural Record (New York).

This is a very good number. Mr. Mowll's article on "Thought and Expression in Architecture" includes some remarks that are well worth serious consideration. The following we are specially struck with:—

The placing of the study of expressive construction at the beginning of our curriculum is at the bottom and root of all possible future progress in architecture. This step in certain schools marks the return to that method by which the world's greatest architecture was achieved. In Greece and in mediæval France there may very well have been no draughtsmen at all. The student got his construction at first hand, and was taught composition only in stone studies of his predecessors. A school with this basis is really an idealised office.

"Warehouses, their Planning and Construction," is a very practical article by Mr. C. H. Patton. There are sections of fireproof floors and methods of insulation used in the United States, and some illustrations which serve to show that warehouses might be made very effective pieces of architecture, but (as a rule) are not made so. The "Ice and Cold Storage" building at Cincinnati, for instance, wants very little to make it an impressive building; but that side of the subject is not gone into in the article. Mr. E. A. Bostock's article on "Glass in Building" is a summary of various forms and qualities of glass, with considerations as to their adaptability in respect of architectural effect.

PICTURE EXHIBITIONS.

The International Society.

As usual, the visitor to the exhibition of the "International Society of Sculptors, Painters, and Gravers," open this year at the Grafton, is greeted on entering with the sight of a headless figure by Rodin, a type of exhibit which seems to be the ensign of the society. In this case the figure is legless also—below the knee. Time was when it would have been thought an impertinence to the public to exhibit a mutilated statue. Now it seems, in some quarters at least, to be a *sine qua non*.

The exhibition is a curious medley of many things that are ugly in character and design, and muddy in colour, a few things that are powerful, and a very few that are beautiful. Amongst the latter, M. Aman-Jean's "Les Porteuses de Guirlandes" comes like a gleam of sunshine among the eccentricities and uglinesses by which it is surrounded. What possible purpose in art can be served by such a picture as Manet's "Ecce Homo," except to degrade the sacred subject down to the level of a vulgar realism, or what would be realism but that the nude body of the Christ is more like soap than flesh and blood. Mr. Strang's portrait of J. B. Clark, and his "portrait group," both in the large gallery, are no doubt painted with great and resolute force; but the vigour seems rather overdone. It is like writing in which every other word is underlined. Mr. William Nicholson's portrait of Lady Pearson is a fine and characteristic work, with that repose and harmony of colour which Strang's, in this instance, want; though no one can paint finer colour harmonies when he chooses. The numerous small studies of figures and other subjects by the late J. M. Swan, in the octagon room, are of much interest, and in their refinement contrast pleasantly with the coarse and vulgar character of some other figure studies in the same room.

In the Centre Gallery, Mr. Harrington Mann's portrait of a young girl, "Mona," is a clever and expressive work. Mr. Hornel's peculiar and individual style is somewhat crudely represented in "The Lily Pool"; we should doubt if this is a recent painting—he has done better than this latterly. Mr. Lavery does not help his high reputation by his picture "A Windy Day," in reality a large sketch in oils, with a very unsatisfactory sea covering a good deal of the canvas. Mr. Charles Shannon's "Autumn" is fine in conception and composition, but the nude figure is not a good design. His other work, "The Vintage," is one of a class of which he has painted a good many; a composition of nude figures which half evade the eye through the uncertain light in which they are seen. This is a kind of picture which aims at being ideal and poetically suggestive. It is difficult to say exactly why it fails to be so, unless it be that there is too much of a kind of conscious intention to be poetical; perhaps, also, that there is a want of dominating *motif* in the composition. Mr. Cameron's "The Marble Quarry" is really powerful in composition and in "values"; but his pictures always seem to remind us that he is essentially a black-and-white artist, not a colourist. M. Le Sidaner's "Hampton Court" in evening light is a very good example of his special talent; it has, we think, been exhibited before in London.

In the end gallery is a good painting of Albi Church, by Mrs. Dods-Withers, but why show this southern church under so gloomy a light? Among other things to remark in the end gallery are Mr. Harold Speed's portrait of Mr. Holman Hunt, and the same artist's painting of "The Parthenon at Night"; Zuloaga's unlovely portrait of a low-looking woman, which people pretend to admire because Zuloaga is a fashion; Mr. Nelson Dawson's "Broken Weather—English Channel"—broken with a vengeance, both sea and sky a mere mass of scumble; and Mr. A. G. Walker's pretty sculpture relief, "Motherhood."

There are various good bits of landscape scattered about, but nothing remarkable; and, as a whole, the exhibition is one which contains little to please and a good deal to exasperate the visitor.



Photo: Topical.

These flats, erected out of the bequest of £500,000 by the late Mr. Samuel Lewis, are let at rentals of 2s. to 8s. per week.

THE SAMUEL LEWIS FLATS, LIVERPOOL ROAD, ISLINGTON: VIEW FROM THE STREET. JOSEPH AND SMITHEM, ARCHITECTS.



Photo : Topical.

The tenants of these flats must not have an income of more than 25/- per Week.

THE SAMUEL LEWIS FLATS, LIVERPOOL ROAD, ISLINGTON: VIEW FROM THE COURT. JOSEPH AND SMITHEM. ARCHITECTS.

The Goupil Gallery.

At this gallery is an interesting exhibition of paintings, chiefly landscape, by Mr. W. W. Russell, an artist with a great deal of power in pourtraying effects of light in landscape, who injures his own effects sometimes by an unnecessary rough handling and an apparent indifference to composition. "The Great Heath" is quite spoiled by the ragged nature of the foreground, and "Poole Harbour" the same. "Donkeys and Kites" we do not call a picture, for there is no composition whatever in it, but it is a brilliant piece of open-air effect. "The Picnic," however, has the making of a fine picture in it. The best of the oils is perhaps the one which hangs alone among the water-colours—"The Home Farm." Mr. Russell belongs to the New English Art Club section of painters, and seems, in painting figures, to share their general dislike to painting faces as nature makes them. "Near the Window" would be an attractive picture if only the girl's face looked like flesh and blood, but it does not; the shape is there, but the material might be putty.

The Carfax Gallery.

The collection of the Carfax Gallery, a medley of small works, including some very good things, even among those which are palpably imitations of an old style. Mr. Dechanne's "Healthy Ground Pond" and "Landscape with Cloud," might, for their style, have been painted in the eighteenth century, but they are beautiful little works. His "View of Oxford" is an imitation of Girtin; good as such. Mr. Rich's sketches of "Shoreham" and "Near Selsey," and Mr. Claude Tryon's of Walmer Town Hall are good. Mr. Neville Lytton's "Clare College" is out of perspective: he exhibits a good crayon portrait of a lady. The modern clavichord, decorated by Mr. and Mrs. Neville Lytton, is good as far as the minor decorative detail is concerned, but the procession of rather stiff-looking white horses on the inside of the lid is hardly decorative, nor has it any relation to the purpose of the instrument.

FOREIGN NOTES.

The Gran Via, Madrid.

The King inaugurated the Gran Via, Madrid, on April 4th, in the presence of the Royal family, the civil and military authorities, and an enormous assemblage of the general public. The Gran Via, or Broadway, will form a thoroughfare connecting the central part of the town with the north-west quarter, hitherto isolated from the rest of the city by a labyrinth of narrow streets, and will thus provide an outlet towards the Northern Railway Station and the magnificent new park of the Moncloa. The scheme, which a group of foreign capitalists have undertaken to execute, involves the razing of many houses and the disappearance of 14 streets. The new road will be divided into three sections. An avenue, 27½ yards broad, will extend from the Plaza de Leganitos, at the head of the main street coming from the Northern Station, to the Plaza de Callao; a boulevard, 38½ yards wide, will continue thence to the Red San Luis; and another avenue will lead to the Calle Alcalá, terminating near the historic church of San José. The total length will be 1,446 yards, and the cost is calculated at about £1,850,000. The contractors are to receive a monopoly, lasting 40 years, of the electric light supply for the houses bordering the new road and of the tram lines running along it. The work is to be completed in eight years. The razing of a great number of old-fashioned houses and the admission of more light and air to the populous central quarter of the city, will mark another step in the transformation of Madrid into a modern city.

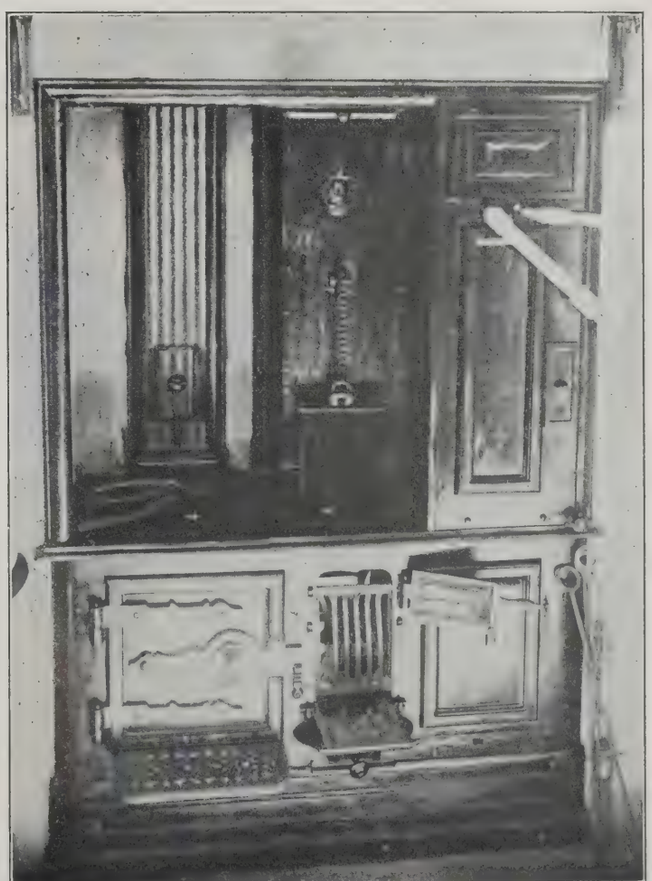


Photo : Topical.

This range, suggested by the Prince of Wales, has a lifting back and a lifting bottom. By means of these the fire in the kitchen can be turned into the sitting-room grate.

THE RANGE USED IN THE SAMUEL LEWIS FLATS, LIVERPOOL ROAD, ISLINGTON.

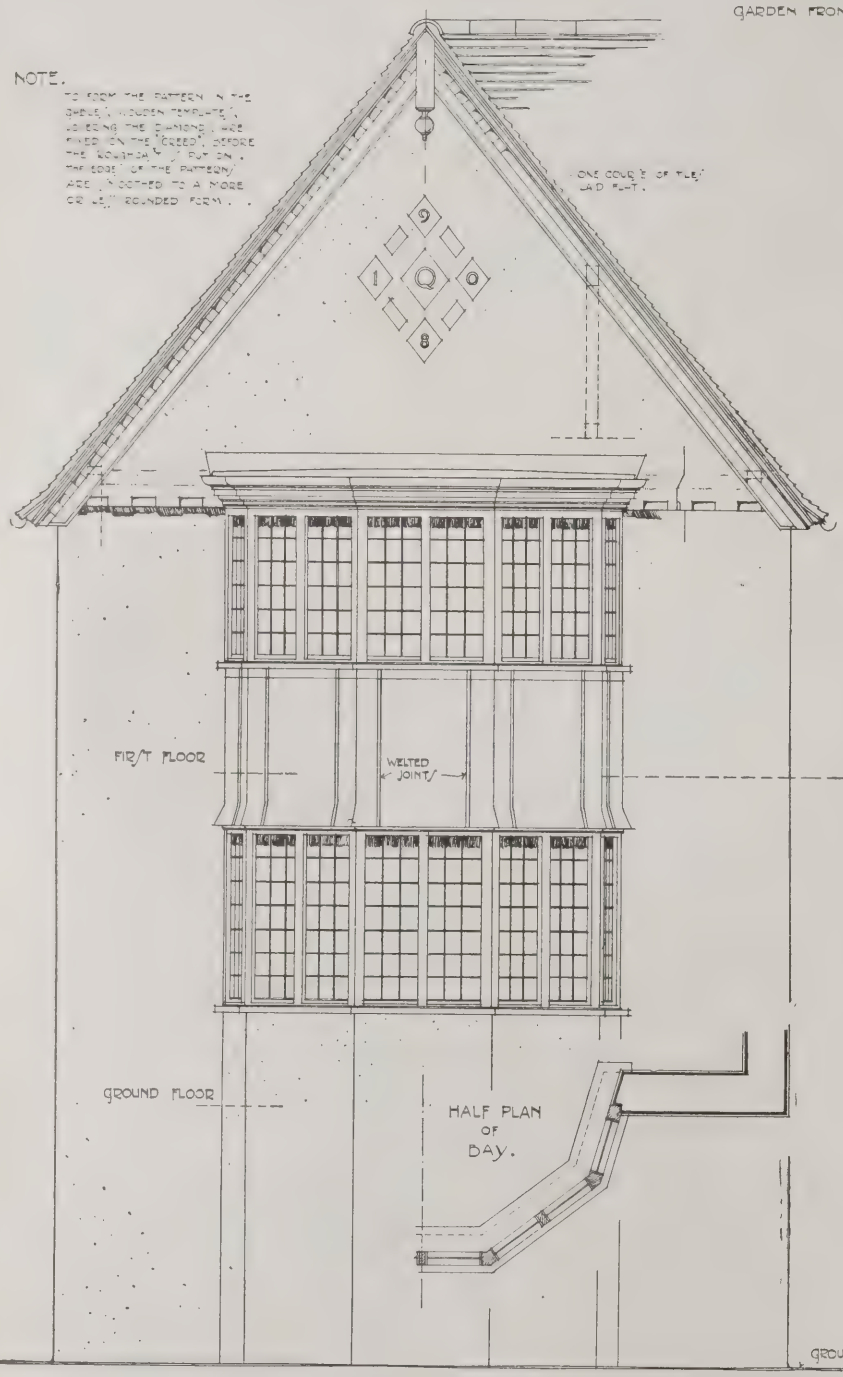
DETAIL OF GABLES AND BAYS ON GARDEN FRONT



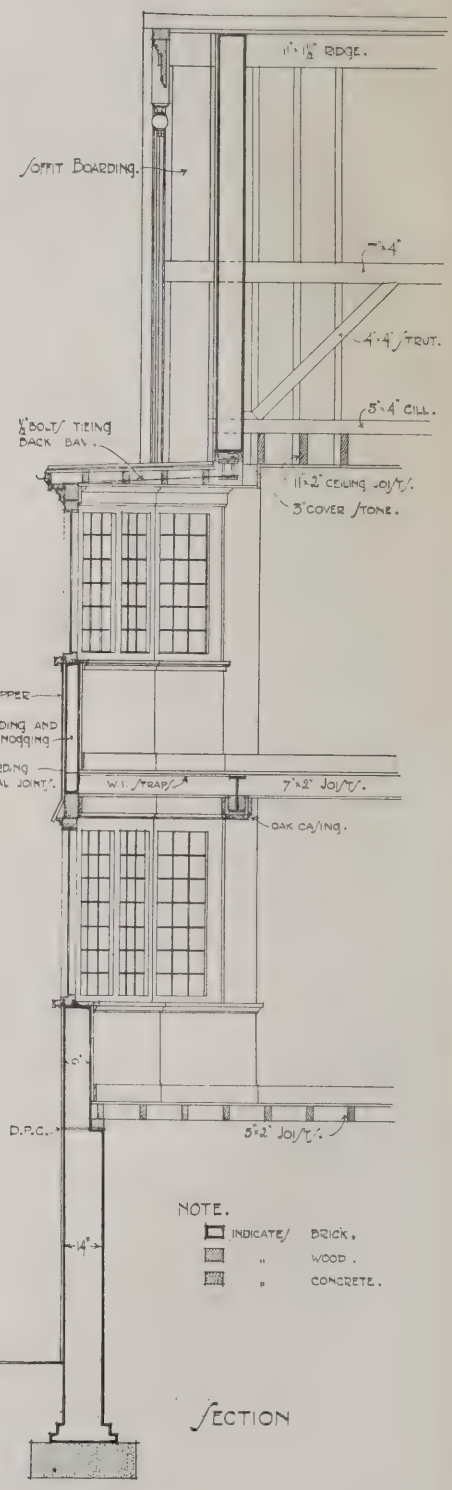
KEY ELEVATION OF GARDEN FRONT.

NOTE.
TO FORM THE PATTERN IN THE GABLES WOODEN TEMPLATES, HAVING THE DIAMONDS ARE FIXED ON THE "CREED" BEFORE THE "BOLSTER" IS PUT ON. THE EDGE OF THE PATTERN ARE "NOTCHED TO A MORE OR LESS" ROUNDED FORM.

ONE COURSE OF TILES LAID FLAT.



ELEVATION.



NOTE.
INDICATES BRICK.
" WOOD.
" CONCRETE.

GROUND LINE

SECTION

SCALE OF FEET

SCALE OF METRES

HOUSE AT CHURCH STRETTON, SHROPSHIRE. ERNEST NEWTON, F.R.I.B.A., ARCHITECT.



The request for back numbers of "Details," all rights in which publication have been acquired by the Proprietors of "The Architects' and Builders' Journal," have been so numerous that it has been decided to republish selected plates in this paper. This house is built on the south side of a hill, the slope of the ground being favourable to the formation of a terrace garden The walls are of local bricks, covered with rough-cast, and the roofing is of hand-made tiles. Between ground and first-floor windows the bay is covered with sheet copper with welted joints. At present the copper is a dull reddish brown colour, but it will eventually acquire a green patina in the pure air of the Shropshire hills. The terrace walls are of common bricks, built with a wide recessed joint, and are intended to be covered with creeper.

BAY AND GABLE ON GARDEN FRONT OF HOUSE AT CHURCH STRETTON, SHROPSHIRE.
ERNEST NEWTON, F.R.I.B.A., ARCHITECT.

OBITER DICTA.

Status. The architectural profession would never obtain a status before the public until they had an established status as an adequately trained and properly educated body. The facilities for architectural education in the provinces should be second to none.—*Mr. J. P. Hynes, of Toronto, speaking at the second general annual assembly of the Royal Architectural Institute of Canada.*

Exciting Spade Work. Antiquarian digging on ancient sites is a gamble on a large scale. Nothing can be more exciting. The spades go in, say, on the turf of Cnossos, and you do not know what will come out. Mr. Evans did know that plenty of writing older than the oldest Greek alphabet would come out, but could not anticipate the marvels of his actual discoveries, a whole lost and forgotten civilisation. Even amateur digging in a Roman villa in a garden has some excitement, but the Romans were so stereotyped in their ways that nothing novel can be expected.—*Andrew Lang, in the "Morning Post."*

A Necessary Abomination. The erection of another huge block of tenement dwellings will give rise to grave questionings. Is it really a satisfactory way of solving the housing problem to pack people neatly on shelves one above the other like goods in a shop? Frankly, the tenement dwelling is of itself an abomination, but unfortunately in a city the size of London it is a necessary abomination. With a population of several millions all demanding daily access to a comparatively limited area the possibility of horizontal extension is limited, and the accommodation must expand vertically. By some arrangement the housing in the inner and middle zones of London must be made decent, and for that purpose the tenement dwelling is the best. All its drawbacks are nothing to the horrible results of crowding several families into buildings designed for a single household.—"*Morning Post.*"



Photo : T. Lewis.

This is in the new wing, the floor and panelling being of oak.

LYMPNE CASTLE, KENT: THE SMOKING-ROOM. R. S. LORIMER, A.R.S.A., ARCHITECT

LYMPNE CASTLE, KENT.

Though there be those extremists who might without much injustice be accused of a morbid appetite for picturesque decay, who seem to love dilapidation and ruin rather than decent weather-tightness and the general conditions comformable thereto, these people, it may be presumed, are but the ultramontanes who seem to be inseparable from every cult and creed. Yet it is the man in the middle distance who counts. He does not object "on principle" to restoration. Rather, it is with him a principle that not only should decay be arrested, but that a venerable building that is in danger of dilapidation should be so "restored" as to be maintained in utility and strength without detriment to its architectural character.



Photo: T Lewis.

LYMPNE CASTLE, KENT: THE TOP OF THE STAIRCASE. R. S. LORIMER, A.R.S.A. ARCHITECT.

This rational view is, it may be assumed, completely satisfied in the work which Mr. R. S. Lorimer, A.R.S.A., has carried out at Lympne. He had to deal with a building that is said to have been erected in the reign of Henry V., although there are no remains that can be certainly ascribed to an earlier date than the reign of Edward VI. For probably eighty years past it had been used as a farmhouse, and had suffered considerably in the adaptation to this purpose. Moreover, Mr. Lorimer found the structure in a dangerous and almost ruined condition. The area comprised farm sheds, cattle courts, barns, etc., and these buildings had to be demolished. New buildings put up on the north comprise the porter's lodge, workshop, washhouse, laundry, chauffeur's quarters, garage, stables, and store. On the first floor of this range are some bachelors' bedrooms, and over another part are bedrooms for the chauffeur and men-servants. The principal additions, beside the kitchen wing, comprise a new dining-room, ante-room, smoking-room, entrance hall, and connecting corridor, with the necessary bedrooms. A new entrance gate has been built, with a paved approach to the house, a screen wall against the churchyard, and screen walls to the garden.

In how scholarly and sympathetic a way the work has been accomplished may be inferred from the illustrations. The idea in the design of the additions to the old castle was to make the connection by a narrow neck only, "so as to leave the old building standing by itself to tell its own story."

The stone required for the building was almost entirely quarried on the spot; and it was found in sufficient abundance to provide the material for paving the old Gothic Court, for forming a paved terrace to the south, and for stoned paths to the gardens.

The new roof to the old hall is of of modern oak, only one tie-beam of the original roof having been found. The linen-fold panelling and the floor are also of oak. The new dining-room ante-room, and smoking-room, are also panelled in oak, and have oak floors.



Photo: T. Lewis.

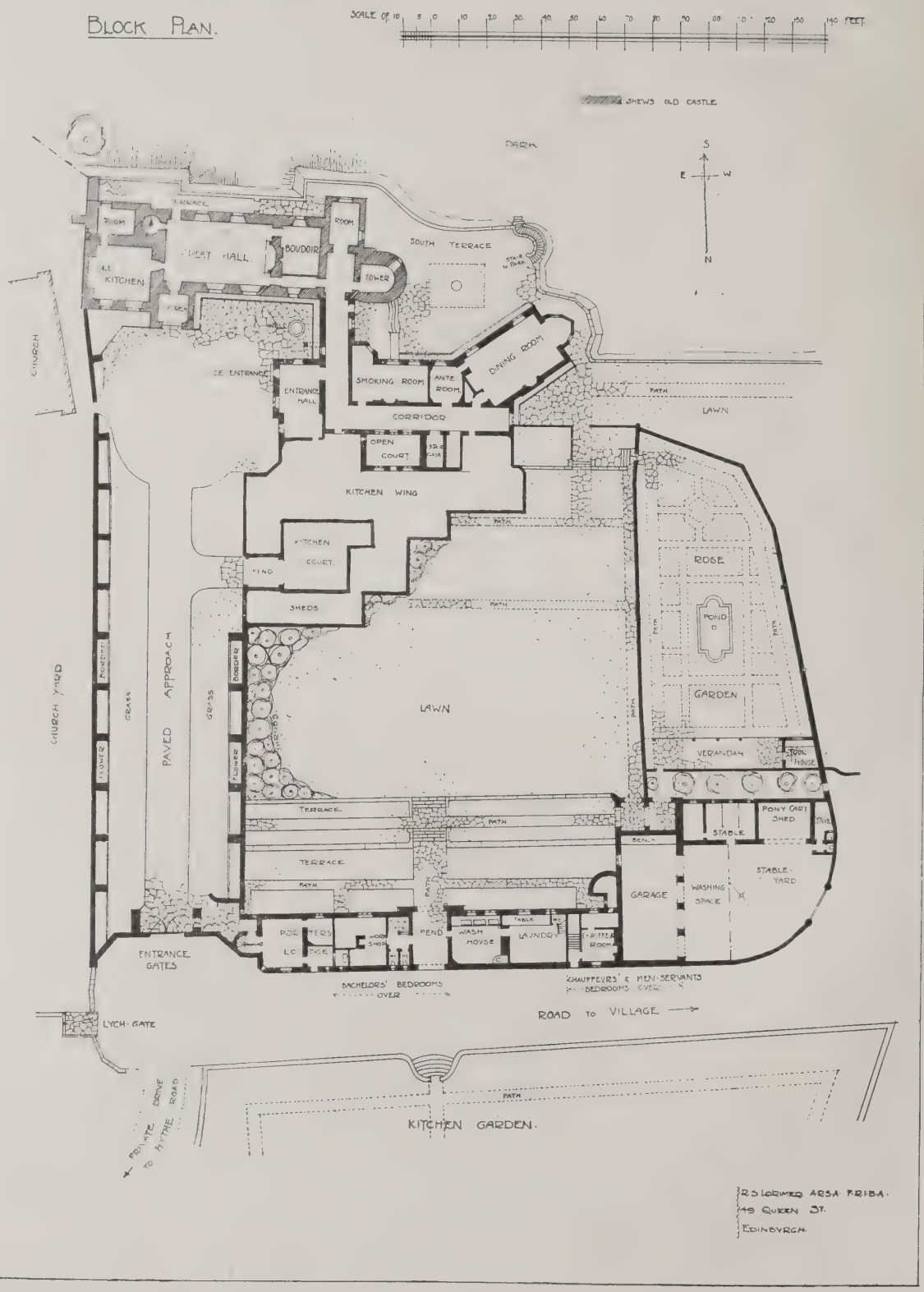
The castle is situated on the edge of a great tableland. The steep bank slopes down ultimately to Romney Marsh, and on a clear night the lights on the coast of France are visible.

LYMPNE CASTLE, KENT: VIEW FROM THE WEST. R. S. LORIMER, A.R.S.A., ARCHITECT.

LYMPNE CASTLE, KENT.

FOR F. J. TENNANT. ESQ^re

BLOCK PLAN.



The plan shows the arrangement of the new buildings, which are connected to the old Castle by a narrow corridor. A new paved approach has been constructed., and new outbuildings, stable, and garage abutting on the road.

LYMPNE CASTLE, KENT. R. S LORIMER, A.R.S.A., ARCHITECT.

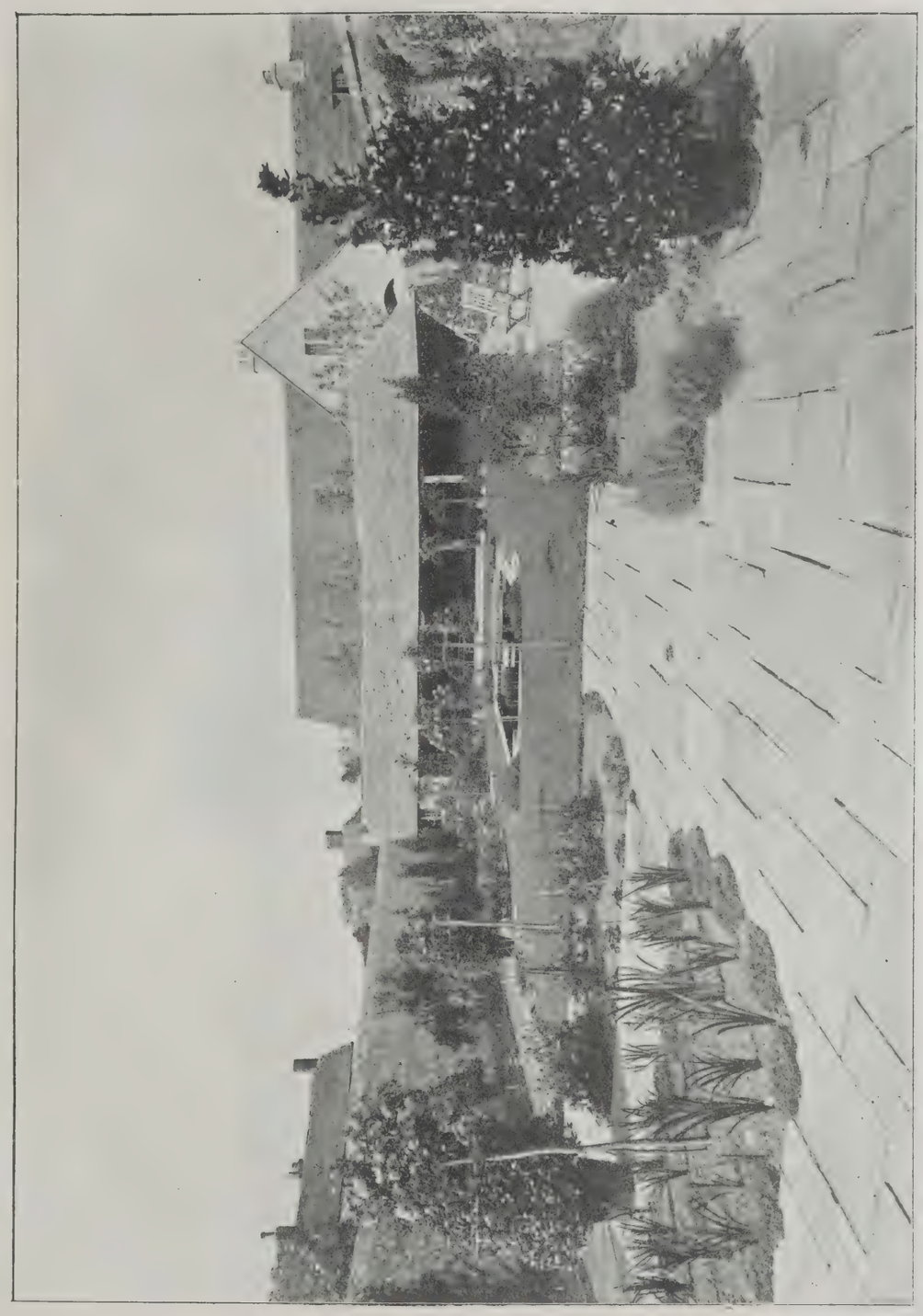


Photo: T. Lewis.

This quiet and peaceful spot, called the Rose Garden on the plan, lies to the west of the principal lawn. In the centre is a small lily pond, and beyond it a verandah, partly formed out of one of the old farm sheds.

LYMPNE CASTLE, KENT: THE ROSE GARDEN. R. S. LORIMER, A.R.S.A., ARCHITECT.



Photo : T. Lewis.

The Great Hall forms the principal part of the old building. Before restoration it had two floors inserted in the height, and was cut up into small rooms. The roof is new, only one of the original tie-beams having been found.

LYMFNE CASTLE, KENT: THE GREAT HALL. R. S. LORIMER, A.R.S.A., ARCHITECT.

FIRE PREVENTION NOTES.

Fireproofing Existing Buildings. Although in this country we have unfortunately had considerable experience of wholesale destruction of property and lamentable loss of life by fire, it must be acknowledged that in this respect we cannot compete with the United States of America. It must also be acknowledged that neither can we compete with them in the aptitude for learning useful lessons from such disasters. We are told that it is now fully realised by American traders that the proper safeguarding of goods against fire is the very life of trade. "The public and the trade [warehousing] are demanding every possible convenience, every possible safeguard against loss of life, loss by fire, or by other means of destruction." The "Architectural Record" (New York) for April, in a special article on the planning and construction of warehouses, suggests that, with regard to existing premises, these demands may be met, in a large number of instances, by (1) sub-dividing great areas by brick firewalls; (2) by properly protecting vertical floor-openings, such as those for elevators and stairways; (3) by added protection from outward exposure; (4) by separating the common from the hazardous commodities; and (5) by providing the premises with an approved automatic sprinkler equipment. In this way fire risk could be reduced to a minimum.

Modern Methods. In the above-mentioned article, only two general types of structure are deemed worthy of special mention as being suitable in all respects for a modern standard warehouse. The premier position is given to "the modern fireproof building, a protected steel skeleton building having brick walls, tile or reinforced concrete floors without wood surface, similar partitions and roof, without interior or exterior wood trimming or framework. This includes standard shafts with fire coverings for elevators, stairways, and all vertical openings; also the proper safeguarding of outside wall openings from exposure. Our contemporary, while obviously favouring the steel-frame structure with tile or concrete insulation, concedes that reinforced concrete, when its form and practice are standardised, will hold its own with the protected steel-frame type, at heights practicable for its use. The great recommendation of the modern fireproof building of America appears to be that it has no general limited restrictions as to height, such as govern structures of mill or joist types. The greater the height of the building, the more carefully considered should be "the question of limitation of individual area." This is more particularly the case with respect to the vertical opening hazard, such as openings and stairways; the large areas and unprotected vertical openings being largely responsible for the extensive damage from fire in fireproof buildings. "Combustible goods will burn, whether stored in a fireproof or frame building. Fire will destroy anything, give it enough fuel, draught, and continuous lines to follow, but confine it within a limited space, within non-combustible enclosures of proper resistance quality, and the damage beyond that to the combustibles therein, usually will be nominal. It is wise, however, not to exceed eight storeys in height, nor to go beyond a floor area of 10,000 sq. ft. for warehouses. The area, in fact, should be no greater than 5,000 sq. ft. without standard fireproof partitions," but with an approved automatic sprinkler equipment the area may reach a greater limit in "individual instances."

A Model Fireproof Building. The compactly built property of the Pittsburg Terminal Warehouse and Transfer Company, Pittsburg, Pa., is cited as an example of effective area limitation. The building is divided by five walls into more than seventy vertical fire sections of six storeys each, their dimensions averaging 20ft. by 158ft., or 3,200 sq. ft. for each room, forming about 400 separate fireproof compartments. The building comprises a basement and six storeys. The elevators and stairways are in fireproof shafts, cut off at the various floors by automatic operating fire doors The premises are equipped with automatic sprinklers, other auxiliary fire protection, and excellent watchman patrol service. This building is certified by the chairman of the Committee on Construction of Buildings, National Board of Fire Underwriters, as being "of the most thoroughly fireproof nature that has come to his attention."

Faulty Construction. The writer goes on to contend that extensive fire losses in mill-constructed buildings are largely due to faults in the buildings themselves. For example, it is often found that the elevator and stair shaft is far from standard; that the fire doors to openings are but makeshifts, or the owner has permitted an open stairway or chute to pierce two or more floors. Perhaps the elevator walls do not extend through the roof. The floors are not waterproof, and no scuppers are provided. The height and the areas are too great. The area permitted is too great. The beams and girders are improperly set. There is deviation from the proper wall thickness. Heating, ventilating, and lighting systems are improperly installed. Division walls are of less than standard thickness, and the fire doors over openings are not of approved type, while the building is perhaps not properly protected from outside exposure. These are some of the features that, even in America, where fireproofing has made a near approach to an exact science, are neglected, sometimes with disastrous results; and the enumeration of these points will probably be useful to British builders, who are paying ever-increasing attention to fire-prevention methods of construction.



Photo: G.P.P.

This fire illustrates the danger in grain stores of the swelling of the grain fom the water played on the building, which burst out the wall. The resistance of the heavy timber bearing is noteworthy.

THE FIRE AT A GRAIN STORE IN ODESSA STREET, ROTHERHITHE.

Cinematograph Shows. It is rather doubtful whether cinematograph buildings are not becoming more numerous than skating rinks. The former are certainly springing up in every direction; and since very many are being hurried on towards completion, it follows that the case heard last week by Mr. Hopkins, at the Lambeth Police Court, raising as it did an important point, is of more than ordinary interest. The summons was taken out by a district surveyor, who charged the manager or proprietor of the Old Kent Picture Palace, Old Kent Road, with having used that building "before the district surveyor or the Tribunal of Appeal had declared his or their approval of the construction thereof." There was also a summons against Messrs. W. Townson and Sons, Ltd., builders, of Bolton, "for failing to comply with a notice of irregularity served upon them by the district surveyor." In opening the case, counsel stated that under Section 78 of the London Building Act, public buildings were in the absolute discretion of the district surveyor, who made such require-

ments as he thought fit, subject to the builder's right of reference to the Tribunal of Appeal. Until January 1st of the present year, the district surveyor had sole jurisdiction over such buildings as these, and up till then a proprietor was entitled immediately to open the place upon getting the certificate of the district surveyor; but on that date the Cinematograph Act came into operation, making it necessary to obtain a licence from the London County Council, subject to such conditions as the Council might think fit to make.

Conflicting Authorities. From counsel's statement Mr. Hopkins, the magistrate, gathered that the position is this: The district surveyor has made certain requirements. These have not been complied with; and, notwithstanding those requirements, and in face of them, the L.C.C. have given the owner a certificate to open a cinematograph show. In spite of that certificate, the district surveyor is insisting upon his alterations. Counsel here interjected that "The certificate given by the Council is a personal one to the man, and has nothing whatever to do with the construction of the buildings." Mr. Hopkins said, "That is carrying it too far." Counsel submitted that the authority of the district surveyor was absolute under section 78, and that his worship was bound to make an order for the work to be carried out. He suggested that the province of the Council was to deal with the seating arrangements and the use of inflammable films, and that the Cinematograph Act was not intended to apply to the structure at all, but to things which were not dealt with by the district surveyor. Mr. Hopkins commented: "It is the old story of the owner and the builder having to suffer because of the conflict between one authority and one person who says he is the authority." Without calling upon the defence, he dismissed the summonses, with £5 5s. costs against the district surveyor; and in doing so, he expressed the hope that some day some tribunal would define the status of the district surveyors in cases where, in their view, their jurisdiction clashed with that of the County Council.

Irreconcilable Restrictions. For this eminently commonsense view of the situation, builders will be duly grateful. But the root of the evil is still in the ground, and is likely to send up shoots in other directions. We have long suffered from conflicting laws and by-laws. A further point is that apparently the builder is often called to account where he has simply obeyed the orders of the owner or the architect. It is surely not just that he should be made to suffer for another's fault, and that he should be saddled with responsibility for matters over which he has no control. That, however, is another story. The lesson immediately derivable from the present case is that the laws and by-laws affecting buildings are still sadly in need of consolidation and codification. At least they should not be so mutually independent or antagonistic as to place the unhappy builder betwixt the upper and the nether millstone.

SOCIETIES' REPORTS.

Royal Institute of the Architects of Ireland.

An ordinary meeting of the Council of the above body was held at 31, South Frederick Street, Dublin, Mr. R. Caufeild Orpen, B.A., occupying the chair, in the unavoidable absence of the President. Amongst the members present were: Messrs. C. H. Ashworth, L. O'Callaghen, F. Hayes, G. Sheridan, A. Millar, G. Beckett, H. Allberry, J. H. Webb, and C. A. Owen, hon. secretary. The correspondence having been dealt with, a communication from the Stonecarvers' Trade Association with regard to the encouragement of the trade was considered, and the Council expressed themselves generally in favour of the association's proposals. The amalgamation of the Architectural Association and the Institute was further discussed, and a proposal to erect a memorial to the late Sir Thomas Drew was under consideration.

The Junior Institution of Engineers.

A visit of the Institution was recently paid to the building in course of erection for the Royal Automobile Club in Pall Mall. Messrs. Mewès and Davis and Mr. E. Keynes Purchase are the associated architects. [The design and plans were given in the "Builders' Journal" for April 21st, 1909.] The work is being executed by Messrs. Waring and White (1906), Ltd., Mr. S. Bylander, their Engineer, Mr. B. Tarring, Superintending Engineer, and Mr. A. F. Alden conducted the members round

The length of the front is 228ft., and the average depth 242ft. There are two storeys below the ground floor and five storeys above, in addition to the ground floor storey, making eight storeys in all above the basement floor. A swimming bath will be constructed in the basement 86ft. long, 30ft. wide, and maximum depth 8ft. The foundations under the swimming bath are 41ft. 6in. below ground floor. The building is constructed practically as a steel frame, all loads being carried on columns up to the first floor or second floor level, except the party walls between the club building and the adjoining building, which is self-supporting. The thicknesses of the walls are all in accordance with the old Building Act. The front and back walls are carried on steel girders at the first or second floors, and are self-supporting above that level. The floors are constructed in reinforced concrete. All the steelwork is cased with at least two inches of concrete. The interior partition walls are built with 2½in. and 4in. thick pumice concrete blocks. The retaining wall supporting the street at Pall Mall front is constructed in ordinary concrete, and the retaining wall at the back of the building is constructed in reinforced concrete—the height of this wall is 38ft. The swimming bath is also to be constructed in reinforced concrete. Triple web-plate girders 3ft. deep are placed at second floor level over large rooms to carry part of building above, and two of these girders weigh 24 tons each. The columns are all made of built-up sections of angles and plates. The girders are generally steel rolled joists, plate girders being used only for special long spans and heavy loads. The distance between the floor beams is generally about 12ft. The front and back walls are faced with Portland stone, and the elevation to Pall Mall is expected to be one of the most artistic in that street. The basement, lower ground floor, ground floor, and first floor will be partly ventilated and heated by means of hot air; in addition, the entire building will be heated with hot-water radiators. All the drainage above lower ground floor will discharge direct into the sewer through pipes suspended under the lower ground floor. The waste water collected in the lower ground floor and the basement will discharge into the ejector chamber 40ft. below the ground floor level, and by means of ejectors the water will be raised to the sewer level. These ejectors will also be used for emptying the swimming bath. Complete drawings are made of the steelwork, showing all connections and the position of all rivets. The work is accurately set out in the shops as well as on the site to facilitate quick erection. At the conclusion of the inspection, on the proposal of Mr. Jas. Oswald (member of Council), a vote of thanks was passed for the facilities which had been given enabling the members to inspect such an interesting example of constructional engineering work.



Photo: G.P.P.

The damage is estimated at £40,000. The bursting out of the walls, due to the pressure of the grain, suggests the employment of monolithic construction in these buildings.

RIVER FRONT OF THE GRAIN STORE IN ODESSA STREET, ROTHERHITHE.

Builders' Clerks' Benevolent Institution Dinner.

The 32nd annual dinner of the above institution was held on Tuesday, the 5th inst. in the King's Hall, Holborn Restaurant, W.C.

The President (Mr. Wm. Downs), in proposing the toast "The Builders' Clerks, Benevolent Institution," observed that the society had been in existence for 44 years. The institution only gave £24 per annum to their pensioners, which was small in comparison with sums paid by some of the other societies. Relief had been given in the first year amounting to £12 15s.; last year payments amounted to £800. They had at the moment thirty pensioners. It had unfortunately been found necessary to draw upon the invested funds to the extent of £300.

Lieut.-Col. Trollope, in proposing the toast "The Architects and Surveyors," thanked the architects for their support, both by their presence and their donations. London buildings, he continued, reflected great credit upon English architects, and formed a striking contrast to the work of the mid-Victorian period. The surveyors dealt with the more practical side of the business, and although builders had to put down ridiculously low figures nowadays, it was not the fault of the surveyors.

Mr. William Woodward, replying for the architects, thanked the previous speaker for his kind tribute to architecture. If Mr. Belcher had been present, he (Mr. Woodward), with the modesty that characterised all architects, would have declined to speak. Architects, he continued, were poets, and architecture was poetry in stone.

Mr. Stanley Chatfeild Clarke responded for the surveyors, and observed that if the large West-end firms continued supplying houses at so much per room, surveyors would have to start a benevolent institution of their own.

Mr. F. S. Oldham proposed the toast "The Builders and Bunders' Merchants." He had spent all his life in the building trade, he observed, and, during the 21 years he had spent on the committee, had seen many of the finest contractors.

Mr. W. F. Wallis, in responding for the builders, said, as builders, they could congratulate themselves upon being members of no mean calling.

Mr. A. Ritchie replied for the builders' merchants, and urged all Englishmen to emulate the example given by Berlin, and acquire a thorough technical education.

NOTES ON COMPETITIONS.

Acton School Competition.

Members of the Royal Institute of British Architects are requested not to take part in the above competition.

By order of the Council,
IAN MACALISTER, Secretary, R.I.B.A.
9, Conduit Street, London, W.
April 6th, 1910.

Blyth Secondary School Competition.

Mr. J. A. Gotch, F.R.I.B.A., F.S.A., the assessor in the above competition, has made his award as follows:—

1st Premium (£50), Mr. Edward Cratney, Wallsend-on-Tyne.

2nd Premium (£30), Messrs. W. and T. R. Milburn, Sunderland.

3rd Premium (£20), Messrs. Shewbrook and Hodges, Newcastle-on-Tyne.

LIST OF COMPETITIONS OPEN.

APRIL 23. COUNTY OFFICES, NAVAN. Particulars given in our issue of March 16th.

MAY 31. MUNICIPAL OFFICES, KARACHI. Particulars given in our issue of March 16th.

JUNE 11. COVENTRY. ENLARGEMENT OF SCHOOL at STOKE. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

JUNE 15. ELEMENTARY SCHOOLS, ACTON. Particulars given in our issue of March 16th.

AUGUST 31. COVENTRY. NEW ELEMENTARY SCHOOL in Centaur Road. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

NO DATE. BIRKENHEAD CHILDREN'S RECEIVING HOME, at the Union. The Guardians invite architects residing within the limits of the Birkenhead Union to submit designs for a proposed Receiving Home for Children in Birkenhead. Premiums are offered to those three architects whose plans are selected. Conditions and instructions may be obtained from John Carter, Clerk to the Guardians, Poor Law Offices, Birkenhead, on application by letter only.

TRADE AND CRAFT.

Siemens O.S. Wiring System and Electric Light Fittings.

In our last issue, the names and addresses of Messrs. Siemens Brothers and Co., Ltd., and Messrs. Siemens Brothers Dynamo Works, Ltd., were, by a printer's error, interchanged on the respective advertisements of these two companies on pages xxxii. and xxxiii. As this accident may have caused some unnecessary correspondence between our advertisers and readers, we wish to make it clear that Messrs. Siemens Brothers and Co., Ltd., are the manufacturers and suppliers of the O.S. wiring system referred to on the advertisement in question, and that the component parts of this system are "Stannos" wires and "Balkos" conduits, which may be used either separately or in combination, depending on whether the wiring is solid or drawn in. "Stannos" wires are indiarubber-covered conductors, surrounded by a homogeneous and watertight metal sheathing. They are semi-flexible, neat, and comparatively inexpensive. When fixed on the surface of walls "Stannos" wires are particularly unobtrusive; and if used for sunk work, they involve a minimum of cutting away of plaster and joists. For the above reasons "Stannos" wires are specially suitable for places where the decorations are valuable and ornate, particularly in old country houses. "Kalkos" consists of light gauge tinned brass tubing and boxes, and it is claimed to be the only draw-in system in which the insulation of the wires does not corrode (because moisture does not condense in them), and the only one which has an absolutely reliable electrical continuity. Both "Stannos" wires and "Kalkos" conduits can be used on the concentric system, that is, with the sheathing or the tubing respectively used as an earthed return conductor, involving half the amount of wire.

Messrs. Siemens Brothers' Dynamo Works, Ltd., are dealing extensively with all classes of electric light fittings, and are supplying effective period fittings of the Adam, Elizabethan, Georgian, Louis, and Empire styles. One of their specialities, the "Majolica" fittings, is composed of a cream porcelain shell, gilt-lined, mounted on a polished mahogany or white wood base, which carries the lamp-holder. Another special type of fittings supplied by Messrs. Siemens Brothers' Dynamo Works, Ltd., is the "Tantalum" arc, in which "Tantalum" lamps are arranged in clusters underneath holophane reflectors, so as to make up one complete fitting. The reflecting and dispersing properties of holophane glassware account for a very uniform distribution of the light in a downward direction, whilst glare is entirely eliminated. The company also deal with standard types of wall brackets, hall lanterns, and electroliers, which are stocked in a large variety of antique brass, polished brass, oxidised copper or oxidised silver, and they have numerous designs of watertight, waterproof, and electric fittings for exposed positions, etc.

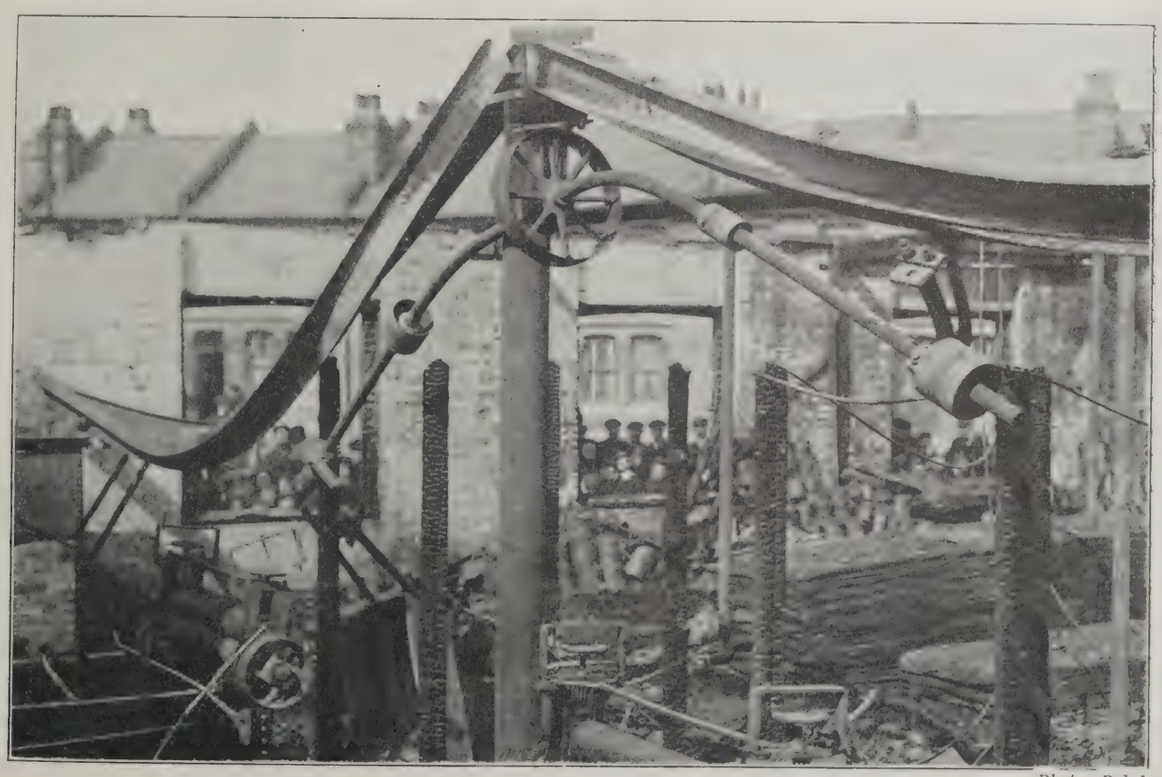
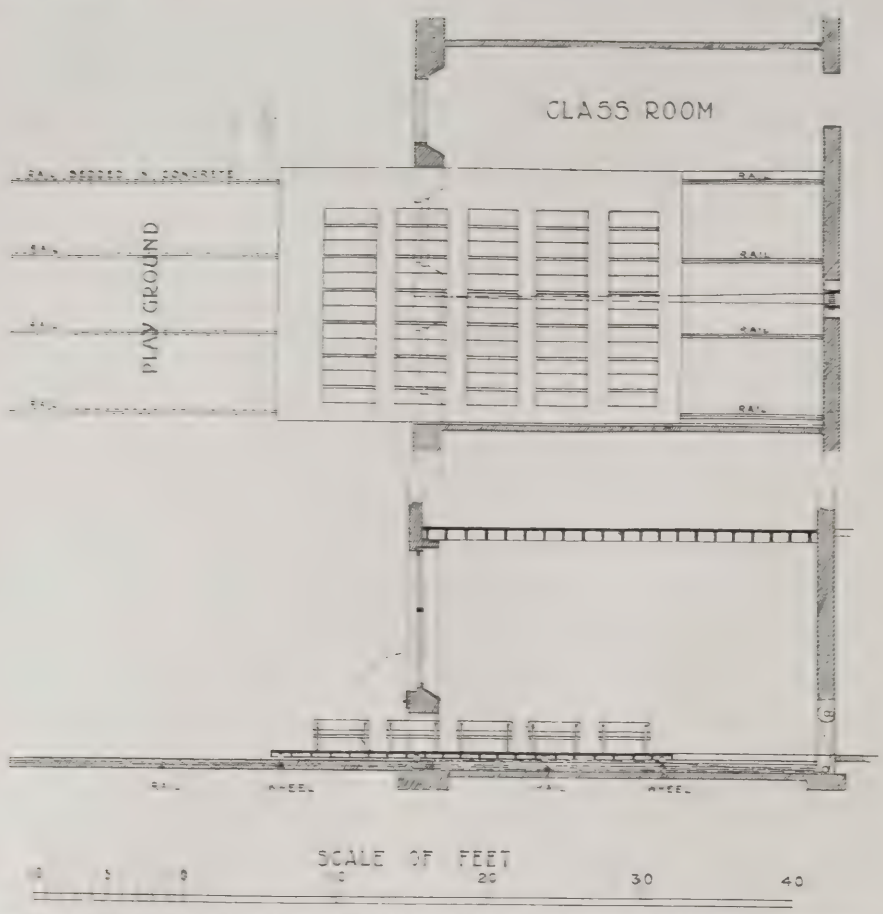


Photo: Bolak.

The roof was destroyed owing to the failure of the steelwork, which can be seen twisted in an extraordinary manner.
FIRE AT THE WORKS OF VULCANITE, LTD., STOUR ROAD, OLD FORD.



PLAN AND SECTION OF PATENT FLOOR FOR OPEN-AIR TEACHING. INVENTED BY THOMAS BAIRD, F.R.I.B.A., I.A.

PORTABLE FLOORS FOR OPEN-AIR TEACHING.

The open-air teaching of school classes seems to be emerging from the experimental stage, and is likely to become an established practice even in this precarious climate. There are, of course, other difficulties; and the special conditions give rise to special requirements. The chief difficulty is probably that of the speedy and convenient transferring of scholars' desks, etc., out of school and in again. This particular difficulty has now been met by constructing the classroom floor in the form of a portable platform, mounted on anti-friction wheels, so that the floor and desks can together be almost instantly wheeled out and in. Rapidity in effecting this change is essential, because even during the best of weather, thunder showers come with little or no warning. Instant removal can be readily and cheaply accomplished, and with little or no confusion, by constructing that part of the floor on which the desks are fixed in the form of a movable platform, running on anti-friction ball-bearing wheels resting on rails underneath, the rails extending through the outer wall of the classroom into and level with the playground as far as necessary. The movable platform or floor could be easily pushed out and in by hand, or it could be wrought by a light wire rope or chain over pulleys attached to a winch secured to the wall, and carefully boxed in so that it would be impossible for anyone to be injured. To permit of the floor, together with the desks, being wheeled out of and into the classroom, the outer wall, for the necessary length, is bridged over with beams, below the window sills, at a sufficient height to allow of their convenient passage. The opening in the wall through which the floor and desks pass would be closed, when not in use, by hinged doors closing in a water-tight barge-board, or by sliding-doors running on anti-friction rollers. Any difference of the levels of the playground with the floor of the classrooms can be overcome by lengthening or shortening the supports on which the wheels carrying the floor are fixed, or the playground immediately around the school could be raised for the necessary width to the level required with steps down to the level of the playground proper. Where the foregoing system may happen to be unsuitable to existing conditions, a permanent light guard rail could be fixed round the edge of the movable part of the floor, to prevent the children falling from it when the level of the playground was some little distance lower. In the majority of cases, however, the level of the playground could easily be made suitable without any special arrangements. The opening in the outer wall through which the floor passes extends only for the necessary length, and the remaining portion of the wall has a casement window in it, opening down to the floor level to permit of the ready egress and ingress of the scholars, and also for the blackboard being wheeled out if necessary.

The method described would be applied to the ground floor only, as it will be evident that any such system applied to the upper floor would be both expensive and dangerous, and would practically destroy the effect of the ground floor arrangement. The difficulty of the upper floor could be overcome by admitting the outer air into the school to such an extent as to render the indoor conditions as nearly as possible equivalent to those of the open-air. One method of accomplishing this is by forming almost the whole outer wall of the classroom of casement windows, to open inwards like doors, and so practically remove, for the time being, the whole outer wall. An objection to that system is, that so much glass would cause the classroom to be very cold, or would so materially increase the cost of heating power and fuel as to render such a system undesirable. Hence it might be sufficient and better, all things considered, to fit the usual windows with hinged casements, opening down to the floor level with fanlights above, made to open to the horizontal so that they would offer, when open, no obstruction to the outer air, and would be always available for ventilation in the usual way. The hinged casement would be a further advantage for cleaning the windows. The openings left exposed by the windows, being hinged in, would be made safe by simple collapsible gates fitted to the stone rebates on the outer side of the casements. Further, to perfect this system, the walls could be reduced to the minimum height allowed by the Educational Department, and the roof left open to the apex, and plastered inside to comply with departmental requirements; and on the ridge or apex of the roof there could be an almost continuous ventilator made to open upwards to the vertical, and so be practically equivalent to temporarily removing part of the roof and leave the classroom directly exposed to the sky. All these suggestions have been put forward by Mr. Thomas Baird, Jr., F.R.I.B.A., I.A., architect, of 134, Bath Street, Glasgow, who is the inventor and patentee of the portable floor described.

COMING EVENTS.

Wednesday, April 13.

ROYAL SANITARY INSTITUTE. — Mr. H. Percy Boulnois on "Scavenging; Disposal of House Refuse." 7 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Annual Business Meeting. President's Valedictory Address. 8 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Students' Visit to Kempton Park Filter Beds and Pumping Station of the Metropolitan Water Board.

Thursday, April 14.

R.I.B.A.—Science Committee meets.

SOCIETY OF ARCHITECTS.—Mr. S. Bylander on "Constructional Steel Work," 8 p.m.

ILLUMINATING ENGINEERING SOCIETY.—Discussion on The Measurement of Light and Illumination will be continued, 8 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Anniversary Dinner, Hotel Cecil.

PAINT AND VARNISH SOCIETY.—Mr. Gaston Depierres on "Zinc Oxide," 8 p.m.

Friday, April 15.

SOCIETY OF ARCHITECTS.—Annual Dinner. Holborn Restaurant, 6.30 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Adjourned discussion on Mr. G. Hughes's paper, "Compounding and Superheating in Horwich Locomotives." Mr. S. N. Brayshaw on "A Research on the Hardening of Carbon and Low-tungsten Tool-steel," 8 p.m.

Saturday, April 16.

R.I.B.A.—Issue of nomination papers for election of Council and Standing Committees.

Monday, April 18.

INSTITUTE OF SANITARY ENGINEERS.—Paper by Mr. A. Alban H. Scott, 8 p.m.

R.I.B.A.—Professor W. R. Lethaby on "The Architecture of Adventure," 8 p.m.

ROYAL SOCIETY OF ARTS.—(Cantor Lecture). Mr. A. B. Searle's Second Lecture on "Modern Methods of Brickmaking," 8 p.m.

LIVERPOOL ARCHITECTURAL SOCIETY.—Annual General Meeting, 8 p.m.

ARCHITECTURAL ASSOCIATION.—Play, "Arctia," Royal Court Theatre, London.

Tuesday, April 19.

R.I.B.A.—Practice Committee meets.

ARCHITECTURAL ASSOCIATION.—Play, "Arctia," Royal Court Theatre, London.

Thursday, April 21.

R.I.B.A.—Literature Committee meets.

ROYAL SOCIETY OF ARTS (Indian Section).—Mr. J. Claude White on "The Arts and Crafts of Tibet and the Eastern Himalayas," 4.30 p.m.

Saturday, April 23.

R.I.B.A.—Council's Annual Report issued.

Monday, April 25.

ROYAL SOCIETY OF ARTS.—(Cantor Lecture). Mr. A. B. Searle's Third Lecture on "Modern Methods of Brickmaking," 8 p.m.

Friday, April 29.

ARCHITECTURAL ASSOCIATION.—Mr. Mowbray A. Green on "The Architecture of Bath." Election of officers. 7.30 p.m.

COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about five days or longer after the date of this issue. Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders. The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

April 8—20. **BIRMINGHAM.**—Erection of a fire station in Moseley Road, Highgate, for the Watch Committee. Before obtaining the bills of quantities, it will be necessary to deposit with the City Treasurer, Council House, Birmingham, a sum of £2 2s., for which a receipt will be given. Applications for forms of tender and bills of quantities may thereupon be made on or before April 8, at the office of the quantity surveyors, Mansell and Mansell, 47, Temple Row, Birmingham, on production of the official receipt for the fee. Drawings may be seen on and after same date at the office of the Architects, Arthur Harrison and Cox, 109, Colmore Row, Birmingham. Rate of wages, etc., clause to be observed. Tenders must be delivered, addressed to the Town Clerk, Council House, Birmingham.

April 9—May 3. **DEPTFORD.**—Erection of a branch library on the site in New Cross Road, S.E., for the Corporation, according to the drawings and specification prepared by Castle and Warren, Architects, and to be seen at their offices at Talbot House, Arundel Street, Strand, W.C. Persons intending to tender must send in their names to the Town Clerk so as to be received by him on or before Saturday, April 9, 1910, accompanied by a deposit of £2 2s. Bills of quantities, prepared by Dow, White, and Gee, of 12, Craven Street, Strand, W.C., together with the conditions of contract, will then be forwarded. Tenders must be delivered to the Town Clerk at the Town Hall, New Cross Road, S.E. The contractor will be required to subscribe to the wages clause embodied in the conditions of contract.

April 14. **YEOVIL.**—Alterations to factory, Summerhouse Road, for Ewens, Johnson, and Co. Builders desirous of tendering must send their names and addresses to John Petter and P. F. Warren, A.R.I.B.A., Architects and Surveyors, Church Street, Yeovil, with a deposit of £1 1s., on or before Thursday, April 14. Bills of quantities and form of tender will then be forwarded.

April 14. **WEYMOUTH.**—Erection of an elementary school for 270 boys, at Weymouth, from drawings prepared by Crickmay and Sons, Architects, 49, St. Mary Street, Weymouth and Westminster. Applications should be sent to G. P. Symes, Clerk to the Weymouth and Melbourne Regis Education Committee, 9 and 10, East Street, Weymouth, by April 14. Bills of quantities will be supplied to a selected number on receipt of a deposit.

April 16. **WEST STANLEY.**—Erection of proposed new banking premises, five shops, entertainment hall, etc., for Jonathan Green. Builders desirous of tendering are requested to send in their names to John J. Eltringham, by April 16, Derwent Street, Blackhill. Bills of quantities will be supplied to the selected builders.

April 18. **MANCHESTER.**—(See Plumbing and Sanitary.)

April 18. **CAMBERWELL.**—Contractors intending to quote for carrying out the construction of a new quay wall for the Borough Council are notified that the time for submitting tenders has been extended until April 18, 1910.

April 18. **CAERPHILLY.**—Erection of new higher elementary school, for the Glamorgan C.C. Plans may be seen, and specification, etc., obtained, for work No. 3, at Caerphilly police station, and at Glamorgan C.C. Offices, Westgate Street, Cardiff.

April 18. **OLDCASTLE.**—Repairs to the fireplaces, floors, etc., of the various wards of the Workhouse and Fever Hospital, for the Guardians. Specification, prepared by Michael Grace, jun., the Board's Engineer, can be seen at Union Offices, Oldcastle Workhouse.

April 18. **BRYNNAU.**—Additions to the Brynnau Council School, near Llanharan, for the Glamorgan C.C. Plans, etc., may be seen, and bills of quantities, etc., obtained, at the Llanharan police station, and at the Glamorgan C.C. Offices, Westgate Street, Cardiff.

April 18. **DINAS POWIS.**—Erection of cookery room at Brynnau Council school, near Llanharan, for the Glamorgan C.C. Plans may be seen, and bills of quantities, etc., obtained at the Dinas Powis Council school, and at Glamorgan C.C. Offices, Westgate Street, Cardiff.

April 18. **KEIGHLEY.**—Supply of bricks and stone covers during period ending June 30, 1911, for the Cemetery Committee. Tenders, addressed to the Chairman of the Cemetery Committee, to be sent to the Cemetery Registrar, Skipton Road, Keighley, from whom specifications may be obtained.

April 18. **PORT TALBOT.**—Erection of new infants' department of the Council school at Taibach, Port Talbot, for the Glamorgan C.C. Plans, etc., may be seen, and bills of quantities, etc., obtained, for work No. 2, at the Port Talbot police station, and at Glamorgan C.C. Offices, Westgate Street, Cardiff.

April 18. **WORTHING.**—Erection of a cookery and manual instruction school in Richmond Road, for the B.C. Specification may be seen and form of tender and bill of quantities obtained on application to the Borough Surveyor. Tenders to be sent to W. Verrall, Town Clerk, Municipal Offices, Worthing.

April 18. **ERITH (Kent).**—Erection of two additional wards and other extensions to the Erith Sanatorium, Little Heath, Belvedere, for the U.D.C. Bills of quantities, general conditions, and forms of tender may be obtained from Harold Hind, Surveyor, Council Offices, Erith, upon receipt of a deposit of £2 2s. Tenders to be delivered to J. Kennedy Allerton, Clerk, Council Offices, Erith.

April 18. **STRETFORD.**—Erection of a public Elementary School at Gorse Hill, Stretford, for the Education Committee. Plans may be seen and bill of quantities obtained on application to the architect, Frank W. Mee, F.R.I.B.A., 32, Victoria Street, Manchester, on deposit of £2 2s. Only those tenders will be entertained in which the contractor undertakes to proceed with the work with the utmost despatch and complete the same within the time set forth in the general conditions of contract. Tenders to be addressed to the Chairman of the Sites and Buildings Sub-Committee, Council Offices, Old Trafford.

April 18. **SOUTH FARNBOROUGH.**—Completion of the superstructure of the extension to workshops at the Balloon Factory, South Farnborough, in the Aldershot Command, for the Secretary of State for War. Plans, specification, and conditions of contract may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., on Wednesday, Thursday, and Friday, April 6, 7, and 8. Those desiring to tender and to receive a copy of the bills of quantities must apply to the Director of Barrack Construction not later than Saturday, April 9. The application must be accompanied by a deposit of 10s. Cheques or orders to be made payable to the Assistant Financial Secretary, and crossed "Bank of England for Credit to Army Funds." Tenders must be delivered addressed to the Director of Army Contracts, War Office, Whitehall, London, S.W.

April 18. **BEDLINOG (Wales).**—Works for the Glam. C.C.: (1) new girls' department of the Council school at Bedlinog; (2) new infants' department of the Council school at Taibach, Port Talbot: (3) new higher elementary school at Caerphilly; (4) additions to the Brynnau Council school, near Llanharan; (5) cookery-room at the Council school at Dinas Powis; (6) new latrines at the Council school at Hengoed. Contractors will be required to pay their workmen the recognised rate of wages, and must produce evidence of being insured against liability for accidents to workmen. Plans and specifications may be seen and bills of quantities and form of tender obtained for work No. 1, at the Treharris County Police Station; for work No. 2, at the Port Talbot Police Station; and for work No. 3, at the Caerphilly Police Station. Plans may be seen and specification and form of tender obtained for work No. 4, at the Llanharan Police Station; for work No. 5, at the Dinas Powis Council School; and for work No. 6, at the Bargoed Police Station. Plans, specifications, etc., of all the works may be seen or obtained at the Glamorgan County Council Offices, Westgate Street, Cardiff, to which address tenders, containing the names and addresses of two substantial sureties, are to be delivered.

April 19. **CWMGORSE.**—Erection of a Congregational Chapel at Cwmgorse. Plans and specification may be seen with T. Howell, Postmaster, Cwmgorse, or with W. Beddoe Rees, Architect, 3, Dumfries Place, Cardiff, of whom bills of quantities may be obtained.

April 19. **ABBEYLEIX.**—Erection of 33 labourers' cottages and fencing plots, for the R.D.C. Forms of tender, plans, specifications, and other particulars can be had on application at the office of James Finnegan, Clerk to Council, Clerk's Office, at the Workhouse.

April 19. **BEDWAS.**—Erection of a police station, for the Standing Joint Committee of the Monmouth C.C. Plans and specification may be seen at the office of William Tanner, County Surveyor, Newport, and copies of the quantities obtained on deposit of £1 1s. Tenders to be sent to the County Surveyor.

April 19. **HAZEL GROVE (Stockport).**—Erection of a new public elementary Council school on land in Chapel Street, Hazel Grove, near Stockport, to accommodate 250 children, with housewifery, laundry, and cookery centres, and caretaker's quarters, for the Cheshire Local Education Authority. Plans and specifications may be inspected and quantities obtained from the architect, C. T. Adshead, Leicester Chambers, 4, St. Ann's Square, Manchester, on payment of a deposit of £2 2s., on and after Tuesday, March 22. Tenders to be sent to J. W. Bann, Clerk, School Brow, Romiley, near Stockport.

April 20. **BLACKER HILL.**—Erection of four houses, for T. Howard. Plans and specifications may be seen and quantities obtained upon application to Arthur Whitaker, Architect, Worsborough Bridge.

April 20. **HEMSWORTH.**—Erection of 62 dwelling-houses, etc., at Fairwilliam Village, Hemsworth, for the South Kirkby, Featherstone, and Hemsworth Collieries (Limited). Send names with deposit of £2 2s. for bill of quantities, to Garside and Pontigon, Architects and Surveyors, Pontefract and Castleford.

April 20. **BARNSLEY.**—Pulling down the Imperial Corn and three adjoining cottages, Hoyle Mill, Barnsley, and for rebuilding the ram, with stabling, etc., for Clarke's Old Brewery, Barnsley Ltd. Plans and specification may be seen, and quantities obtained on application to R. and W. Dixon, Architects, 5, Eastgate, Barnsley, to whom tenders must be delivered.

April 20. **SEDGEFIELD.**—New cemetery lodge at Sedgefield Village, Co. Durham, for the Burial Joint Committee. Plans, specification, and conditions of contract may be seen and bills of quantities obtained at the office of J. W. T. Richards, M.S.A., Architect and Surveyor, 57, High Street, Stockton-on-Tees. Tenders to be posted to William Cole, Clerk to the Committee, 5, Windsor Terrace, Whitley Bay, R.S.O.

April 20. **ROYTON (near Oldham).**—Provision of shelters and other erections, asphalting of walks, and drainage of site in connection with the park and recreation ground, Radcliffe Street, Royton, for the U.D.C. Specification and quantities and other particulars may be obtained, and plans inspected at the office of the Architect, Ernest Woodhouse, F.R.I.B.A., 88, Mosley Street, Manchester. Tenders for the whole of the works combined to be forwarded to Thomas Bradshaw, Clerk, Town Hall, Royton, near Oldham.

April 21. **EVESHAM.**—(See "Engineering.")

April 21. **HAYNFORD.**—Erection of a dwelling-house at Haynford, Norwich. For specifications apply to Wm. Roberts, Haynford.

April 21. **NORWICH.**—Erection of a dwelling-house, at Haynford, Norwich. For specifications, apply to Wm. Roberts, Haynford. Plans can be seen at Thompson's, Newsagent, Stump Cross, Norwich; or at Mr. Roberts, Waterloo Place, Haynford.

April 22. **DURHAM.**—(See "Engineering.")

April 22. **PONTYPOOL.**—Erection of a public abattoir, stabling, and other works at Pontypool, for the Pontypool U.D.C. Drawings and specification may be seen, and forms of tender and bills of quantities obtained, on application at the office of D. J. Lougher, architect and surveyor, Bank Chambers, Pontypool, upon depositing £2 2s. Tenders to be sent to H. H. Haden, Clerk, Council Offices, Pontypool.

April 22. **WEST RIDING.**—Following works:—Warmsworth Dearn, Victoria Provided School, erection of new senior mixed department (builder, joiner, slater, plumber, plasterer, painter), for the Education Committee. Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A sum of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders must be addressed to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

April 23. **ELLESMERE PORT.**—Erection of new County police buildings. Plans and specifications can be seen at the office of H. Berwick, F.R.I.B.A., County Architect, Chester, and quantities obtained on deposit of £1. Tenders to be delivered to Reginald Potts, Clerk of the Peace, Chester.

April 23. **TRIM.**—Repairs of Enfield Dispensary Residence. For full particulars as to terms of contract see handbills, which can be obtained on application to Vincent J. Sheridan, Clerk of Trim Union, Clerk's Office, Trim Workhouse.

April 23. **VERYAN.**—Erection of a cottage at Boswague Farm, Veryan, for W. Elliott. Plans and specifications can be seen either at the farm house or at the office of the architect, A. Ernest Harris, 28, Boscawen Street, Truro. Tenders to be sent to W. Elliott, Boswague Farm, Veryan.

April 25. **BEDWAS.**—Erection of fourteen semi-detached houses at Bedwas for the Tydfil Road Building Club. Plans and specifications may be seen at the Blackwood office of Ralph Simmonds, Architect and Surveyor, Blackwood, or at Bedwas by appointment. Tenders to be delivered to the Chairman, E. Lewis, Church Street, Bedwas.

April 25. **COVE (Southampton).**—Erection of a new Council school for 140 children at Cove. Plans, specifications, and conditions of contract (no quantities) may be seen, and other information obtained, at the office of W. J. Taylor, County Surveyor, The Castle, Winchester, on and after Monday, April 4. A copy of the plans and specification will also be deposited at the existing school at Cove. Tenders are to be delivered to H. Barber, Clerk of the County Council, The Castle, Winchester.

April 25. **EASTWOOD (Essex).**—Erection of a cowshed for eight cows, on land adjoining the Council school at Eastwood, for the Essex C.C. The cowshed must comply with the dairies, cowsheds, and milkshops orders, and any regulations made thereunder, and also with any local bye-laws, and subject thereto, it should be constructed of weather-boarding on a brick foundation, with concrete floor and tiled roof. Tenders (with plans and specifications) should be sent to the Clerk of the Council, Shire Hall, Chelmsford.

April 26. **ROCK FERRY (Birkenhead).**—Erection of a sorting office, Rock Ferry, Birkenhead, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to W. Gilruth, H.M. Office of Works, Head Post Office, Liverpool. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

April 26. **CHELMSFORD.**—Works in their cattle market, for the B.C.:—1, construction of a roof over Rodd and Slipper's stand; 2, construction of a roof over Offin and Rumsey's auction ring; 3, erection of a small horse shed of corrugated iron; 4, fixing new manger in, and repairing, existing horse shed. Specification and form of tender, and full particulars, may be obtained, and the plans may be inspected, at the Borough Surveyor's Office, 16, London Road. Tenders must be delivered at the office of W. Smith, Town Clerk, Municipal Offices, 16, London Road, Chelmsford.

April 27. **CREWE.**—Erection of a sorting office, Crewe Station, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster, Head Post Office, Crewe. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

April 27. **WOOLWICH.**—Additions, alterations, and repairs to a mission hall in Francis Street, North Woolwich, to adapt same for use as a branch public library, for the B.C. Persons or firms desirous of tendering may, upon depositing the sum of £1 1s., obtain copies of the drawings, specification and form of tender at the office of J. Rush Dixon, M.Inst.C.E., Borough Engineer, Town Hall, Woolwich. The person or firm whose tender is accepted will he required to pay Trades Union rates of wages, to observe Trades Union hours of labour, and to enter into a formal contract. Tenders must be sent to Arthur B. Bryceson, Town Clerk, Town Hall, Woolwich.

April 28. **GLASS HOUGHTON (Castleford).**—Erection and completion of the new "West Riding Hotel," at Glass Houghton, near Castleford. Send names to Ernest E. Pickersgill, Architect, Brewery Offices, Pontefract, before April 21. Quantities may be obtained, and plans and specifications inspected after that date at same address.

April 29. **LEYTONSTONE.**—Erection of a new county high school for 300 girls, to be erected at Forest Road, Leytonstone, Essex, for the Education Committee, in accordance with plans and specifications prepared by the architect, W. Jacques, A.R.I.B.A., 2, Fen Court, Fenchurch Street, London, E.C., at whose offices the plans and specifications, together with forms of contract, may be seen on any day except Saturday. Builders and contractors wishing to tender must send their names and addresses, together with a deposit of £5, to the Architect, on or before Monday, April 11, 1910. The contractor whose tender is accepted will be required to give the bond of an approved guarantee society in the sum of £1,000 as security for the due performance of the contract. Tenders to be delivered to R. Dempsey, Clerk to the Leyton District Sub-Committee.

April 30. **FALMOUTH.**—Additions and alterations to the Falmouth Grammar School, for the Governors, the work including heating of the premises by hot water, according to plans and specifications, which may be seen by appointment at the school, or at the office of the Architect, Sampson Hill, Green Lane, Redruth. Tenders to be sent to R. J. Loney, Clerk, 26, Norfolk Road, Falmouth.

April 30. **GOODMAYES (West Ham).**—Alterations and additions, Little Heath House, Goodmayes Asylum, for the Borough Council. Plans and specification may be seen, and form of tender, bills of quantities, and further particulars obtained at the office of John G. Morley, Borough Engineer, Town Hall, West Ham, E., upon deposit of £1 1s. Note.—No tender will be considered unless the same is delivered at the office of the Town Clerk, Town Hall, West Ham, E., in the envelope supplied, by registered post. The contractor will be required to enter into a bond with one surety for the due performance of the contract, and no work will be ordered under the contract until such bond has been duly executed. The contractor whose tender is accepted will be required to pay the whole of his workmen such rate of wages and observe such hours of labour as are recognised by the workmen's trade unions, and shall not assign nor underlet or make a sub-contract with any person or persons for the execution of any part of such work. In the event of any breach of such agreement the Council will enforce the penalty clause in its entirety.

May 17. **BRIDGEND.**—Erection of a new board-room and offices at the workhouse, for the Guardians. Plans, etc., may be seen, and all particulars obtained at the office of P. J. Thomas, architect, Bridgend. Tenders to be sent to R. Harmar Cox, Clerk, Union Offices, Bridgend.

No date. **STAINCROSS.**—Slating and plumbing for one house. For plans and specifications, apply, H. Yardley, Braithwaite Street, Staincross.

No date. **GOSPORT.**—Erection of new Wesleyan church and schools. Apply for quantities to Gordon and Gunton, Architects, Finsbury House, Blomfield Street, London, E.C.

No date. **WHEATLEY.**—Erection of pair of semi-detached villas, to be erected in Axholme Road. Send names to John Athron, Architect, 10, Priory Place, Doncaster. Quantities will be supplied.

No date. **ARMLEY.**—Erection of extension to works, Canal Road, for J. W. Roberts, Ltd. Names and addresses to G. Fredk. Bowman, Architect, 5, Greek Street, Leeds, and quantities will be forwarded in due course.

No date. **AISLABY.**—Erection of a cottage, at Aislaby, for G. Cass. Drawings, etc., may be seen at the office of A. E. Young, Architect and Surveyor, 77, Baxtergate, Whitby, and quantities will be forwarded to applicants.

No date. **SELBY.**—Erection of three cottages in Flaxley Road for the Selby Steam Laundry Co., Ltd. Plans may be inspected and specifications obtained at the laundry.—Henry T. Tate, Architect, 6, Arlington Avenue, Cottingham, East Yorks.

No date. **LEEDS.**—Alterations of premises in St. Peter's Street, for A. W. Scarr and Sons (Ltd.). Send names to Fredk. W. Rhodes, M.S.A., Architect and Surveyor, Upper Wortley, Leeds, and bills of quantities will be forwarded when ready.

No date. **EXETER.**—Rebuilding Nos. 175 and 176, Sidwell Street, Exeter, for James Hammett. Drawings and specification may be seen at the office of James Jerman, F.R.I.B.A., Architect and Surveyor, 1, Bedford Circus, Exeter, and also any further particulars obtained.

No date. **WHITBY.**—Altering and part rebuilding of butcher's shop, and other premises adjoining, in Tunnel Road, Grosmont, near Whitby, for Mrs. Wm. Duck. Plans may be supplied to builders, upon written application agreeing to tender.—Thomas Dowson, Architect and Surveyor, 3a, Flowergate, Whitby.

No date. **RHYL.**—Contractors desirous of tendering for any of the following work may have quantities (which will be ready about the 16th inst.) upon application to Maxwell and Tuke, architects and engineers, 25, Brazennose Street, Manchester. The contractor must enclose with his application a cheque for £1 1s. as deposit for each or any of the three contracts. No. 1.—Widening and encasing the present iron pier, constructing a jetty some 600 yards long to deep water, all in ferro concrete. No. 2.—Erection and construction of a new assembly hall, visitors' club, numerous shops, tea-rooms, and offices, sundry alterations to the present amphitheatre, all of which are to be built on terra firma and constructed of brick, etc. No. 3.—New Dining-room, refreshment-room, kiosks, and shelters, to be erected on the pier proper, and will be constructed principally of wood, iron, and cement.

ENGINEERING.

April 16—17. **TOW LAW.**—Providing the whole of the material, including the filtering medium, and the construction of works for the purification of sewage, for the U.D.C. Contractors desirous of tendering for these works must send their names and addresses not later than April 16, to John Hillary, Surveyor to the Council, Tow Law, accompanied by a deposit of £2, and to such contractors all particulars necessary for tendering will be furnished. Contractors desiring to inspect the site of the works must meet the Surveyor at Tow Law Station at 1 p.m. on April 20, when plans of the proposed works may be examined. Separate tenders are to be submitted for the providing of the filtering medium and the other parts of the works. Tenders must be sent to Edwd. Milburn, Clerk to the Urban District Council, Council Offices, Tow Law.

April 18. **WIGTON.**—(See "Plumbing and Sanitary.")

April 20. **LITTLEOVER, NEAR DERBY.**—Construction of about five miles of 15in., 12in., 9in., and 6in. pipe sewers, together with manholes, gauge chambers, stormwater overflows, ventilating shafts, and other accessories, for the Shardlow R.D.C. Plans and specification may be seen at the office of the engineers, Shaw, Son, and Fuller, The College, All Saints', Derby, and a form of tender and a copy of bill of quantities may be obtained from them on deposit of £1 1s. Tenders must be sent to J. W. Newbold, Clerk, Becket Street, Derby. The contractor whose tender may be accepted will have to enter into a bond with two bondsmen to ensure his financial ability to carry out the work.

April 20. **ROCHDALE.**—Construction in ferro-concrete of a high level road and coal store in connection with their gasworks, for the Gas and Electricity Committee of the Corporation. Plans and levels of the site may be seen and conditions of tender obtained on application to T. Banbury Ball, the manager, at the Gasworks, Dane Street, Rochdale, from whom any further information may be obtained. Tenders to be addressed to the Chairman of the Gas and Electricity Committee, Town Hall, Rochdale.

April 20. **SOUTH DUBLIN.**—Construction of a sewer and works connected therewith in the Donnybrook portion of the Rural District, in accordance with drawings and specification prepared by the Engineer, T. J. Byrne, A.R.I.B.A. Drawings, specification and conditions of contract may be inspected at the office of the R.D.C. Schedule of quantities and forms of tender may be obtained at the council's office. Tenders addressed to "The Presiding Chairman," will be received by George Gallagher, Assistant Clerk of the Council, 1, James's Street, Dublin. Solvent security in two persons, or the Bond of an approved Assurance Company, for the due performance of the work will be required.

April 21. **DURSLEY.**—Heating and hot-water supply service at the Workhouse, where a specification can be seen on application to the Master. Tenders to be delivered to J. G. Wenden, Clerk to the Guardians, Dursley.

April 21. **FISHTOFT.**—Heating the Parochial school by means of the low pressure hot-water system, for the Trustees. The school may be inspected on any week-day on written application to Rev. E. P. Cook, Fishtoft Rectory, Boston, to whom tenders must be sent.

April 21. **EVESHAM.**—Provision and erection of a ferro-concrete band stand on the public recreation ground, for the T.C. Plans and specifications can be inspected by persons or firms desirous of tendering, at the offices of H. S. Harvey, the Borough Surveyor, Town Hall, Evesham, who will supply all further necessary particulars. Tenders to be sent to Thos. A .Cox, Town Clerk, Evesham.

April 21. **LAMBERHURST (Tonbridge).**—Taking up and relaying of about 240 yards of 15in. pipe, and construction of about 400 yards 9in., and 70 yards 6in. stoneware pipe sewer, with 12 manholes, etc., etc., in the village of Lamberhurst, about three miles from Goudhurst Station, for the Tonbridge R.D.C. Plans and specifications may be seen, and bill of quantities and form of tender obtained on application at the office of Frank Harris, Engineer and Surveyor to the Council, Broadway, Southborough, Tunbridge Wells, on deposit of £1 1s. Tenders to be delivered to Neville R. Stone, Clerk to the Council, 23, Church Road, Tunbridge Wells.

April 22. **DURHAM.**—(1) Reconstructing stone bridge, near Durham, with steel girders, 48ft. span, and masonry abutments, etc.; (2) reconstructing Aldin Grange Old Bridge (masonry arch, 45ft. span); and (3) paving road channels, laying concrete kerb and flags in Front Street, Chester-le-Street. Plans and specifications can be seen and bills of quantities for Stone Bridge, obtained at the County Engineer's Office, Shire Hall, Durham. Tenders, as the case may be, to be delivered to William Crozier, A.M.Inst.C.E., Security for the proper completion of the work will be required.

April 23. **STROMA.**—Construction of additional works to be executed at Stroma South Pier, for the Caithness C.C. Copies of the plans, etc., may be seen at the office of Mr. James Young, County Clerk, County Clerk's Office, Thurso.

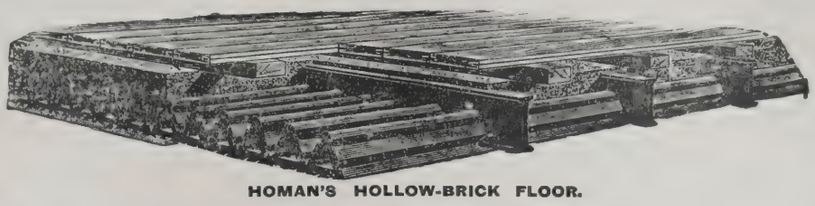
April 23. **LINTHWAITE.**—Widening of the Wakefield and Austerlands Main Road, for the Highways Committee of the West Riding, the works including the erection of a brick, or masonry, retaining wall, in length about 130 yards by a maximum depth of 30ft. Plans may be seen and bills of quantities, etc., obtained, at the office of F. G. Carpenter, West Riding Surveyor, County Hall, Wakefield, on deposit of £1. Cheques, etc., should be forwarded and made payable to "The West Riding Treasurer," County Hall, Wakefield.

(Continued on page xvi.)

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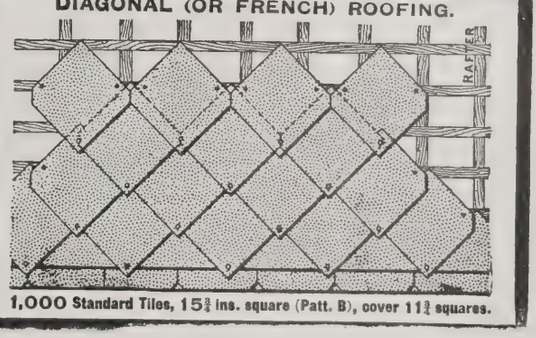
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FLATS AT BERNER STREET, ST. JAMES STREET AND KENSINGTON HIGH ST., KINGSWAY, ETC.
WAREHOUSES AT HACKNEY, SOUTHFIELDS, SMITHFIELD ETC., ETC.

May 4. **NAAS.**—Construction of pipe sewers, manholes, flush tanks, storm overflows, lamp holes, fences, filters, septic tanks, and concrete effluent carriers, the preparation including under drainage of about half a statute acre of land for irrigation ground, and other works, in strict accordance with plans and specification prepared by the Council's Engineer, F. Bergin, B.E., for the R.D.C. Plans, etc., can be seen at the office of D. J. Pursell, Clerk of Council, Council Offices, Naas, on any day (except Wednesdays and Saturdays), or at the office of the Council's Engineer, 36, Westmorland Street, Dublin. Tenders must be accompanied by a schedule of prices, and contain the names and addresses of two solvent sureties, willing to join in a bond of £500 for the performance of the contract within the specified period. The contractor will be expected to give preference to local labour.

June 1. **MONTE VIDEO (Uruguay).**—H.M. Legation at Monte Video have forwarded copies of the specification, plans, etc., in connection with the invitation, by the Administration of the port of Monte Video, for tenders for the construction of two reinforced cement warehouses and six reinforced cement sheds. Tenders will be received up to 4 p.m. on June 1, at the Oficina de Tráfico y Conservacion, Consejo de Administracion del Puerto de Monte Video, Calle Cerrito 185, Monte Video. The above-mentioned copies of specifications, etc., may be seen by British firms at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, London, E.C.

No date. **RHYL.**—(See "Building.")

No date. **BARMBY MARSH (Howden).**—Repairing 150 feet of river bank, in front of The Sloop Inn.—W. P. Lofts, Solicitor, King Street, Wakefield.

IRON AND STEEL.

April 18. **DUBLIN.**—Supply of the following, for the Great Northern Railway Company (Ireland):—1,200 tons bull head rails (90lb. B.S. section); 55 tons fishplates (B.S. section); and 1,400 tons cast iron chairs. Specifications and forms of tender can be obtained from the Secretary. Tenders should be delivered to T. Morrison, Secretary, Amiens Street Terminus, Dublin.

No date. **TOTTENHAM.**—Providing and fixing iron fencing, etc., for the Burial Board. Full particulars and forms of tender will be supplied at 568, High Road, Tottenham.

PAINTING.

April 13. **BROADSTAIRS.**—Painting work at the Council offices and fire station, the public lavatories, and the bandstand, shelter seats, garden seats, etc., for the U.D.C. Specifications can be seen and forms of tender obtained on application to the Town Surveyor, Howard Hurd, C.E., Council Offices, Broadstairs. Tenders must be delivered at the office of L. A. Skinner, Clerk to the Council, Council Offices, Broadstairs.

April 20. **YORK.**—Painting, colouring, and limewhiting, to be carried out at certain schools during summer holidays, for the Education Committee. Specifications may be obtained from J. H. Mason, Secretary, Education Offices, Clifford Street, York. Separate tenders are required for each school to be painted and coloured, and one tender for the whole of the limewhiting.

April 20. **PORTSMOUTH.**—Painting for the Corporation:—(1) Seats and railings, etc., in the Clarendon Road Gardens, the Saxe-Weimar Gardens, the Kingston Recreation Ground, the Kingston Church Ground, the spaces to the north of the Copnor Bridge (both East and West of the Railway), the enclosure on the Grand Parade; (2) pavilions, seats and railings, etc., in the North End Recreation Ground; (3) bandstand, palm houses, seats and railings, etc., in Victoria Park; (4) exterior of public baths; (5) external painting, etc., of the Town Hall. Tenders may be submitted for one or more of the works, and specifications and plans may be seen and forms of tender obtained at the Borough Engineer's Office, Town Hall. Tenders to be sent to G. Hammond Etherton, Town Clerk, the Town Hall, Portsmouth. Rate of wages, etc., clause to be observed.

April 21. **RAINHILL.**—Painting all external wood and iron work at the annexe buildings, etc., Rainhill County Asylum, for the Visiting Committee of Lancashire Asylums Board. Specification may be seen on application to Jas. Gornall, Clerk and Steward, Clerk's Office, Rainhill Asylum.

April 23. **CARDIFF.**—Cleaning, colouring, and painting children's homes at headquarters, Ely, and in Cardiff and Penarth, according to specification, a copy of which, together with the form of tender, may be obtained from Arthur J. Harris, Clerk, Union Offices, Queen's Chambers, Cardiff, to whom tenders must be sent.

April 23. **MANCHESTER.**—Painting various bridges over canals and rivers in the city, for the Paving and Highways Committee. Specification and form of tender may be obtained on application at the City Surveyor's Office, Town Hall, Manchester, on payment of deposit to the City Treasurer of £2 2s. All cheques or postal orders are to be made payable to the order of the Corporation of Manchester. Tenders, addressed to the Chairman of the Paving, etc., Committee, are to be delivered at the City Surveyor's Office.

April 25. **NEW MALDEN.**—Cleaning, distempering, and painting at the Central Homes for Children, Kingston Road, for the Guardians. Specification can be obtained on application to Chas. W. Dash, Clerk, Union Offices, Coombe Road, Kingston-on-Thames. Tenders should be sent to the Clerk. Contractors to pay the fair rate of wages current in the district, and for this purpose the fair rate of wages shall mean Trade Union rate.

April 26. **DUNDEE.**—Painter work to be executed on Nos. 93 and 95, Commercial Street, for the Water Commissioners. Specification and form of tender may be obtained on application to George Baxter, Engineer and Manager, Water Engineer's Office, 93, Commercial Street, Dundee. Tenders should be lodged with Wm. H. Blyth Martin, Clerk of the Commissioners, City Chambers, Dundee.

April 28. **BLACKHILL (Durham).**—Painting and colouring the following Council schools:—Burnope, Consett Infants', Iveston, Edmondbyers, and Waskerley, for the Durham C.C. Education Committee. Tenders must be sent to J. R. W. Sherwood, 22, Queen's Road, Blackhill, from whom forms of tender may be obtained.

June 12. **KIRKBY-IN-FURNESS.**—Re-painting the cottages at Herschell Terrace, for the Kirkby-in-Furness Co-operative Society. Specifications can be seen at the stores on application to the manager.

PLUMBING AND SANITARY.

April 18. **HENGOED.**—New latrines at the Council school at Hengoed, for the Glamorgan C.C. Plans may be seen, and specifications, etc., obtained at the Bargoed police station, and at Glamorgan C.C. Offices, Westgate Street, Cardiff.

April 18. **WIGTON.**—Supply of materials in connection with the workhouse drainage scheme and water supply, for the Guardians. Particulars, etc., may be seen at office of J. F. W. Ritson, Clerk to the Guardians, 4, West Street, Wigton.

April 18. **WEST RIDING.**—Taking down of partition in urinals, wall, etc., and preparing for a new w.c., at Cudworth Pontefract Road Council school, for the C.C. Education Department. (Trade, builder.) Specifications on application. Tenders to be received by T. Graham, West Riding Education Offices, Obelisk Chambers, Barnsley.

April 18. **HULME (Manchester).**—Sanitary alterations in connection with the following premises. Nos. 3-15, Bank Street, and 25, Great Jackson Street; Nos. 2-8, Rex Street, for the Manchester Corporation. Forms of tender, general conditions, and specifications may be obtained, and plans seen, on application to H. Prescott, manager of the Drainage Department, between the hours of 9 and 11 o'clock each morning. Tenders must be addressed to the Chairman of the Drainage, etc., Sub-Committee, and delivered at the Drainage Office, Town Hall, Manchester.

April 23. **DONCASTER.**—Laying 253 yards of 9in. fire clay pipe sewer, including two manholes, average depth 4ft. 6ins., in Windmill Balk Lane, Adwick-le-Street, for the R.D.C. Specifications and further particulars may be obtained from or seen at the office of the Surveyor, W. R. Crabtree. Tenders must be sent to F. E. Nicholson, Solicitor, Clerk to the Council, Union Offices, High Street, Doncaster.

No date. **STAINCROSS.**—(See "Buildings.")

ROADS AND CARTAGE.

April 18. **PRESTON.**—Levelling, paving, etc., back road behind Clifton Place, Long Lane, Ashton-on-Ribble, for the Corporation. Plan, section, and specification, may be seen, and schedule of quantities and form of tender obtained at the office of the Borough Surveyor, Town Hall, Preston, to whom tenders must be delivered. Fair contracts clause.

April 18. **LITHERLAND.**—Widening and improving of Sefton Street for the U.D.C. Plans and specification can be seen and form of tender and quantities obtained on application to A. H. Carter, Surveyor, Public Offices, Sefton Road, Litherland, any morning between the hours of 9 and 11 o'clock, on deposit of 10s. 6d. Tenders to be sent to William Kirk, J. W. Allen North, Clerks to the Council, 15, Lord Street, Liverpool.

April 18. **LIVERPOOL.**—Widening and improving Sefton Street, for the Litherland U.D.C. Plans and specification can be seen and form of tender and quantities obtained on application to A. H. Carter, Surveyor, Public Offices, Sefton Road, Litherland, between 9 and 11 a.m., on deposit of 10s. 6d. Tenders to be sent to William Kirk and J. W. Allen North, Clerks to the Council, 15, Lord Street, Liverpool.

April 18. **SUNBURY-ON-THAMES.**—Supplying and laying of about 1,600ft. run of 12in by 4in. blue Pennant bunched kerbing; also for the supply and delivery only of Derbyshire limestone tar paving to Sunbury railway station, in such quantities as the Council may require before March 31, 1911, for the U.D.C. Specifications and forms of tender for each of the above contracts may be obtained on application to Harold F. Coales, A.M.I.C.E., Surveyor. Tenders to be addressed to Charles E. Goddard, Clerk, Council Offices, Sunbury-on-Thames.

April 19. **RISHTON.**—Labour in sewering, paving, flagging, etc., in Cliff Street (Lord Street to Stourton Street) and in Danvers Street (Cliff Street to back Cliff Street West), for the U.D.C. Plan may be seen and specification and form of tender obtained on application to the surveyor, at the Council Offices, Brook Street, Rishton, to which address tenders must be sent addressed to J. J. Adams, Clerk.

April 19. **BARKING.**—Surface water draining, forming, making up, metalling, channelling, kerbing, lighting, fencing, etc., of a new road, about 440 yards in length, to be known as Abbey Road, within their district, for the U.D.C. Plans and details can be seen, and specification, quantities, and form of tender obtained, upon application to C. F. Dawson, Surveyor to the Council, Public Offices, Barking. Tenders may be delivered to the Council at 7 p.m. on Tuesday, April 19, or be sent by post to H. Hargreaves, Clerk to the Council, Public Offices, Barking. Fair wages clause.

April 20. **BOURNEMOUTH.**—Making up Bryanstone Road, for the B.C. Full particulars, forms of tender, specification and schedule, may be obtained of the Borough Engineer, F. W. Lacey, at whose offices drawings can be seen, provided that the sum of £1 1s. has been previously deposited in respect to each tender, with F. W. Lacey, M.I.C.E., Borough Engineer and Surveyor, Municipal Offices, Bournemouth.

April 21. **GLOUCESTER.**—Stone and hauling, for the R.D.C. Forms of tender may be obtained at the offices of the Council, Berkeley House, Berkeley Street, Gloucester, from F. E. Weaver, the District Surveyor. Tenders must be sent to Herbert H. Scott, Clerk to the Council.

April 21. **GRAVESEND.**—Supply of the following road materials, etc., for the Corporation:—English or Welsh basalt; Cherbourg quartzite; granite setts; ragstone chippings. Specification, form of tender, and all other information may be obtained on application at the office of the Borough Surveyor, F. T. Grant, Town Hall, Gravesend. Tenders must be delivered to the office of H. H. Brown, Town Clerk, Gravesend, together with samples of the materials which it is proposed to supply.

April 22. **DURHAM.**—(See "Engineering.")

April 22. **THIRSK (Yorks.).**—Supply of about 1,000 tons of whinstone and 6,000 tons of lag, to be delivered, carriage paid, at one or more of the following stations:—Boroughbridge, Brafferton, Coxwold, Humberton sidings, Newby Wisk, Otterington, Pilmoor, Se say, Sinderby, Thirsk Junction, Thirsk Town, and Topcliffe, for the Thirsk R.D.C. Form of tender can be obtained from R. R. Wright, Highway Surveyor, Thirsk, on receipt of stamped addressed foolscap envelope. Duplicate samples of stone are to be sent to the Surveyor of Highways, Thirsk R.D.C. Thirsk. Tenders must be sent to William Swarbreck, Clerk, Finkle Street, Thirsk.

April 25. **REIGATE.**—Supply of the following materials:—Granite macadam, basalt, and flints; granite kerb and setts; Kent ragstone; tar-paving material; artificial stone paving; gravel; concrete beach; pea beach; compo, grit; Portland cement. Forms of tender, conditions of contract, and full particulars may be obtained upon application to Fred T. Clayton, the Borough Surveyor, and every person tendering will be required to deposit at his office, at the Municipal Buildings, Reigate, a sample of the materials for which he tenders. Tenders are to be delivered at the office of Alfred Smith, Town Clerk, Municipal Buildings.

April 25. **STEVENAGE.**—Tar-paving the footpath (about 2,200 superficial yards), along the east side of High Street, the south side of Basil's Approach, and the north side of Providence Row. Also for paving with tar macadam the roadways (about 500 superficial yards) in Middle Row and Baker's Row, within their district, for the U.D.C. A plan of the proposed work can be seen, and a copy specification and form of tender can be obtained at the offices of the Council in Orchard Road, Stevenage. Tenders to be delivered to Wm. Onslow Times, Clerk to the Council, Urban District Council Offices, Stevenage.

April 26. **GOSFORTH.**—Carriageway and footway construction, for the U.D.C. All particulars may be obtained from George Nelson, A.M.Inst.C.E., Engineer and Surveyor to the Council, Council Chambers, High Street. A deposit of £2 2s. is required for quantities.

April 28. **CHATHAM.**—Supply of broken granite or other hard stone and surface picked flints, for the T.C. Specification, schedule, and form of tender can be obtained on application at the Borough Surveyor's Office, Town Hall, Chatham. Tenders to be delivered to Charles Day, Borough Surveyor, Town Hall, Chatham.

No date. **PONTELAND.**—Contractors desirous of tendering for several miles of roadmaking on the Dorras Hall Estate, will please send in their names and addresses to Watson and Scott, 48, Dean Street, Newcastle.

MISCELLANEOUS.

April 20. **HORSHAM.**—Tar paving of the playgrounds and incidental work at the Horsham Southwater Council school, for the West Sussex Local Education Authority, situate about three miles from Horsham and within half a mile of the Southwater Railway Station (L.B. and S.C.R.). Specifications and forms of tender will be forwarded on application to Lionel Thompson, Secretary, Education Offices, Horsham, Sussex, to whom tenders must be sent.

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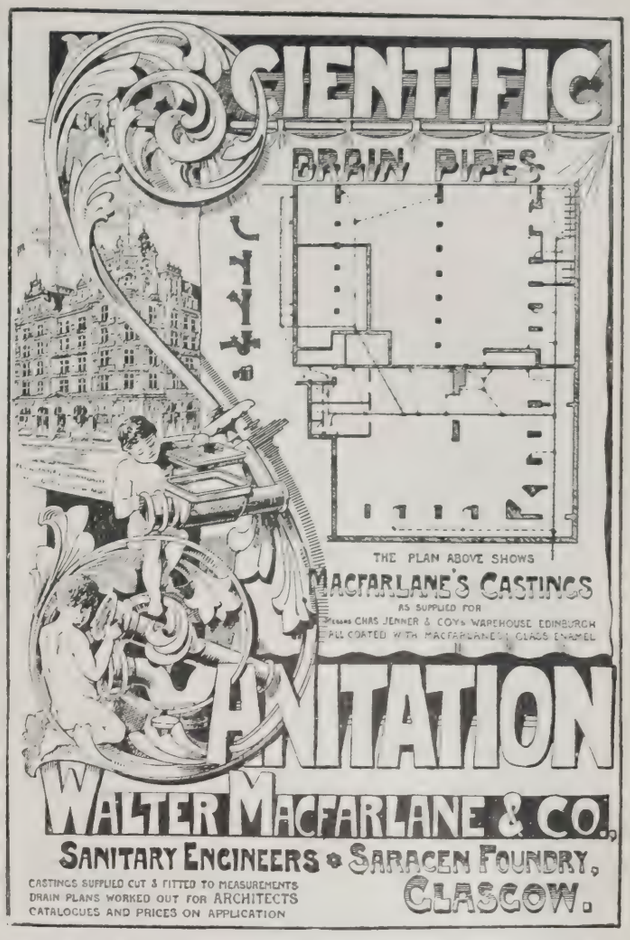
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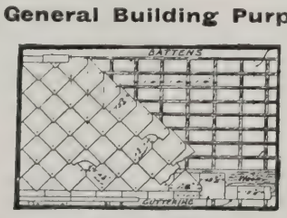
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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, ARCHITECTS' AND BUILDERS' JOURNAL, *Caxton House Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Braichycymmer, Glam.—Accepted for the erection of additions to the Council school at Braichycymmer, Glam., for the Glamorgan Education Committee. D. Pugh-Jones, M.S.A., County architect, Cardiff.
F. W. Lougher and Co., £529 14s. 2d.

Bradford.—Accepted for all trades in erection of St. Clement's Vicarage, Barkerend Road, Bradford, Yorks. Horace E. Priestley, M.S.A., 4, Bertram Road, Manningham, Bradford, architect.

O. Booth and Son, Great Horton, excavator, mason and bricklayer	£784 0 0
W. Pickering, Garnett Street, carpenter and joiner	423 0 0
J. Smithies, Great Horton Road, slater	55 17 6
J. and W. Bates, Manchester Road, plasterer	129 0 0
G. Collinson, Manningham Lane, plumber and glazier	200 0 0
H. A. Smith, Bakerend Road, painter	40 5 2

All of Bradford.

Berkhamsted.—For erecting new residence at Berkhamsted, for W. S. Rogers, Esq. Moscrop-Young and Glaisfield, architects, 20, Brook Street, Bond Street, W.

Collwell and Edgar	£1,325
H. and J. Matthews	1,299
Ed. Smith and Son	1,296
Miskin and Sons	1,295
G. B. Tutt and Son	1,287
Honour and Son	1,236
Brightman and Son*	1,147

*Accepted.

Chopwell (Durham).—Accepted for the erection and completion of the new branch at Chopwell, for the Annfield Plain Industrial Co-operative Society, Ltd. Geo. Thos. Wilson, 22, Durham Road, Blackhill, Co. Durham, architect.
J. G. Parker, Hendon, Sunderland, £7,438 13s.

Chard.—Accepted for the erection of house and shop, Fore Street, Chard. Symes and Madge, architects and surveyors, Somerset House, Chard. Quantities by the architects.
Alex Poole, Ilminster, £540.

Chester.—Accepted for alterations and additions to a public elementary school in Victoria Road, for the T.C. P. H. Lockwood, St. Werburgh Street, Chester, architect.
T. Mayers, Rowton, Chester, £3,135.

Cwmlai, Tonyrefail, Glam.—Accepted for the erection and completion of a new Council school at Cwmlai, Tonyrefail, for the Glamorgan County Education Committee. D. Pugh-Jones, F.S.I., County architect, Cardiff.
Fred Bond, Beda Road, Cardiff, £5,292 17s. 4d.

Gosport.—For erection of new cookery school in connection with the Grove Road Schools, Gosport, for the Gosport and Alverstoke Education Committee. Edwin J. Tench, A.R.I.B.A., Architect, Norwich and Bury St. Edmund's.

South Western Joinery Co.	592 13 6
Tanner, Southsea	480 0 0
F. A. Lane, Gosport	425 0 0
C. M. Dash, Gosport	419 0 0
G. D. Osgood, Gosport	395 0 0
F. W. Johnson, Brockhurst	388 18 0
Lear and Sons,* Alverstoke	381 0 0

*Accepted

Guildford.—For erecting new premises, Haydon Place, Guildford, for the Guildford and District Co-operative Society, Ltd. T. J. Capp, architect, 1, Stoke Road, Guildford.

W. Smith and Sons, Guildford	£2,700
A. Johnson, Guildford	2,653
R. Smith, Guildford	2,650
S. Ellis, Guildford	2,637
F. Billimore, Guildford	2,632
Tribe and Robinson, Guildford	2,610
Higlett and Hammond,* Guildford	2,549
H. Brand, Guildford (withdraw)	2,172

*Accepted.

Halsted (Essex).—For erection of new buildings in connection with the Greenwood Certified Industrial School for Girls at Halsted.

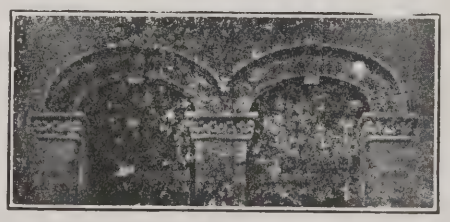
Ward, Colchester	£1,607 0 0
French, Halsted	1,552 0 0
Beaumont, Lexden	1,513 0 0
Dobson, Colchester	1,494 0 0
Deaves, Bures	1,493 10 0
Sudbury, Halsted	1,455 0 0
Clarke, Cambridge	1,429 0 0
Sharpe, Halsted	1,429 0 0
Farr, Frinton	1,410 0 0
Pudney and Son,* Colne Engaine	1,387 0 0

(Tenders continued on page xx.)

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(Tenders continued from page xviii.)

Harrington (Cumberland).—Accepted for the various works required in connection with the laying out of a cemetery ground, and erecting a boundary wall, cemetery chapel, and curator's house, at West Ghyll End, High Harrington, for the Harrington U.D.C. Charles W. Eaglesfield, Gordon Street, Workington, architect and surveyor.

L. Ferguson and Sons, Harrington, builders and joiners	£1,494 6 11
T. Mandle and Co., Maryport, slaters	95 10 0
J. C. Perrin, Workington, plasterer	50 0 0
Pope and Co., Workington, plumbers	43 0 0
H. Sanderson, Workington, painter and glazier	40 0 0

Llest, Pontyrhyl, Glam.—Accepted for the erection and completion of a new infants' Council school, at Llest, Pontyrhyl, Glam., for the Glamorgan County Education Committee. D. Pugh-Jones, F.S.I., County architect, Cardiff.

F. W. Lougher and Co., Pontycymmer, £3,177 10s.

London, W.—For erection of new school buildings in connection with Haven Green Baptist Church. G. Ashby, Lean and Son, 491, Oxford Street, W., architects.

Estimate A.

Myring and Son	£2,450 0 0
C. Ansell	2,340 0 0
Frost and Co.	2,167 15 0
G. Bollom	2,133 0 0
W. Thorn	2,112 0 0
W. J. Dickens*	2,070 0 0

Estimate B.

Myring and Son	£1,200 0 0
C. Ansell	1,180 0 0
Frost and Co.	1,064 0 0
G. Bollom	1,076 0 0
W. Thorn	1,205 0 0
W. J. Dickens	1,030 0 0

Deductions:—Myring and Son, £30; C. Ansell, £40; G. Bollom, £29; W. Thorn, £75; W. J. Dickens, £32.

*Accepted.

Londonderry.—Accepted for the rebuilding of the Guildhall for the Corporation. Quantities by Messrs. W. H. Stephens and Sons, 13, Donegall Square North, Belfast.

H. Laverty and Sons, Ltd., Belfast, £24,584.

Newbridge (Mon.).—For erection of a new church at Newbridge, Mon., for the trustees of the Zoar Welsh Congregational Church. John W. Aldiss, M.S.A., Newbridge, Mon., architect and surveyor.

T. F. Howells, Cardiff	£1,775 3 3
W. J. Bloxham, Banbury, Oxon	1,742 0 0
W. Williams, Cardiff	1,654 0 0
D. Davies and Sons, Cardiff	1,050 0 0
J. T. Jones, Cefn, Ruabon	1,575 0 0
A. S. Morgan and Co.	1,500 0 0
Price Bros., Cardiff	1,498 0 0
W. Jones, Gloucester	1,495 0 0
G. F. Leadbeter	1,486 0 0
E. F. King and Co.	1,438 0 0
C. H. Reed	1,395 0 0
J. Jenkins and Co., Ltd.	1,389 0 0
E. W. D. Evans, Cardiff	1,380 0 0
C. F. Morgan, Newbridge, Mon.	1,360 0 0
Gregory Bros., Pontypool, Mon.	1,320 0 0
A. and J. Richards, Griffithstown, Pontypool, Mon.	1,272 0 0
Jones and Jones, Newbridge, Mon.	1,177 15 5
S. Edwards,* Newbridge, Mon.	1,137 17 0

Rest of Newport, Mon.

*Accepted

Pontypridd, Glam.—Accepted for the erection and completion of latrines for boys at the Pontypridd County school, for the Glamorgan County Education Committee. D. Pugh-Jones, F.S.I., County architect, Cardiff.

T. F. Howells, contractor, Caerphilly, £285 10s.

Pontypridd, Glam.—Accepted for the alteration of the Laboratory Block at the Pontypridd County school, for the Glamorgan County Education Committee. D. Pugh-Jones, F.S.I., County architect, Cardiff.

T. F. Howells, contractor, Caerphilly, £230 0s. 10d.

Preston.—Recommended for acceptance for erection of weights and measures and billposting offices and workshops in Tithebarn Street, for the Preston T.C.

J. T. Gabbott, £1,270.

Rhyl.—For concrete decking at Rhyl Pier. Maxwell and Tuke, architects, 25, Brazennose Street, Manchester.

Dickinson, Ltd.,* Bolton ... £964

Iron and Steel Work.

T. R. Williams,* Rhyl ... £122 1 0

*Accepted.

Scuthend.—Accepted for the completion of the nave of St. Erkenwald's Church.

Jarvis and Co., Hackney Road, London, £4,290.

Sunningdale (Berks.).—Accepted for erection of four new cottages on the Ridge Mount Estate, for G. T. Wills. Messrs. T. Leonard Roberts and Co., Sunningdale, architects.

J. H. Wakelin, Sunningdale, £1,110.

Taunton.—For erecting six houses in Leslie Avenue, Rowbarton, for Taunton Co-operative Society, Ltd. Messrs. Sprankling and Price, architects, 16, Hammet Street, Taunton.

R. Rendell	£1,770
Lowe and Son	1,620
T. Rabjohns	1,475
T. Manning and Son	1,425
H. G. Smith	1,419
J. Maddock,* Wood Street, Taunton	1,345

*Accepted.

Tiverton.—For the construction of two concrete service reservoirs of 240,000 and 60,000 gallons capacity and other works at Tiverton, Devon, and alternatively for two reinforced concrete reservoirs of above capacity, for the Town Council. Mr. J. Siddalls, borough engineer.

Concrete Reservoirs.

Brebner and Co., Edinburgh	£4,032 11 4
Wakeham Bros.	3,952 0 9
T. Relf and Sons	3,444 1 6
Playfair and Toole, Southampton	3,319 0 0
J. and W. Stewart, Westminster	3,248 2 1
S. Ambrose, Bath	3,228 13 4
Hobrough and Co., Gloucester	3,049 3 7
H. Berry, Crediton	2,988 10 8
Moss and Sons, Westminster	2,981 5 8
Steer and Pearce	2,933 16 10
H. Drew, Paignton	2,883 0 0
Pethick Bros.	2,765 0 0
H. V. Smith and Co., Westminster	2,719 15 0
G. Pollard, Bridgwater	2,716 0 1
W. Shaddock	2,687 1 7
Mitchell and Sons, Manchester	2,440 8 3
Greenwood and Sons, Halifax	2,405 1 3
E. G. Coles,* Taunton	2,278 13 5

Reinforced Reservoirs.

Playfair and Toole	2,584 0 0
Hobrough and Co.	2,181 5 10
H. Berry	1,978 0 10
Moss and Sons	3,242 14 6
Steer and Pearce	2,692 17 0
H. Drew	2,340 0 0
H. V. Smith and Co.	2,094 19 10
G. Pollard	2,216 0 1
Mitchell and Sons	1,862 6 6
Greenwood and Sons	2,013 12 8

Reinforced Reservoirs without General Work.

E. P. Bovey, Torquay	£1,390 0 0
Reinforced Building Co., Leeds	1,368 14 11
Byard and Sons, Gloucester	1,338 0 0
Yorkshire Hennebique Co., Leeds	1,138 10 0
Wilkins and Sons, Bristol	1,043 15 0
Lambrick and Co., Burton-on-Trent	920 0 0

*Provisionally accepted.

Rest of Plymouth.

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THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
APRIL 20th, 1910.

Volume XXXI. No. 794



Photo: W. H. Watts.

Temple Bar, of which Sir Christopher Wren was the architect, was re-erected at Theobald's Park, Hertfordshire, where it now stands,

TEMPLE BAR WHICH IT IS PROPOSED TO BRING BACK TO LONDON.



This building is one of the finest works of Alexander Thomson, the Scottish genius who, without having travelled or studied abroad, evolved some wonderful classic designs which earned him the sobriquet of "Greek" Thomson.

CHURCH IN ST. VINCENT STREET, GLASGOW, FROM THE SOUTH. ALEXANDER ("GREEK") THOMSON, ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

APRIL 20, 1910. *CAXTON HOUSE, WESTMINSTER.* VOLUME 31. No. 794

Note : The List of Contents will be found on Page V of the front advertisments in this and subsequent issues.

Architectural Work in India.

TILL within a few years ago architecture was a subject which could hardly be said to be officially recognised by the Anglo-Indian Government. Buildings were carried out for the most part by the Public Works Department, known shortly as the "P.W.D.," whose officials were, and are still for the most part, engineers. One architect of undoubted ability, Mr. Chisholm, who has now returned and settled in London, designed various important buildings in which there was a happy attempt to give something of Oriental feeling to the architecture without descending to direct copyism of Hindu or Indo-Saracenic detail. But Mr. Chisholm seems to have been alone in this kind of effort to give a special æsthetic treatment to buildings erected under English rule in India. Generally speaking, such buildings seem to have been marked either by a commonplace classicism, or later, in some instances, by a rampant modern Gothic treatment in what used satirically to be called the "Manchester Gothic" school.

Fortunately, however, a few years ago the Indian Administration came to see the advisability of establishing a "Consulting Architect to the Government of India." In December, 1902, Mr. James Ransome received this appointment for a term of five years, at the end of which time Mr. John Begg was appointed his successor. Both gentlemen are Fellows of the Institute of Architects; by the older among our readers Mr. Begg's name will be remembered as that of one of the finest draughtsmen of his day in London. We have now before us an album showing Government buildings which have been carried out from Mr. Ransome's designs, and the two first Annual Reports (1907-8 and 1908-9) on architectural work in India, drawn up by Mr. Begg, and each accompanied by illustrations of some of the buildings recently erected.

The preliminary notice to the first of these Reports conveys the idea that there is still a good deal of difficulty in even obtaining the requisite materials for a comprehensive annual report of architectural work in India, and that much work done in the provinces does not come under the notice of the consulting architect at his central department in Calcutta. It appears to have been a nominal direction by the Government of India, from the first appointment of a consulting architect, that photographs or drawings of all important architectural works carried out in India should be sent to the consulting architect for inspection and review. But it is one thing to issue such a decree and another to get it attended to, in so vast a country as India. Comparatively few do, apparently, arrive, and in the preliminary notice referred to it is mentioned that the author of the Report had just received photographs of two buildings in one province, one of them completed about three, and the second more than five, years ago. As he drily remarks, "This Report must not trench on the province of the Archæological Department."

These matters of administrative mechanism will no doubt right themselves in time, as those concerned with building in India become used to the working of an institution which must have seemed rather a startling novelty at first, after so many years of neglect of the interests of architecture by the official authorities. We come now to the real interest of the subject — what has been and may be done with English architecture in India.

It is a rather curious question for discussion, whether a conquering nation should take its own architectural style into its new possession, or adopt the indigenous style for the buildings erected under its rule. The Romans, who may be considered as the typical conquerors of history, adopted the former principle, and carried their own columnar style wherever they went. There were occasional examples of modifications of detail from local influence, but in general a Roman triumphal arch, for example, was essentially the same in design and style wherever it was erected. On first becoming possessors of India, we followed the same course, not consciously or on principle, but because it was the natural thing to do, and no English Government or English Proconsul in those days would have thought of troubling their heads about architecture. Accordingly we built streets or business buildings of Regent Street Classic, and a cathedral of Rickmanised Gothic. No one thought whether it was right or wrong. But now Governments and Viceroys—one recent Viceroy in particular—have begun to think on the subject, or engage others to think for them; and it is of importance that they should think right.

At present there seems rather a divided mind on the subject. Mr. Ransome's collection of designs, "issued under his advice, while consulting architect to the Government of India" (that is the way it is put in the preface) shows no certain aim; but we do not know how far he is responsible for this. His illustrations commence with new buildings in Wellesley Place, Calcutta (see page 352 et seq.), a well-balanced classic design, such as might suitably be erected in any important city in England; designs for a Government House at Dacca, and for Government offices in Calcutta, are also pure classic, and rather tame as such, though they derive a certain effect from the necessity of having the real interior walls masked by arcades or colonnades, with a space behind them, in order to keep the direct heat of the sun off the walls. Other designs in the book, however, are on very different lines. A design for "A Block of Offices for the Plains" (not carried out) appears to have been really intended for a railway station at Lahore, and shows the employment of certain Saracenic features on a plain utilitarian structure of red brick, and sparingly used stone dressings. The result is, in the illustration at least, very pleasing, but it must be admitted that it does not look like a building erected under English influence. Nor does the telegraph office at Dacca (see illustration). But this is more to the purpose, because it is a simple design obviously influenced by climate; palpably a hot-weather building; though one may well ask why Dacca should have a classic Govern-

ment office and a very Oriental-looking telegraph office. Mr. Ransome's own position, as briefly stated in his preface, is that "there is no style of architecture suited in its entirety to the requirements of Europeans in the plains of India." The classic designs he seems to think have to be too much modified for climatic conditions to be satisfactory in effect. Gothic does not give enough shelter from the heat without completely modifying its fashion of traceried windows—that is, we presume, making closely woven tracery, with small openings, as in the Indo-Saracenic style; a modification which might, however, go well enough with the Gothic style. The native styles, says Mr. Ransome, are rich in useful suggestions, "but their extravagant ornament and elaborate features render their faithful interpretation inexpedient;" a conclusion in which we should entirely concur.

We are inclined to think that the solution would be found in thinking a little less about styles, native or European, and more about Style, as a quality based on practical conditions, and influenced to some extent by European tradition. We do not see why buildings based on Classic precedent should not bear modifying to meet the conditions of a hot climate, without sacrificing either their architectural effect or their appearance of European origin. Something like this seems to have been done in the Secretariat at Nagpur—an original and pleasing design, and in the Kennedy House Secretariat at Simla, the first design for which is exceedingly European—Scottish, in fact; the adopted design, which is much superior, has European character, but with a difference; it is not a building one would expect to find in Europe, and yet it has the touch of the European hand. It is the best design in Mr. Ransome's book. It is worth note that this building was specially designed for construction in concrete-steel, and it is one of the best examples we have seen of what may be done with that material. A drawing of it was exhibited at the last Royal Academy.

From Mr. Begg's Reports we take one of the illustrations of the High School at Ahmedabad, which is a good example of effect in a brick building, obtained by simply planning and constructing it so as to suit the climate. Who is exactly responsible for the design is not apparent; but taking it for what it is, a school under English rule in a tropical climate, it is the right kind of thing, suitable without being pretentious. Our remaining illustration, the school at Kotwali, a building by the Public Works Department of that town, is much praised by Mr. Ransome as "a good example of what the Indian stone-cutter can be got to do, even in these days, when given a fair chance." That is a point that is of interest, of course; but this building is simply an imitation of Indo-Saracenic, and that is not the treatment for a school-building erected under English government. Imitations are of no value.

The illustrations generally, accompanying the two Reports, show a great difference and uncertainty of aim in Anglo-Indian architecture. The Presidency General Hospital, Calcutta, has the same merits as the Ahmedabad High School, an unpretentious building structurally expressive of its purpose and conditions. In other designs there is an extraordinary variation of type. "New Additions, Viceregal Lodge, Simla," is a wretched piece of bastard Elizabethan, we should say obviously "P.W.D." work. Then the "Proposed Vice-regal Lodge," with its stone lower storey, and plaster and timber above, looks like a small country house in England (perhaps that was the intention), and the "Library, Simla," like the public library in an English country town. There seems as yet to be no settled path or method for Anglo-Indian architecture. The illustrations to the two Reports are a medley; and there will probably be no difference in this respect until architectural administration in India is so far advanced that the consulting architect to the Government of India may be able to exercise a real influence on the style of the buildings erected, instead of this being left, in so many instances, to the caprice of departmental engineers.

St. Paul's Bridge.

IN regard to the scheme of the proposed new bridge over the Thames, to be called "St. Paul's Bridge," there has been for some time back a rather ominous silence on the part of the authorities officially concerned. Public attention was drawn to the subject some time ago; a deputation was, if we remember right, sent by the Institute of Architects to the City authorities to urge the importance of making the new bridge architecturally worthy of its position, and not considering it merely as an engineering work; and general assurances were given that this aspect of the matter would be duly considered. But when we have heard nothing more for so long a time, we naturally get anxious to know what has been hatching. A letter on the subject, signed by eight eminent artists, which appeared in the "Times" of Friday last, was therefore very opportune, and it is to be hoped that it will elicit something. The writers of the letter observe that the treatment of London bridges recently does not inspire confidence in the future; "excellent pieces of engineering as they often are, they are, from the point of view of civil architecture, deplorable." This is not, however, a very wisely worded sentence, for they ought to have remembered that the very latest bridge, Vauxhall, is not in this sense deplorable at all, and it is understood that its general design was the work of a very eminent architect. It is true, however, that Vauxhall Bridge would have been a perfectly horrible design if a certain amount of public feeling on the subject had not been aroused by criticisms by competent judges in the Press. The letter now published would have been more effective if the recent bridges that are most objectionable had been pointed out. These are undoubtedly Blackfriars Bridge and the Tower Bridge; both of them pieces of would-be Gothic gewgaw of the most barbarous description. Engineers, however, are still for the most part unaware that these bridges are bad, or why they are bad; and those who care about the subject are naturally afraid of finding that all this time an engineer's design for St. Paul's Bridge has been getting into shape and getting accepted behind the scenes; and then we shall be told (as we were in the case of Vauxhall Bridge) that it would be "an insult to the engineer" to engage an architect to revise and improve his design. What we want to see is a grand masonry bridge of the same type as London Bridge; that alone can really become an adequate part of the architecture of London. What ought to be done is either to advertise a sketch competition, open to all, for ideas for the new bridge, and select the best six for a final competition, or to invite a certain number of architects and engineers to submit designs in a limited competition. In a matter of such importance to the architectural beauty of London nothing ought to be settled until the proposed design has or designs have been publicly seen and judged. On this subject one is glad to see that a daily paper so powerful as the "Times" is wide awake, and has supported the letter referred to by a short but excellently reasoned leading article. The enlightenment of the "Times" on matters æsthetic in recent (very recent) years is, in fact, as surprising as it is gratifying. Remembering how its columns used to be the happy hunting-ground of such Philistines as the late Lord Grimthorpe, one is inclined to exclaim "Is Saul also among the prophets?"

Trouble in Germany.

AT the moment of writing, a bitter struggle between employers and employed in the building trade in Germany seems imminent. The employers have threatened to lock out the men unless the latter yield unconditional acquiescence in the terms proposed to them. These terms are so exorbitant that no self-respecting body of men could be expected to accept or tolerate them. That is apparently the precise idea with which they are being so ruthlessly enforced. The employers are determined upon a war of extermination of the trades unions, and neither Government intervention nor the remonstrances of influential organs

of the Press, seem to have the slightest power to make them swerve from this settled purpose. Possibly they may have been greatly provoked, and are now bent upon remorseless reprisals. It used to be alleged that foreign trades-unionism was a very bad copy of the British original; and what with *sabotage* in France and militant socialism in Germany, it may be inferred that the employers have only too much reason to distrust it, and one may even suspect that they are to some extent justified in their fierce endeavour to destroy it. In this country such an endeavour would fail, for the simple reason that public opinion would be fatal to it. The newer and truer trades-unionism that has been now evolved amongst us is generally recognised as being on the whole admirable in principle and fairly straightforward and honourable in practice. The foreign variety has perhaps yet to go through several stages of development before it can render itself either equally praiseworthy or comparably efficient. But since the Germans have borrowed from us the idea of organisation by the work-people on the one hand, and the employers on the other, why do they not go a step or two further, and copy the admirably effective Conciliation Boards by which the builders in our country have apparently succeeded—almost miraculously—in eradicating industrial warfare? Strikes and lockouts can never become impossible on this side of the millennium; but the Conciliation Boards, and the better feeling and more perfect understanding which they engender, have more than justified the anticipations with which they were inaugurated. It is hardly too much to say that they have infused a new spirit into industrial life; and, so far, they seem to have rendered industrial war a reminiscence of the barbarous past. Germany can have no more use for strikes and lockouts, with the ruinous losses and all the misery and suffering they entail, than we have: and we are sure that the National Federation of Building Trades Employers of Great Britain and Ireland would be only too happy to supply their German congeners with full and explicit guidance in the path of peace.

A Discovery of Italian Frescoes.

SOME interesting frescoes have been uncovered recently in the Church of St. Quirico, in the neighbourhood of the frontier village of Domodossola. The parocco of St. Quirico is situated about a mile or a mile and a-half from the station, and the quaint little church occupies a commanding position on an abutting hill at the foot of Mount Calvario, surrounded by vineyards. The view from the church stretches up and down the vale of the Ossola, through which the river meanders alongside the railway (which runs on to Arona and Milan) and across to the opposite hills, the lower slopes of which are clothed with vineyards, with an occasional church situated on apparently strategic points, similar to that on which we stand.

This little frontier Church of St. Quirico is a dependence from the Cathedral of Domodossola, from which, twice a year, on Rogation Sunday, and again on the first Sunday in July, a priest is sent to celebrate Mass; these being the only two services held in the church during the year, unless one is held in connection with some unusual and special function. A wealthy widow lady, of Turin, who spends the summer months at Domodossola, has recently interested herself in the church, and it is by her devotion and effort that the splendid frescoes now revealed for the first time after many centuries, have been brought to light. A little more than half of the work has been done so far, and the Signora Rosa Calpini hopes to return next year and complete the work which has already had so splendid a result. It seems that there is no authentic record of the foundation of the church, but from its style and appearance it is supposed to date from the thirteenth or fourteenth centuries. It was for many hundreds of years the only church in the whole of the Vale of Ossola.

The frescoes, which appear to be of the same date as the church itself, include a Holy Supper of primitive execution, and some beautiful ornament, which, being somewhat dilapidated, does not reveal the name of the artist. There is a St. Julius, exorcising the serpents, in pure fourteenth century style, by Antoninus Gugliermi, of Antigorio (the artist's name being clearly legible), and a St. Catharine, with the Virgin and Child. The draperies and such of the figures as have been preserved, are very beautifully painted. A St. Michael weighing souls in a balance, seems to be of the same period. There is also a painting of the Eternal Father, which unhappily is much damaged. Last September, in the Apse, behind the only altar in the church, three life-sized figures in splendid preservation were discovered. They represent St. Quirico, St. Giulitta, his Mother and St. James, all magnificent figures, with beautifully shaped and life-like heads, and garments of brilliant colours. Other figures around the apse have not yet been opened up.

But the Holy Supper is the most important, and, indeed, the most interesting of the series. Distinctly archaic in style and drawing, it measures some thirteen feet by four feet six inches. Most of the figures are in splendid preservation, and above each is inscribed his name, those legible being, from left to right, Simon, Judas, Peter, Thomas, Thaddeus, James the Great, James the Less ("Jacobus ma" and "Jacobus mi") and Bartholomew. The figure of our Lord, splendidly fresh and clear, is represented as giving the Sop to Judas, while his left arm rests on the shoulder of the Apostle John, who leans forward on the table.

The drawing of the table is especially quaint, and without the least attempt at perspective. It is spread with bread, in the form of small round loaves, some two or two and a-half inches in diameter; fish, which lie on the table itself, without dishes; carafes of wine, and wine tumblers, which, curiously enough, are exact reproductions of the common glasses which are found in ordinary use in every little wineshop in Italy to-day.

The Art of Orchardson.

THE death of Sir W. Q. Orchardson removes from among us a painter who, if he did not belong quite to the first rank, stood very high in virtue of two qualities—viz., his refined sense of colour and his capacity for making his art, on occasion, a trenchant and powerful commentary on life. To make painting what Matthew Arnold said poetry ought (in a sense) to be—"a criticism of life"—is not the highest use of art, it is true; the highest object of art is to appeal to the sense of beauty; but to illustrate actual life and enforce a moral is one use of the art of painting, and one which is not to be despised, when it is done with such power and effect as it was by Orchardson in "Mariage de Convenance," "After," and "The First Cloud." These were pictures which compelled one to think of something besides painting. Others of Orchardson's works, such as "The Young Duke" and "Voltaire," were inspired by the love of the picturesque, of historic incidents, costumes, and ornament; and his "Napoléon on the Bellerophon" may count as one of the best pictures which the Napoleonic legend has evoked. But Orchardson had also the distinction of being a very fine colourist, with a scale of colour of his own, which always remained his own: he had in this sense no imitators. It would be difficult to define in what the peculiar element of his colouring consisted; but it was distinctly original and personal to himself. And one result of it was this: That he was able to paint a portrait of a man in an ordinary everyday costume—in tweeds or in a frock-coat; to leave the dress sufficiently realistic for the purposes of portraiture, and yet to secure in it a subtle harmony of colour unsuspected of tailors, and which completely removed the picture out of the region of mere commonplace realism. No other modern English portrait-painter had quite this special gift of adaptability in regard to colour in the treatment of everyday costumes; even Millais, in his portraits of men, though he was stronger in the depicting of character, did not show the same instinct as a colourist in this class of portrait.

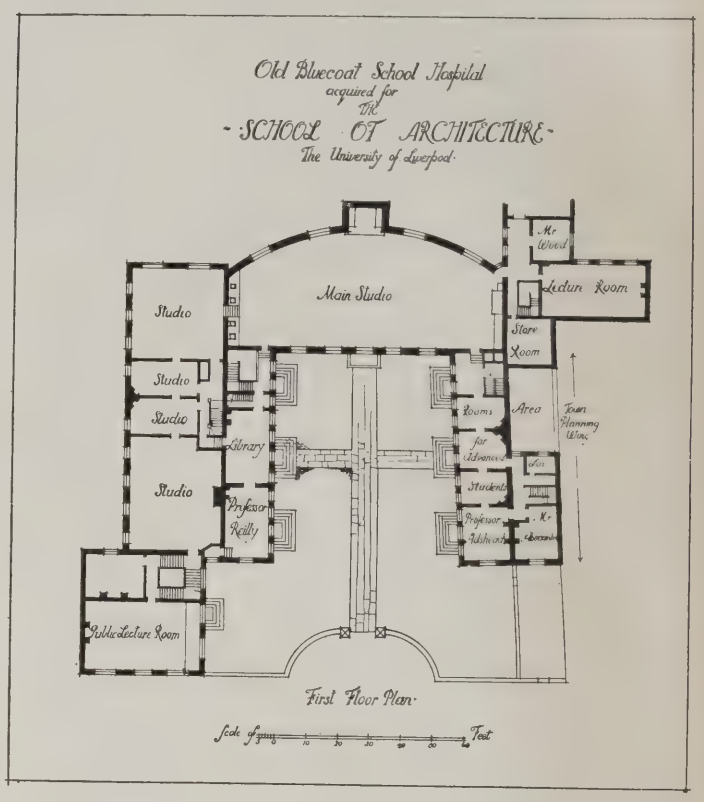
NOTES AND NEWS.

The School of Architecture, Liverpool.

The Old Blue Coat School, which, through the generosity of Mr. W. H. Lever, has now become the home of the School of Architecture, was built in the years 1716-1717, and is a good and complete example of Queen Anne architecture, indeed, the only one Liverpool possesses. It is situated in a quiet side street called School Lane, but faces the main thoroughfare of Liverpool, Church Street, across the grass of the pro-cathedral churchyard. The architectural interest centres in the buildings surrounding the court, which were the first to be built, and have remained unaltered to this day. These the school now occupies. The main block facing the gateway consists of the dining-room, and chapel over it, now the exhibition room and the main studio of the school, two large rooms 90 feet by 40 feet, well lit with large windows on either side. The two wings were designed to accommodate 25 children each, girls on one side, boys on the other. As in a court of a smaller Cambridge college, three doors lead from the courtyard to either wing, though the dormitory plan above does not admit of separate staircases. Each door is emphasised by a little pedestal of stone steps, with a flagged walk leading to it, giving a most picturesque and charming effect. The windows in the flank walls, which are in excess in glass area of many a modern building, and give ample light for studio purposes to the interior, are set well to the face of the brickwork, and by their broad frames and astragal bars carry through the sense of wall surface without any feeling of weakness. Indeed, these side façades offer a very practical solution of the problem of an office building where light is important, for even the rooms with the oval windows are well and pleasantly lit. Externally the frieze of the elliptical windows under the cornice, well set in a field of plain brickwork, is a delightful feature. The materials are small hand-made red bricks and local sandstone. Liverpool, like the rest of the north of England, suffers from Ruabon red pressed bricks, so that on the score of brickwork alone the building was worth saving. The windows are glazed throughout with blown crown glass. Professor Reilly has not been able to ascertain the name of the architect or master builder, but the detail is the traditional detail of the period, with just a hint of Inigo Jones's influence in the main doorway opposite the entrance gates. An interesting motto on the chapel frieze, "Christianae charitati promovendae inopique pueritiae ecclesiae anglicanae principiis imbuendae sacrum anno salutis MDCCXVII.," explains the original purpose of the building—a motto we mean to keep now that the purpose is changed. It has been ascertained from old accounts that



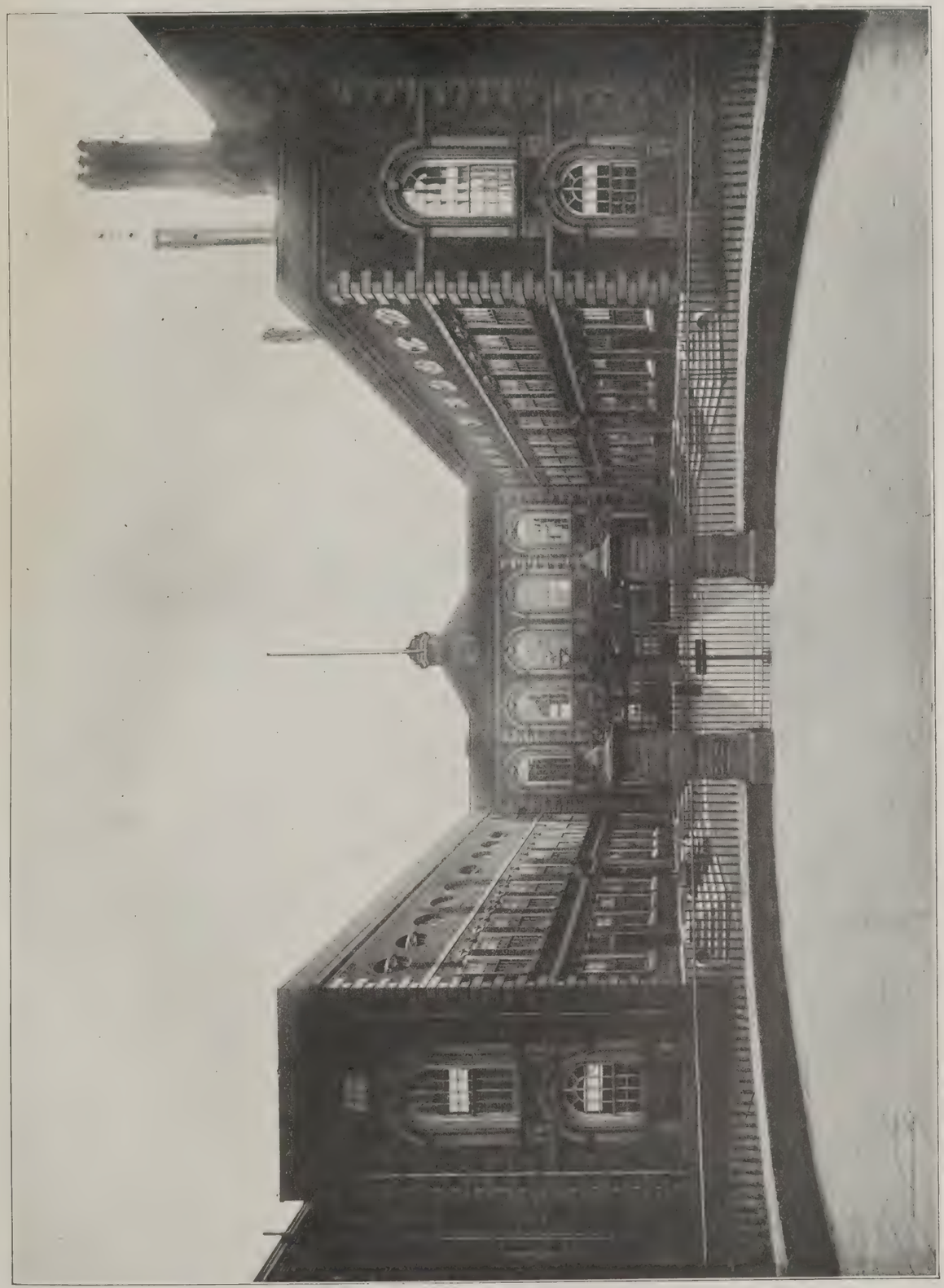
THE SCHOOL OF ARCHITECTURE, LIVERPOOL UNIVERSITY: THE MAIN STUDIO.



the cost of the building in 1717 was only £2,000-£3,000; the agreed purchase price to-day is £24,000-£25,000. The purchase money has been provided out of the damages in the famous soap libel cases. In the eighteenth century the accounts also show it was possible to feed, clothe, and educate a boy at the hospital for £8 12s. a year, while his architectural successor to-day costs £30. That the training of the latter, however, will be the better for his new surroundings is not too much to hope for, and at any rate the thanks of architects are due to Mr. Lever, not only for saving so fine a building from the imminent destruction that threatened it, but also for giving it to the service of our profession.

Reviving Interest in Temple Bar.

Temple Bar, which in 1878 was taken down from its position at the western boundary of the City of London, near where now stand the Law Courts, and on a site that is now occupied by the much-abused Griffin monument, was in 1887 re-erected at the entrance to Theobalds Park, Cheshunt. Sir Henry Meux, in taking charge of this last of the City gates, undertook to relinquish all right to the structure in case he allowed it to fall into disrepair. The relic has been well preserved; but there has grown up, it is said, a strong desire on the part of certain influential citizens to make the old structure public property, which should be re-erected either in one of the open spaces in the City—such as Finsbury Circus Gardens—or in some spot that is easily accessible to Londoners, such as one of the entrances to Epping Forest. Lady Meux would, of course, be within her rights in refusing permission for the removal of the Bar, for which, however, a more appropriate site than that which it now occupies could assuredly be found. Temple Bar, which was built by Wren in 1670, consisted of a gateway, built of Portland stone. On its east side, in niches, were statues of Queen Elizabeth and James I., and on its west side those of Charles I. and Charles II. These were all carved by John Bushnell, who died in 1701. For a long time the interior of the Bar was leased by Messrs. Child, the bankers, as a depository for their ledgers. Outwardly, the Bar was frequently "adorned" with the heads (stuck on poles) of persons who had been executed; the last to figure in this barbarous and disgusting exhibition being those of rebels of the '45.



This very complete and interesting specimen of Queen Anne architecture has been purchased by Mr. W. H. Lever, M.P., and devoted by him to the use of the School of Architecture, Liverpool University.

THE OLD BLUECOAT SCHOOL, LIVERPOOL, NOW THE SCHOOL OF ARCHITECTURE, LIVERPOOL UNIVERSITY.

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St. James's, Piccadilly.

It is satisfactory to be able to record that a very objectionable proposal to build on part of the churchyard of St. James's, Piccadilly, has been negatived in Parliament by a large majority. The church authorities have had the right of making occasional use of the neighbouring vestry hall. The proposal recently brought forward was that the City Council should pay £2,000 to the rector and churchwardens in compensation for their abandoning this right of user, and that the latter should make use of the money to erect a mission hall or clergy house on the part of the churchyard between the church and Jermyn Street. The scheme is objectionable on two grounds; first, that the land is part of an old burial ground, and graves would have to be disturbed; and secondly, that the small piece of open ground there is a bit of open space in a crowded neighbourhood which can be ill spared. It may be added that no building could be erected on the space proposed without appearing to crowd up the church very much, and that the architectural results would be as unfortunate as the hygienic.

The Zona Monumentale.

Senator Luca Beltrami, the architect who restored the Castello Sforesco at Milan, has published, in the "Corriere della Sena," an important article on the Zona Monumentale controversy. He commends the action of Commendatore Boni, "the only competent and really responsible member of the Commission," in resigning his seat on that body rather than consent to "bury the goddess Rome beneath the macadam and tramlines of a 200-ft. boulevard." Of the five remaining commissioners, only one, it appears—Professor Lanciani, the archæologist—is at all trusted by the opponents of vandalism. Hope is now centred in the new Minister of Education, Signor Credaro, who, although he is but little of an archæologist, is a man of intellectual sympathies, and has, for instance, decided to recommend the planting of a sacred grove at Pietole, near Mantua, in commemoration of Virgil, and the erection of a shrine to the poet, as proposed by Boni.

"Palimpsest" Papering and Distempering.

The National Association of Master House Painters and Decorators of England and Wales (Incorporated) have issued a circular in which they draw attention to the grave prejudice to the public health which arises from the habit, now so prevalent, of papering walls of dwelling-houses on the top of existing papers. They declare that while the practice is more commonly found in cottage, tenement, and lower middle-class houses than in those of higher rentals, where the tenant is in a position to insist on more wholesome conditions, yet even these latter are not exempt, as the practice exists in classes of houses in which one would have thought it would not have been tolerated for a moment by the occupier. The former of these cases is the graver danger by reason of the lesser cubic space contained in the rooms, and consequent closer proximity of the occupiers to the walls and ceiling surfaces, and the generally crowded state of the community, but wherever the practice obtains the danger to public health is there. The accretion of decaying and putrid matter arising from the habit of hanging paper upon paper sets up germs of disease which must of necessity lower the health of the occupiers, and if it does not actually engender disease predisposes to it by lowering the general tone of healthy life. The association is of opinion that if our public authorities would take powers in their by-laws to compel owners of property in all cases to strip off the accumulated layers of paper, and cleanse the wall with a wash of some disinfectant before papering, it would be a tremendous step forward in the direction of public safety. Equally dangerous, from a health point of view, is the practice of laying one coat of distemper upon another, without first washing off the old colouring matter. The binding medium of all ordinary distemper is size made from animal or fish glue, and these, from their nature, are liable to rapid decay. If fresh when first laid on, under the alternation of the atmosphere of the dwelling, they absorb the moisture of the atmosphere, and immediately a process of decomposition is set up, and fœtid odours are given off, to the prejudice of all who come within their range. There is, for small houses constantly inhabited, only one safe course. That is to insist that every time the walls are redecorated by papering, or by distemper, the walls shall be first stripped clean to the surface prior to re-doing. Even if the obligation were imposed only when houses changed tenants and before they were reoccupied, it would be an immense gain, and would limit the accretions of paper or coats of distemper to those of a single tenancy.

An Old Thatched House at Norwood.

The only existing genuine old thatched house in the County of London was to have been pulled down "by the order of the L.C.C.," but efforts are being made to preserve it. The house, which is reputedly 300 years old, stands within the 30 acres of land at Norwood which has been acquired for conversion into a public park, and workmen had actually assembled with the object of destroying it when members of a local committee which had induced the L.C.C. to buy the land gave further proof of their persuasive powers by inducing the men not to begin operations pending negotiations with the Council. The house, as already observed, is the last of its kind in London; the thatched house in the Grove, Camberwell, being a modern building. The actual thatch of the Norwood house, however, it need hardly be said, must often have been renewed, and the present covering is obviously not at all ancient.

Big Ben's Bell.

In these days nothing escapes criticism. Since there are those who would "speak disrespectfully of the Equator," it is not surprising to find that Big Ben's bell has not been spared a similar indignity. Speaking at the Royal Institution on Saturday last, Mr. William Wooding Starmer said that the tone the bell gave was not so good as it should be. It had been badly used, as nothing but serious injury could result from the cutting of the holes in the sound-bowl. It was said that the holes were cut to ascertain the extent of the crack. There was no doubt that the crack only extended partially through the sound-bowl, but to what extent it injured the tone it was difficult to say. Speaking of the bells generally, Mr. Starmer said it was deplorable that in one of the most important buildings of the kingdom such bells should be used for the enlightenment of the British public every fifteen minutes of the day. It might well be asked, "Are we a musical people?" when such discordant sounds were allowed to pass as music. But in spite of Mr. Starmer, and possibly in defiance of all musical feeling, Londoners will go on loving Big Ben's old cracked voice, which is as music to their perhaps not over-sensitive ears.

Memorial Windows at Haslar.

Two stained glass windows which have been placed in the Chancel of the Chapel of the Royal Naval Hospital, Haslar, by naval medical officers and friends in memory of colleagues who have lost their lives on active service, were unveiled on Sunday week by Archdeacon Wood.

More Spade Work.

Dr. Duncan Mackenzie, acting for the Palestine Exploration Fund, is in Constantinople arranging to obtain a permit from the Turkish Government for new research work in Palestine. In a few days he leaves for Jerusalem to supervise the engagement of helpers for the excavation expedition and generally complete his plans. A sketch of the programme to be carried out was given on Saturday by an official of the fund. "We are hoping to commence the work as soon as possible after the permit is obtained," he said. "Dr. Mackenzie will be in charge on our side, with a Commissioner watching on behalf of the Turkish Government, and a foreman over the native workmen. A party of about fifty natives will be employed, selected from men who have had

previous experience of excavation work. The whole company will camp upon the site, living, I expect, in temporary huts. Every spadeful of earth turned up has to be carefully sifted, so that not the smallest relic may be overlooked. For many reasons we cannot make known the site for the excavations. If it were published, native dealers and tourists would at once flock thither. The site is extensive, and anything may be found there, from gold bars, perhaps, to ancient pottery. Everything excavated belongs to the Turkish Government, and will be placed in the museum at Constantinople. Although it is to be supposed that the principal finds will be mainly of interest to students of Biblical archæology, the architectural possibilities justify this brief notice.

Swing Doors in Schools.

The case of Morris v. Carnarvon County Council came before the Court of Appeal last week. A girl of six, a pupil in one of the Carnarvonshire provided schools, when leaving the classroom, did so by pushing through a swing door, which swung back and trapped her hand, crushing the fingers so badly that one had to be amputated. From the evidence it appeared that the door in question was fixed in the building before the Council took over the school. The County Court awarded damages to the child on the ground that the defendants were negligent in allowing such a door, which was a dangerous trap to children so young as the plaintiff, to remain. The Divisional Court affirmed this decision, and this view was confirmed by the Court of Appeal. School architects will doubtless make a note of this.

Marble in Skye.

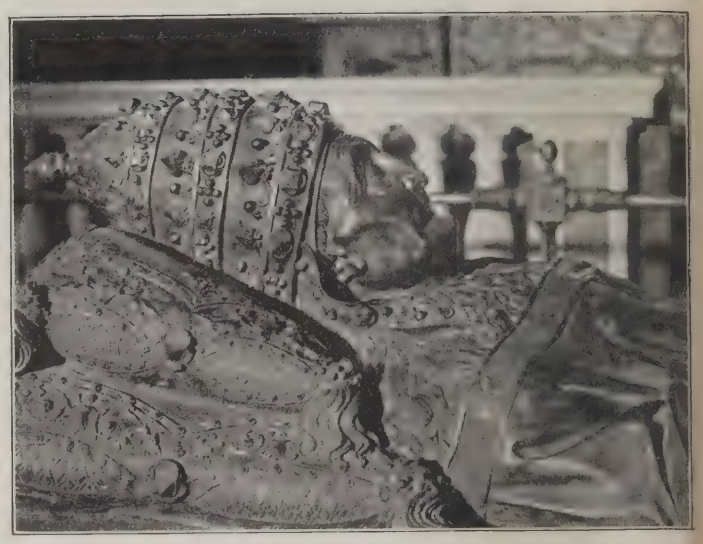
The establishment of a prosperous marble industry in the Highlands would have somewhat revolutionary results. That such developments are possible the promoters of the new quarries which are being opened at Bradford, in the Island of Skye, seem to have full confidence, which they have manifested by importing from Belgium eighteen experienced marble cutters. It is claimed, indeed, and recent surveys by experts confirm the impression, that Highland marble may soon become a real competitor with the products of the famous quarries of Greece, France, and Italy. Much preliminary work is to be done before the marble can be placed on the market, and it was necessary to import skilled quarrymen from Belgium because the natives do not at present possess any knowledge of marble-cutting.

A Minor Sculptor of the Renaissance.

The Tomb of Pope Sixtus IV., in St. Peter's at Rome, is one of the masterpieces of Antonio del Pollajuolo, one of the Renaissance bronze-workers, who was born 1429 and died in 1498. He was known more, perhaps, as a painter, but it is difficult to look at the view and detail of the tomb of Sixtus IV. without realising his great capabilities as a sculptor. His other great work, the wall tomb of Pope Innocent VIII., also in St. Peter's, was carried out in conjunction with his brother, Pietro del Pollajuolo. Antonio acquired fame for his knowledge of anatomy, and the wonderful modelling of the face of Sixtus IV. is confirmation of the statement, often made, that his bent was rather towards realism than to idealistic treatment. Unfortunately this tomb is so badly placed and lighted that the beauties of the work are not well seen; but one cannot repress admiration for the sculptor who could model and successfully cast this wonderful figure and relief.

Town Planning Conference.

A Conference of all the local authorities within fifteen miles of Charing Cross having town-planning powers has been called by the National Housing and Town Planning Council for May 6. In London itself there is but one such authority—the County Council—but within the fifteen miles radius there are no fewer than seventy-nine bodies with power to adopt town-planning schemes. Every member of the London County Council will receive an invitation to the Conference, and the other authorities will be asked to send representatives. The principal resolution to be discussed will



DETAIL OF THE TOMB OF SIXTUS IV. ST. PETER'S, ROME. ANTONIO DEL POLLAJUOLO, SCULPTOR.

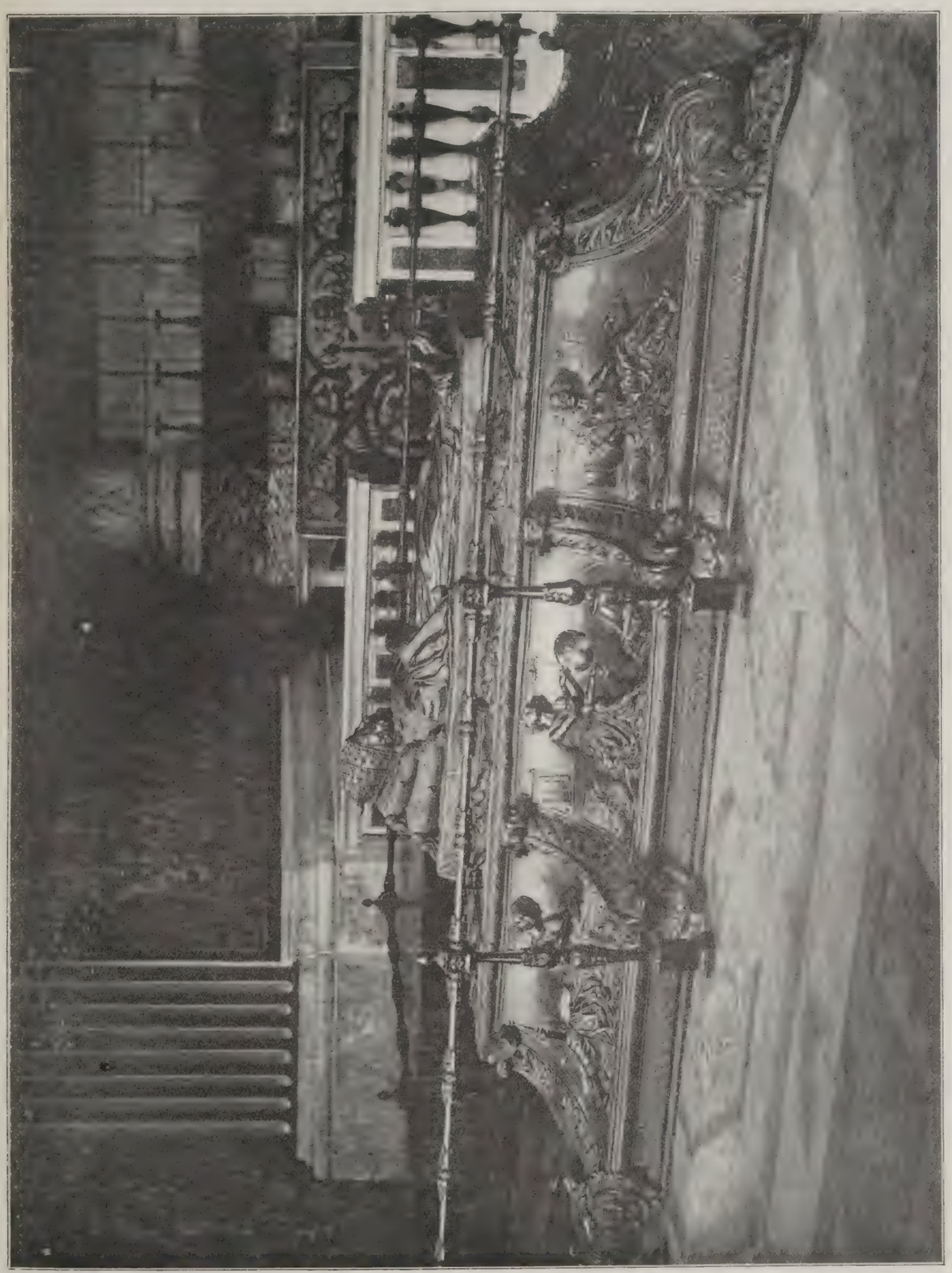
ask that each local authority should at once appoint a Town Planning Committee to study the powers given to them and to report on the administration of possible schemes to their Council. Another resolution will ask the Local Government Board itself to convene a Conference of local authorities in Greater London to consider joint action in regard to those features of town-planning which affect the development and amenities of Greater London as a whole.

Proposed Wilberforce Memorial.

The committee that endeavoured to secure the preservation of Battersea Rise House, Clapham Common, as a memorial to William Wilberforce now purpose to place a fountain or a statue on a portion of the site of Henry Thornton's old home, in which Wilberforce lived as a guest. A suitable piece of ground has been given. The committee now includes Mr. G. D. Faber, M.P. for Clapham, the Mayor of Battersea (Mr. P. P. Haythornthwaite), Canon Clarke, Dr. McManus, Dr. Richards (secretary), Mr. Shirley Benn, Mr. Edwin Evans, Mr. Henry Arding, and a number of other representative men in the district as well as several ladies. Canon Erskine Clarke, who for thirty-seven years was vicar of Battersea, is endeavouring to secure funds for a memorial church, a site for which has been secured on the Battersea Rise Estate. The feeling of the members of the committee at their meeting last Friday was that a further memorial which would appeal to the public generally was desirable. If funds are forthcoming they intend to embellish the fountain with a bust or medallion of Wilberforce.

Art and Registration.

Mr. George E. Bond, presiding on Friday evening at the twenty-sixth annual dinner of the Society of Architects, held at the Holborn Restaurant, was supported by a large company, which included Lord Saye and Sele, Mr. Atherley-Jones, K.C., M.P., Judge Rentoul, Mr. H. Nield, M.P., Mr. Ellis Marsland, Mr. Henry Tanner (President of the Architectural Association), Mr. Cyril Cobb, Alderman Max Clarke, and Colonel F. S. Leslie (hon. secretary). Mr. Bond, referring to the Architects' Registration Bill, claimed that a very large majority of practising architects in the United Kingdom favoured registration. If an art qualification were the only requirement in the practice of architecture, he would say that it should be left to its own free development; in the past all art teaching had been too dogmatic. As the modern practice of architecture involved scientific and technical knowledge and business ability as well as artistic taste, it was obvious that an artist without practical knowledge could not be an architect, and they desired to establish a definite minimum of these combined qualifications below which in the future no man should be entitled to style himself an architect.



MONUMENT OF SIXTUS IV. IN ST. PETER'S. ROME. ANTONIO DEL POLLAJUOLO, SCULPTOR.

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THE NEW PASSY VIADUCT, PARIS.

[*This description of the New Passy Viaduct is chiefly interesting for the indication it gives of the trouble taken by the French authorities to satisfy æsthetic considerations. This is evident not merely by the employment of an Architect and Sculptor in conjunction with the Engineers; but more particularly by the steps taken in adjusting the levels, and the pains taken to secure good "lines" for the new structure.*]

Most visitors to the French metropolis are familiar with the important masonry viaduct of the Chemin de Fer de Ceinture which commences near Auteuil Station and terminates with the Pont d'Auteuil; a massive structure built in the time of Napoleon, and of such strength and width as to permit the railway viaduct to be continued on its surface to the opposite side of the river.

Until recently, this was the only example of a double-deck bridge in Paris. A second one has now been added by the completion of the Viaduc de Passy, constructed for the Chemin de Fer Métropolitain, across the north-east end of the Ile des Cygnes, on the site formerly occupied by the foot-bridge known as the Passarelle de Passy, a structure erected in 1878 to facilitate communication between the Exposition of that time and the Quai de Passy.

The new bridge, which carries the Chemin de Fer Métropolitain for the second time over the Seine, follows an oblique line between the Rue de l'Alboni and the Boulevard de Grenelle. The railway, passing from the Place de l'Etoile, under the Avenue Kléber and the Rue Franklin, emerges from the ground at the side of the heights of Passy, and rises to the level of the viaduct.

The General Scheme.

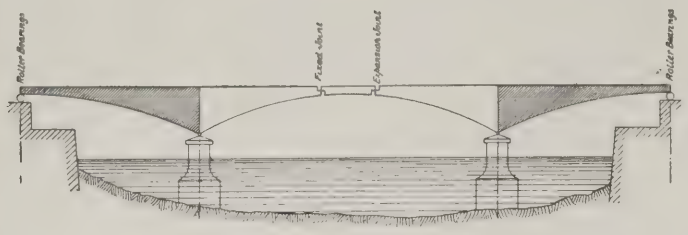
The problem thus raised was not free from difficulties. It was necessary to carry the railway at the elevation demanded by its height above the streets on each side of the river, and so a double-deck bridge was clearly indicated, sufficiently light to cross the river with the last possible obstacle to navigation and the flow of water, and of such design as to avoid the creation of an eyesore in a favourite residential suburb. Another point for consideration arose from the different levels of the roadways on the two sides of the river. For instance, the Quai de Passy was 5.56 metres lower than the decking of the bridge over the cutting of the Ligne de l'Ouest, along the Quai de Grenelle. If this difference had been adjusted by constructing the viaduct with a continuous gradient the effect would have been particularly unpleasing, especially as the upper deck for the railway must have been kept level, and moreover it would not have been possible to provide the clear headway essential under the arches on the Passy end of the structure.

The solution adopted was one falling into line with the project formulated in 1885 by the Service de la Voie Publique for raising the Quai de Passy with the twofold purpose of affording protection against floods, and of providing for the substitution of a regular highway bridge on the site of the Passarelle de Passy. The Rue de l'Alboni was subsequently levelled up in accordance with this scheme, but for lack of funds it was not possible to deal in the same way with the quay, the two thoroughfares being connected for pedestrians and separated for vehicles by a stairway at the end of the street.

In the accepted design for the new viaduct, the roadways of the lower deck terminate at the height of 3.80 metres above quay level, and are continued in the form of two



I.—GENERAL VIEW OF THE NEW PASSY VIADUCT FROM THE RIGHT BANK OF THE SEINE, LOOKING WEST.



2.—DIAGRAM OF CANTILEVERS.

slopes, with the gradient of 7 millimetres per metre, curving out right and left parallel to the quay, causing no interference with the existing tramway lines, and according with the project for raising the general level of the quay, over which the elevated railway passes.

Fig. 1 is a general view of the works, as now executed, including (a) an approach viaduct along the Rue de l'Alboni and across the Quai de Passy, connecting the adjacent railway station with the end of the viaduct proper, the approach being 90 metres long, divided into five girder spans of approximately equal length. (b) A viaduct of 237.16 metres long, crossing the river on the skew of 75 deg. 14 min., and comprising two distinct bridges, each of three spans, and connected by a masonry arch on the Ile des Cygnes. On the Passy side the spans measure 29, 54, and 29 metres, and on the Grenelle side the spans measure 23, 42, and 23 metres, these dimensions being from centre to centre in each case. The total width of the combined structure at the level of the lower deck is 24.70 metres, providing accommodation for a central promenade 8.70 metres wide, two roadways each 6 metres wide, and two footwalks each 2 metres wide.

Above the promenade the decking of the elevated railway viaduct is 7.30 metres wide, this part of the structure consisting of parallel steel girder spans, supported at intervals of 6 metres by two rows of steel columns. The height of the lower deck is 8.50 metres above the normal level of the river, the deck of the railway viaduct being 7.50 metres higher.

(c) An approach viaduct of 57 metres crossing the Quai de Grenelle and the cutting of the Chemin de Fer de l'Ouest in a single span, and a small girder span connecting the viaduct with the Quai de Grenelle railway station.

The Passy Approach.

The Passy approach viaduct is built of two plate girders of I section 0.50 metre wide by 1.25 metres deep, spaced 5.65 metres apart, and connected by cross girders at intervals of 1.70 metres. Upon the latter are supported brick jack arches over which is laid the ballast of the permanent way. This form of construction is undoubtedly heavy, but was adopted with the view of deadening the noise of trains passing down the middle of the street. On each side of the main girders there is a steel plate footwalk for the use of railway employees, supported on cantilever brackets, joined by an ornamental cast iron balustrade outside. The viaduct is carried on two rows of cast-iron columns spaced so as to clear the roadway of the Quai de Passy.

The Grenelle Approach.

The approach viaduct of Grenelle is an example of the care taken to avoid unsightly proportions. If the parabolic form of girder usually employed on the elevated parts of the Metropolitan Railway had been adopted for this approach the depth of the girder would have been at least 5 metres. This of course was out of the question, and the designers were confronted with the task of providing for a parallel



3.—THE NEW PASSY VIADUCT, PARIS: THE MASONRY ARCH ON THE ILE DES CYGNES, CONNECTING THE TWO BRIDGES. THE SCULPTURE, REPRESENTING ELECTRICITY AND COMMERCE, IS BY M. INJALBERT.

girder of minimum depth without the possibility of applying intermediate supports either on the quay roadway or on the decking, which at that point covers the Chemin de Fer de l'Ouest.

The distance to be spanned being 55 metres (about 180ft.) it will be understood that the requirements of ample strength and minimum depth were not easy to reconcile, but by fixing the ends of the girders the total depth was reduced to 3 metres, and the result was to preserve the regularity of outline of the viaduct as a whole.

The main approach span comprises two parallel girders with a slight camber, connected by the decking and fixed at each end to two massive pillars terminated by hinged feet resting upon masonry foundations. The two pillars are connected by a portal arch transmitting to the masonry the horizontal thrust from bracing applied beneath the decking.

The Viaduct Proper.

In regard to the design and construction of the viaduct proper, it should be pointed out the soil beneath the bed of the river consists of plastic clay extending down to a considerable depth. Therefore, it was decided to adopt the cantilever principle in order to obviate oblique pressure upon the foundations, and thereby to keep to a minimum the thickness and weight of the abutments and piers. Fig. 2 is a sketch illustrating the nature of the arrangement adopted, where each double-arm cantilever is supported upon a masonry pier, the weight being adjusted so that the outer arm is capable of counterbalancing half the weight of the small connecting girder.

The Passy abutment is 30 metres long by 8.50 metres wide, by 15.30 metres high; and consists of a retaining wall 7.15 metres high by 3.30 metres thick at the base, having a skewback 1.40 metres wide to carry the end of the cantilever. At its extremities the abutment is connected by carved wing walls to the two retaining walls on either side of the slopes leading down from the bridge decking to the Quai de Passy. At their junction with the abutment the wing walls include angle pilasters, and they are finished with a parapet in Coutarnoux stone, which at one end joins up with the balustrade of the bridge, and at the other end is continued along the wall of the slope next to the river. The wall of the slope facing the quay is finished by a similar parapet. In order to give direct communication for foot passengers between the viaduct and the Quai de Passy, a stone stairway 10 metres wide and including twenty-five steps has been constructed at the end of the promenade running along the middle of the viaduct.

From the middle of the abutment rises a masonry tower 10.05 metres high, pierced by an arched opening 3 metres wide by 5.80 metres high, for the central promenade, and supporting the end of the approach viaduct as well as one end of the elevated railway viaduct over the bridge.

The pedestal of the tower is in cut stone from Souppes, the remainder being in Coutarnoux stone. A parapet at each side serves the purpose of covering the break between the approach and the upper deck of the bridge, the lateral faces of the tower being treated in appropriate architectural style.

The Grenelle abutment is similar to that on the other side of the river, the foundation measuring 30 metres long by 8.50 metres wide by 16.50 metres high. The viaduct roadways are placed in communication with the Quai de Grenelle by the covering over the Chemin de Fer de l'Ouest, and with the low-level quay by two slopes bounded on the side of the river by retaining walls built out from the abutment. A tower like that at the Passy end makes an appropriate link between the viaduct proper and the approach span, and provides also for the convenience of those using the central promenade.

The four river piers are of uniform design. Each foundation presents in plan the form of a rectangle terminated by a semicircle at each end, its length being 32.27 metres, and its width 7 metres. Each pier measures 6 metres wide at the base, and 4 metres wide above a point 1 metre below the normal level of the Seine, the difference of width being gradually approached by a concave buttress faced with scappled ashlar. The vertical face and the coping of each pier are faced with dressed stone from the Souppes, and the heart is of rubble in Portland cement mortar. On top of each pier is a block of granite 1.60 metres wide, upon which are fixed the hinged supports of the steel cantilevers.

The most imposing part of the masonry work is the monumental structure on the Ile des Cygnes connecting the two bridges. It includes abutments for the two cantilever bridges, a massive arched structure supporting the ends of the two elevated railway viaducts, and at the end of the island a large projecting buttress, constituting an efficient bulwark against the undermining of the main work by scour.

The masonry structure measures 58 metres long in the direction of the river, 24 metres wide, parallel with the axis of the viaduct, by 23.55 metres above foundation level. The



4.—A FISHERMAN: FIGURE ON THE SPRINGING OF CANTILEVER ARCH. M. GUSTAVE MICHEL, SCULPTOR.

foundations comprise piles driven into the clay, and a platform of lime concrete 2 metres thick.

Between the ends of the lower decking are two walls in dressed stone, forming abutments, each having a recess for the supports of the cantilevers, the intervening space being filled in to the height of about 4.50 metres below the roadway, the remaining interval being occupied by a masonry chamber whose object is to eliminate the outward pressure that would be exerted against the walls by earth filling. Both walls are prolonged up the river from the viaduct to form the massive buttress at the head of the island (see Fig. 1), the end of the structure being protected by a cutwater, surmounted by ornamental masonry. The surface of the buttress constitutes a terrace, around which is a stone parapet. On the other side of the viaduct a stairway with masonry balustrades gives direct access to the down-stream portion of the island.

Above road level the superstructure takes the form of a monumental gateway, built in dressed stone, with a basket-handled arch having the span of 9 metres, the rise of 3.64 metres, and the clear headway of 6.23 metres at the crown. In addition to this arch, which is parallel to the axis of the Ile des Cygnes, two small arches of 3 metres span are provided for passage of the central promenade along the viaduct.

The monument is surmounted by an entablature, on the up-stream and down-stream faces of which are masonry shields and other decorative work (Fig. 3).

The Decorative Features.

One gratifying feature connected with the Viaduc de Passy is that all the architectural and decorative features of the work were executed from the designs of M. Formige, architect to the City of Paris, with the co-operation of three well-known sculptors—M. Gustave Michel, M. Coutan, and M. Injalbert.

The exterior trusses of the main bridge spans are designed with a series of spandrel arches, architecturally treated in accordance with a uniform scheme, and are finished by a projecting cornice, supporting handsome cast-iron parapets, the cornice being carried in part by corbels, one at every upright in the spandrels.

Above each river pier the springings of the cantilever arches are decorated by groups of statuary, modelled by M. Gustave Michel and cast by M. Capitain-Geny, of Bussy, the eight groups required for the upstream and downstream sides of the viaduct having been reproduced from two models, one representing ironworkers and the other fishermen. Three figures from these groups are illustrated on this and the preceding page, in Figs. 4, 5, and 6.

The masonry towers supporting the ends of the elevated railway viaduct are enriched by sculptural details, and special attention was paid in the same way to the monumental arch on the Ile des Cygnes. The two principal faces of this work also bear bas-reliefs over the spandrels of the main arches. On the upstream face there are two figures by M. Coutan symbolical of Science and Work, and on the downstream face two figures by M. Injalbert representing Electricity and Commerce.



5.—AN IRONWORKER: FIGURE ON SPRINGING OF CANTILEVER ARCH. M. GUSTAVE MICHEL, SCULPTOR.



6.—AN IRONWORKER: FIGURE ON SPRINGING OF CANTILEVER ARCH. M. GUSTAVE MICHEL, SCULPTOR.

For the lighting of the viaduct, electric lamps, arranged in specially designed lanterns, are hung in parallel lines between the columns supporting the upper viaduct, the lights being automatically switched on and off at the proper time by an ingenious arrangement installed in the chamber between the abutment walls on the Ile des Cygnes, the device in question requiring adjustment only once a week.

It has been suggested in France that the Viaduc de Passy is the first double-deck bridge constructed entirely in metal. That distinction clearly belongs to Stephenson's high-level bridge at Newcastle, which for more than sixty years has been in continuous use by road and railway traffic, and is capable of bearing the weight of modern rolling-stock.

The structure at Passy, however, is worthy of notice, not only on account of the manner in which various difficult constructive problems have been solved, but also as a praiseworthy attempt to deal with steelwork in accordance with the æsthetic considerations inseparable from the design of bridges in large cities.

Notes.

The footbridge which was removed to make room for the railway viaduct had to be reinstated for the convenience of the public, and in order to facilitate the execution of the foundation work, and the subsequent masonry construction, the old Passarelle de Passy was re-erected at the distance of 30 metres from the site of the new viaduct, and although this involved considerable expense, it is stated that the outlay was more than repaid by the saving of time that was effected in consequence of its adoption.

Only one accident occurred during the progress of the foundation work, and it was not attended by serious results. The passage of a steamboat at full speed set up a powerful swell and damaged the plant connected with the sinking of the foundation of the pier nearest Passy, making it necessary to finish the work by the aid of a cofferdam.

We are indebted to M. Formige, architect to the City of Paris, for the photographs from which the illustrations to this article have been reproduced.

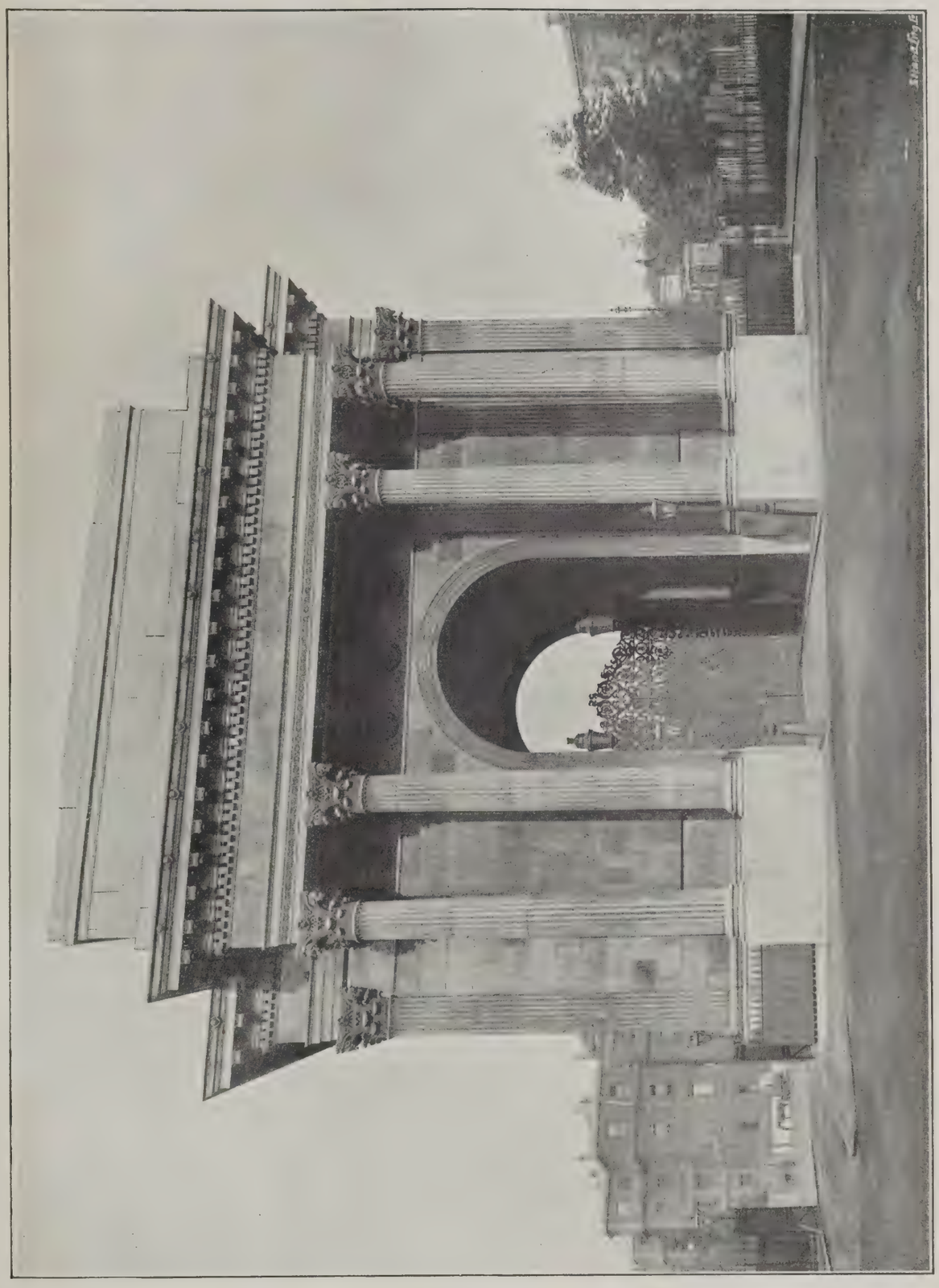


Photo: E. Deckree.

This arch will shortly be surmounted by a quadriga designed by Captain Adrian Jones, of which a photograph has been published in our pages. The statue of the Duke of Wellington, which formerly stood upon the arch, is now at Aldershot.

THE WELLINGTON ARCH, CONSTITUTION HILL, LONDON. DECIMUS BURTON, ARCHITECT.

OBITER DICTA.

The Charm of Renaissance Gardens. One great charm of Renaissance gardens was the skilful manner in which Nature and Art were blended together. The formal design of the *giardino segreto* agreed with the straight lines of the house, and the walls, with their clipped hedges, led on to the wilder, freer growth of woodland and meadow, while the dense shade of the *bosco* supplied an effective contrast to the sunny spaces of lawn and flower bed. The ancient practice of cutting box-trees into fantastic shapes, known to the Romans as the topiary art, was largely restored in the fifteenth century, and became an essential part of Italian gardens. In that strange romance printed at the Aldine Press in 1499, "Hypernotomachia" of Francesco Colonna, Polyphilus and his beloved are led through an enchanted garden, where banquet-houses, temples, and statues stand in the midst of myrtle groves and labyrinths on the banks of a shining stream. The pages of this curious book are adorned with a profusion of woodcuts, by some Venetian engraver, representing pergolas, fountains, sunk parterres, pillared *loggie*, clipped box and ilex trees of every variety, which give a good idea of the garden architecture then in vogue.—*Julia M. Ady, in the "Nineteenth Century."*

Two Views of Colour. The majority of the paintings in this exhibition [that of the Royal Society of British Artists] are by artists of the old school. To them picture-making consists primarily in the more or less careful selection and arrangement of form; colour being merely an arbitrary and often very disturbing addition, with no real bearing on the structure of the work. Yet among these examples we find signs that the modern notion of colour as the very basis of the structure of a picture is gaining ground.—"*Athenæum.*"

The Growing Beauty of London. The walls which have so far masked the new arched way which will give entrance from the Mall to Trafalgar Square have now been removed on the Mall side, and one can see what an impressive addition this work will make to the beauty of London. Passing along the Mall from Buckingham Palace the beautiful building with its triple arches crowns a charming vista. The arches have a noble spring, giving an air at once of strength and lightness. The over-erection has the appearance of being a little heavy, and it would seem that a slightly better effect would have been got if it had been somewhat higher and on a level with the sky-line of Carlton House Terrace. Later, when the concealing walls and disfiguring buildings on the Trafalgar Square side are removed, there will be caught through the arches from the leafy quietness of the Mall a glimpse of the surging traffic of the Square and the Strand; at present that view is spoiled, but the new architectural feature gives the Mall a charming finish. Some day the Mall should rank as one of the finest pageant thoroughfares in Europe.—"*Daily Telegraph.*"

Town Planning. Nothing could be more wholesome and salutary than that the public mind should be excited about town planning, and evidently our school of architecture is determined that the people of Liverpool shall enjoy this excitement.—"*Liverpool Daily Courier.*"

COLOURED RELIEFS AND MOSAICS.

By R. ANNING BELL, R.W.S.

[Mr. Anning Bell, an abstract of whose lecture at the Carpenters' Hall is given below, has made these two branches of art work his special study; and his work in coloured relief is particularly well known. His paper contained some useful suggestions on the suitable positions for these respective methods of decoration, and some interesting practical notes concerning them.]

I propose to begin, he said, this evening by describing to you two methods of decoration suitable to wall surfaces of a considerable area. Mosaic cannot be used to advantage except over a considerable area. Coloured relief is attractive in small spaces, but its proper use is for friezes, panels, and walls of a goodly size.

Suitable Positions for their Use.

Before going into details, I want to go into the question of how they are best used and the particular wall surfaces which develop their respective qualities most satisfactorily. A wall to be covered by mosaics does not need to be so well lighted as that which is intended for colour relief. Small lights such as those round the apse of St. Mark's, Venice, are the best treatment we can have for mosaics; these numerous small windows give a most sumptuous effect. The basilica shape of the church, with its nave and aisles, small transepts and apse, is the earliest form, but does not give mosaic the opportunity of showing its full beauty. This method of decoration is the child of the architecture by which it is developed. Mosaic for several centuries was used as the decoration for basilican-shaped churches. It is probable that the apsidal ends were the only parts decorated with mosaics; and seeing the beautiful effect of the light on the curved surfaces, the architects probably thought that these might be extended. Churches such as St. Vitale, at Ravenna, and St. Mark's, Venice, resulted from the experience of architects who had observed its beauty on curved surfaces, and so made plans to increase their opportunities for obtaining these effects. St. Mark's, of all that I have seen, is the most beautiful and best architectural setting for mosaics; its curved surfaces and scattered lights give the subdued effect and air of mystery so necessary for mosaic work. Mosaics should be above the eye and in large surfaces. When in small pieces it looks quite trumpery.

No Mouldings with Mosaics.

Having dealt with the necessity for eliminating mouldings when using mosaic, the lecturer proceeded to point out that where it is used no other colour is wanted —stained glass fights with it, and nothing else can live where there is mosaic.

Coloured Relief.

I intend to dwell at greater length to-night on coloured relief, because it has not attracted the attention of so many good masters as mosaic. One sees coloured reliefs—of a sort—all over the place, in every theatre and music hall, but one seldom sees one with any kind of originality. They are usually modelled by one person, coloured and gilded by another. Any colour scheme in which colour plays the principal part must be modelled in colour. Then the subject chosen should bear some relation to the building of which it forms a part, for example, a church. Stories from the Bible or lives of the Saints would be suitable; for a town hall, examples of civic virtues and social duties, etc. Each building will suggest what is a fit subject for its decoration. When the subject has been settled the next thing to decide on is the scale and the ornament. Get out a sketch of the whole scheme in colour

The Colour Chart.

Although this sketch gives no idea of the effect of the whole, yet it is extremely important, as if the work is slightly changed this colour scheme is a map. It is of great importance to decide on the colour spaces in the map, because when the whole surface is a sheet of clay we shall get lines which seem more agreeable and which will be difficult to resist. Having settled the scale of the colour scheme, the next thing to proceed with is the modelling. My experience has been chiefly in clay and plaster, and I will talk of these. The amount of relief given will depend on the lighting and the position in which the work will be placed. If high up, the modelling needs to be bold. It never needs to be in very high relief to get the best colour effect. A very slight relief makes work tell more distinctly at a distance. Work high up wants to be in simple planes. The great thing is to get the drawing good and the masses of colour well distributed.

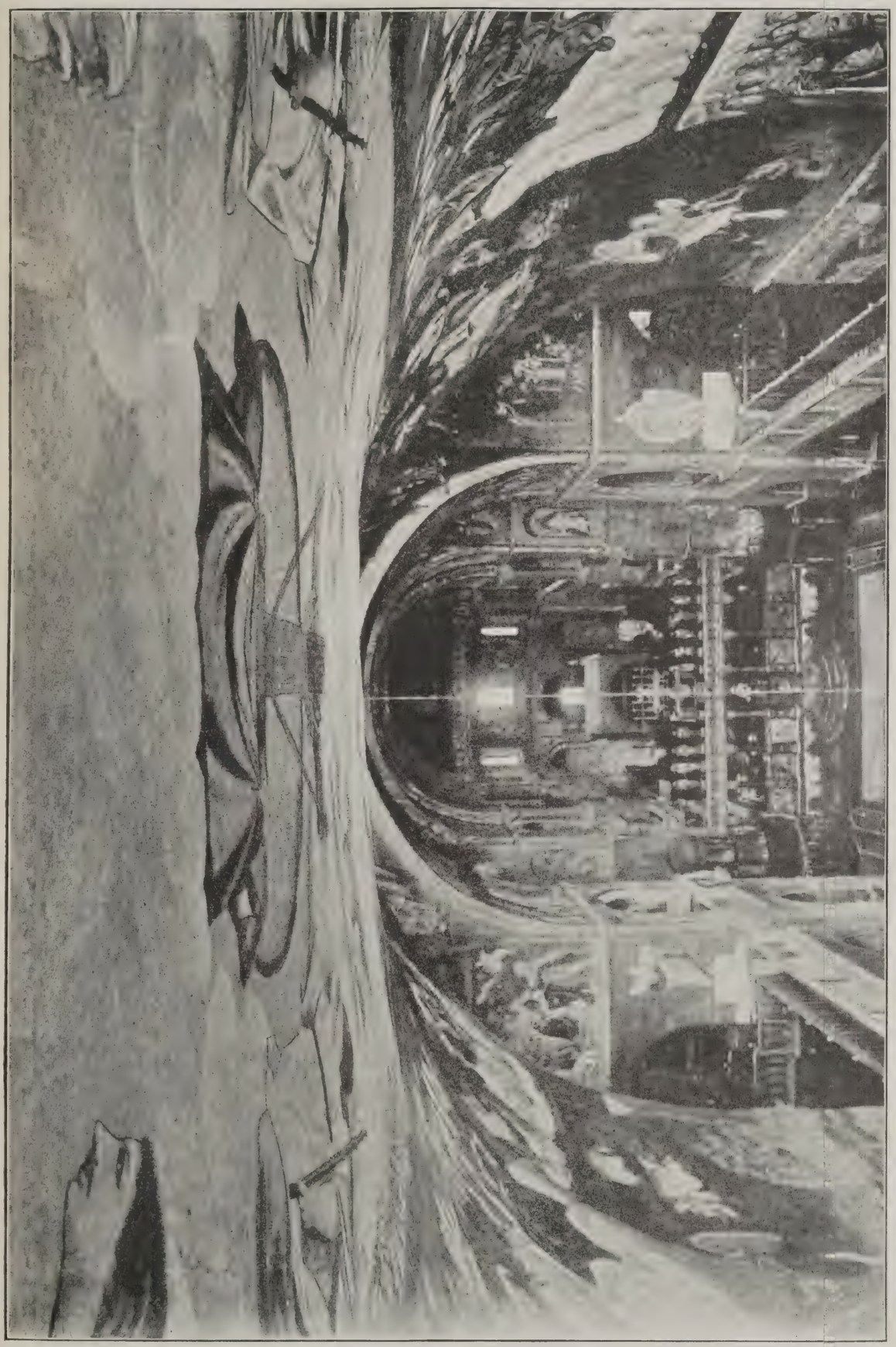
The Clay Model.

When the clay model is finished it can be cast in plaster and then fired into "biscuit." The objection brought against the plaster work is that it is not durable. The biscuit cannot be broken with a hammer. In either case, whether it is to be executed in biscuit or plaster, you have to stop the suction of the surface before painting. The best thing I can find for this is white shellac. This should be dissolved in spirits and put on in several coats. When the ground is thoroughly stopped, proceed to gild what parts are required, whether to show or as a ground for colour. After this gold has been applied and a few days allowed for it to set, proceed with the colour. I use ordinary artists' oil colours with a little wax and turps. You can use tempera, but it must not be cleaned or sponged for several days after this.

A Sense of Colour.

Of course, in colouring, anything approaching realism is undesirable. For getting variations of light and shade you can work in opaque or transparent colours. Experience alone will tell you what can be done. You want most particularly a sense of colour. You can add patterns, but the essential thing in this work is to keep the colour in mind, especially when doing the modelling. You have little hollows where you want shadows, as in the folds of a dress, and little ridges where you want light, and so vary the surfaces so as to get variety in the quality of the colours. Strong colour is the best, but no colour has its full value in this material on account of the inequality of the surface on which it rests.

Some slides were here shown, including a reredos from Park Church, Glasgow; an overmantel, an altar-piece from the Scandinavian Church at Liverpool; and a panel in the Skinners' Hall, all executed by Mr. Bell. The Royal Chapel at Palermo, of which an interior view was given showing the decoration, was, Mr. Bell said, one of the finest examples of mosaics in the world. The cathedral at Monreale, built in thirty years, shows one style throughout.



ST. MARK'S, VENICE: A CURIOUS VIEW FROM UNDER THE ROOF, SHOWING THE MOSAICS, AND THE DEFLECTION OF THE VAULT OF "THE PARADISE."

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

The Technique of Mosaic.

A mosaic decoration consists of pieces of glass, differing in size, much of the old work being from ¼in. to ⅜in. square. Old work is always rather small. The interstices between these pieces are unequal, and can be made to vary the quality of the work. They are sometimes coloured. The quality given by these interstices to the work gives a monotony to the surfaces. They give a flatness and an austerity to the design eminently agreeable. The fact that colour masses in mosaics are not as prominent as a single piece of glass is on account of these interstices and the shine on them due to uneven surfaces. Another reason is that many of them are nearly transparent, and so both tend to lower the tone.

Here, after the work has been settled and the coloured cartoon made of the whole work, the tesserae are marked over them. The lines of these are very important, as upon them often depends the success or failure of the work. These cartoons may be made in water colour, oil, or pastel. I use water colour myself if the work is to be done *in situ*.

Methods of Mosaic Workings.

There are two methods of doing the work. In the first the cartoon is laid on the floor, and the tesserae matched to the colour and then laid on the spot. These are then floated over in cement and a slate laid on them and allowed to set, then turned over. The difficulty about this method is that one can never see the front until the work is completed, also the tesserae come out looking flat and mechanical. Another disastrous effect of these slabs of slate is when they are put up *in situ* in a curved surface they have a most unfortunate appearance. I prefer the second method, which is longer and more costly, but you can see the work all through. First the wall on which the work is to be placed should be soaked with boiled oil, which seems to help the putty; then leave for a day or two and apply the putty to the surface, or as much as you can do before the putty gets hard. This should be ¾in. thick. The tesserae should be made from glass rondeaux, and should be picked out from the tracing of the cartoon and pushed into the putty. An early form of putty consisted of slaked lime and marble dust in the proportion of 1—3. Another recipe is marble dust, boiled oil, and slaked lime. Care should be taken if the building has a southern aspect that the material is not affected by the sun's rays. The skill of the executant varies greatly, and a great deal depends upon the taste of the individual; and the designer should be constantly in touch with the workmen. Mosaic has limitations which should be studied and noted. No decorative scheme is more delightful when properly used, and nothing is more disastrous in effect when used outside its scope.

NEWS IN BRIEF.

The Chenavard prizes have just been awarded by the Ecole des Beaux-Arts as follows: 1 (900 francs), equally divided between MM. de la Bouglise and Mauxion; 2 (400 francs), M. Bray; 3 (300 francs), M. Alleman. The Académie des Beaux-Arts has awarded the Duc prize (3,700 francs), for the encouragement of the higher architectonic studies, to M. Chaussemiche for his designs for a hydro (établissement thermal) at Châtel-Guyon.

* * *

The death of Sir William Quiller Orchardson, R.A., last Wednesday, removes one of our most popular painters of figure subjects, nor was he a mean portraitist. Born in 1835, he was one of the very successful band who studied at the Trustees' Academy, Edinburgh, under Robert Scott Lauder, along with Thomas Faed, Peter Graham, John Pettie, and John MacWhirter. There was doubtless a good deal of sentimentality about his popular successes (of which "Hard Hit" is probably the best known), but his technique was always masterly. He was elected A.R.A. in 1867, and R.A. exactly ten years later. He received the honour of knighthood in 1907.

* * *

Professor S. D. Adshead informs us that at the examination at the end of the first session of the School of Civic Design at the University of Liverpool, the following students have been successful, and will be awarded the certificate in civic design: Messrs. G. N. Dixon, S. A. Kelly, B. J. Pearson, and F. B. D. Stalker.

* * *

The annual general meeting of the Glasgow Institute of Architects (Associate Section) was held in the rooms on Wednesday, March 27th. A very satisfactory report was read and approved, and the following committee was elected: Messrs. A. M. Gardner, A. Wright, J. Wright, H. Higgans, E. G. Wyllie, T. Lunan, J. A. Wilson, Alex. Davie, Wm. Vickers, jun., and A. Newton. Mr. Alex. Wright was appointed chairman, and Mr. J. Arch. Wilson, 92, Bath Street, was again elected hon. secretary.

* * *

The Emigration Office is circulating a warning to the public that the system of paying premiums (or any sum above the ordinary steamship and railway fare) in this country, to gain instruction in farming in Canada is liable to grave abuse, and is considered by the Canadian Government to be unnecessary. Young men who are going to Canada in order to obtain a knowledge of farming are strongly advised to pay no fee of the kind to any private agency, but to apply for information to the Canadian Assistant Superintendent of Emigration, 11 and 12, Charing Cross, London, S.W., or to the Chief Clerk at the Emigration Office, 31, Broadway, Westminster.



HIGH SCHOOL AHMEDABAD, INDIA.
(See Leader: "Architectural work in India.")

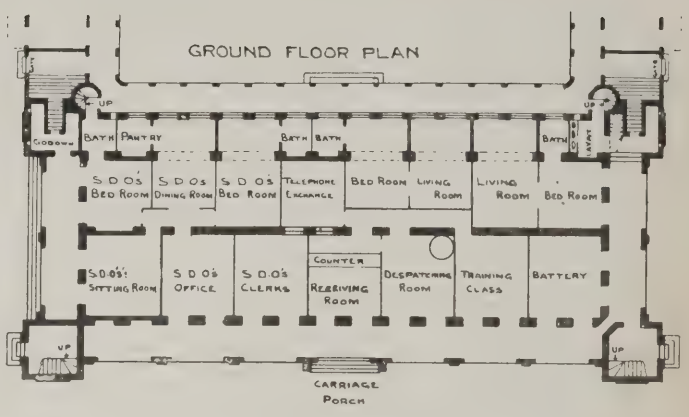
A new brickmaking material that is being employed in Denmark is locally called *moler*, and is described as "a foliated diatomaceous deposit found in Jutland." The Danish States Testing Laboratory has succeeded in producing from it a fine red brick, very firm and light and of such toughness that a nail could be driven through without cracking it. The bricks, while remarkably strong in proportion to their slight weight, are too porous and absorptive for external use, but are suitable for every kind of indoor work.

* * *

For the bearing it may possibly have on building prices, it may be here noted that last Thursday the United States Steel Corporation announced that they will advance the wages of their 205,000 employees on May 1st, increasing the pay-roll by nine million dollars (£1,800,000) annually.

* * *

Mr. Arthur T. Walmisley, M.Inst.C.E., engineer to the Dover Harbour Board, in a paper on "The Port of Dover," read before the Royal Society of Arts, touching upon the many schemes proposed at various times for reaching the Continent, pointed out that in order to build a bridge, it would be necessary to find foundations below water at a depth of twenty-nine fathoms, or 174ft., in the deepest part of the channel. He mentions that the reclamation works east of the Admiralty pier would provide a site of 11½ acres attached to the pier for a railway station and sidings, and would include a deep-water landing stage 780ft. long and 20ft. wide.



GROUND FLOOR PLAN OF TELEGRAPH OFFICE, DACCA.

* * *

The twentieth Salon of the Société Nationale des Beaux-Arts was opened at the Grand Palais on April 13th by the President of the French Republic. The critics pronounce it above the average.

* * *

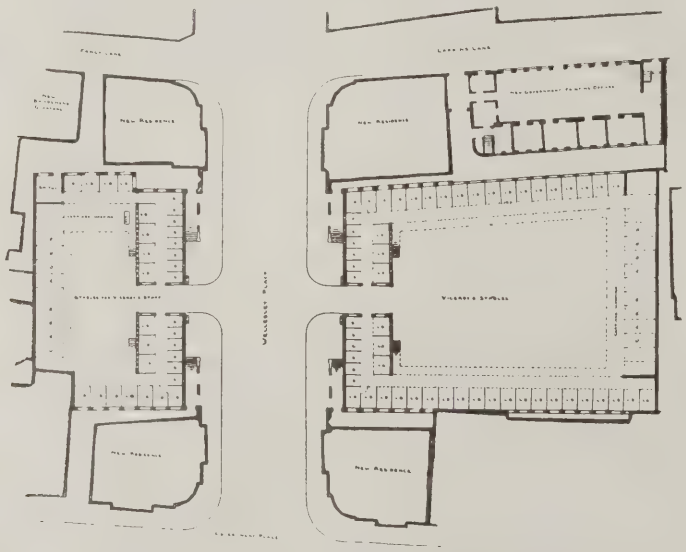
The Battersea Borough Council have decided not to rescind a resolution (passed by the Vestry fifteen years ago) which fixed the minimum wage for the employees at 30s. and the hours at 48 per week. Two deputations attended and protested against any change. Had the resolution been passed the Council would have been asked to consider proposals for introducing trade union conditions and the practice of other councils.

* * *

The proposed extension of the Charing Cross, Euston, and Hampstead Railway from the present terminus at Charing Cross to the Embankment has been for the present abandoned, owing to the objections or difficulties with respect to tunnelling under the Hôtel Métropole or, alternatively, under the pillars of the South-Eastern and Chatham Railway bridge. The Bill has been therefore withdrawn from the House of Lords

* * *

A Committee of the House of Lords, presided over by the Earl of Kintore, passed, on Wednesday last, the Bill authorising the Cambridge University and Town Waterworks Company to raise further capital for the extension of their undertaking and the sterilisation of the water supplied to the University and town of Cambridge and the surrounding district. The original intention was to construct, at a cost of £167,500, new works in the rural district of Chesterton; but the sinking of certain wells having become unnecessary that figure will be reduced by about £44,000. When the Bill reaches the Commons, it will probably be opposed by the Corporation of Cambridge, who complain that their powers of purchasing the waterworks and carrying them on as a municipal undertaking may be prejudiced.



PLAN OF NEW BUILDINGS, WELLESLEY PLACE, CALCUTTA.



NEW BUILDINGS WELLESLEY PLACE, CALCUTTA.

(See Leader: "Architectural Work in India.")



SCHOOLS KOTWALI, NAGPUR.



THE TELEGRAPH OFFICE, DACCA.

(See Leader; "Architectural Work in India.")

NOTES FROM FRANCE.

The Municipal Council of Paris is occupied about a proposal for purchasing an hôtel built some years ago in the Place Malesherbes by a rich art collector named Gaillard. The façade, in stone and brick, is a reproduction of part of the Louis XIIth wing of the Château of Blois. The house cost 11 million francs, and is now offered for sale at 2 million. This is, of course, a tempting bargain, and it is proposed to buy the place and make it a museum to receive the Dutuit collection, now in the Petit Palais. The proposal is a good deal criticised, the house being only a modern imitation of old work, and it is thought that the Council might spend the money much better in purchasing the ancient Hôtel de Sens, built at the end of the fifteenth century by the Archbishop of Sens, Tristan de Salazar. This and the Hôtel de Cluny (the well-known museum) are the only examples of fifteenth-century domestic architecture still standing in Paris; and the Hôtel de Sens, unless officially purchased, is likely to be destroyed. As it is near the Faubourg St. Antoine, it would be an excellent place for a museum of applied art for the benefit of the artisans of this quarter, who never get as far west as the Galliera Museum.

* * *

The Department of the Marne has advertised a competition, open to all French architects, for a new Palais de Justice at Reims, at a proposed cost of 1,700,000 francs.

* * *

Parliament has passed a law prohibiting from henceforth the affixing of any advertisements or trade announcements on buildings classed as "monuments historiques," or in any places of picturesque or historic interest. Committees are to be appointed in each department to see to the carrying out of this measure according to local circumstances.*

* * *

M. René Binet, the architect, has just completed the first portion of a large addition to the "Magasins de Printemps," built 26 years ago from the designs of the late Paul Sedille, a building which made his reputation at the time. The new portion, when complete, will have a turret at each angle decorated with bas-reliefs, mosaics, and statues, the sculptor being M. Guillot, a pupil of Falguière, and will be crowned by a large dome filled with stained glass.

* * *

The Chamber of Deputies have under consideration a scheme for completing the Conservatoire de Musique in the Rue d'Edinbourg, by the erection of a concert-room to seat 1,200 people, to be carried out under the direction of the architects of the Service des Bâtiments Civils.

* * *

The restoration of the Palace of the Popes, at Avignon, is steadily proceeding, and numerous interesting archæological discoveries are being made during the progress of the work. The apartment called the "Salle des Audiences" is now completely restored, and in the chapel the stained glass which was destroyed during its occupation as a barracks has been replaced according to its original design. The municipality of Avignon are occupied with the restoration of the ancient battlements extending along the bank of the Rhone, between Porte Saint Dominique and Porte de l'Oulle.

*This appears to have been suggested by the English Society for Checking the Abuse of Public Advertising.

In the course of the work carried on under M. Tournaire at the Palais de Justice at Paris, a part of the ancient Gallo-Roman wall of the fourth century has been discovered, at a depth of 10ft. below the present ground level. The "Vieux Paris" Committee are about to undertake further explorations on the spot, in the hope of finding other remains of interest.

* * *

The Société Nationale des Architectes de France holds a general meeting at 15, Rue de la Cerisaie, Paris, to-morrow, at what would be regarded in this country as the unearthly hour of half-past nine in the morning. The programme includes a visit to the Apprentices' School in the Rue des Epinettes. The thirty-eighth congress of French architects takes place this year in Paris, from the 20th to the 25th of June. The opening session will be held at the Ecole des Beaux Arts on the morning of Monday, June 20th, at 10 a.m.

* * *

On the initiative of M. Bergevin, general secretary of the Union Syndicale des Architectes Français, suburban associations or groups of Paris architects are being organised. The Société des Architectes de la Banlieue Est de Paris has been already formed, and its bureau comprises the following names: President, M. G. Damotte (Nogent-sur-Marne); vice-president, M. Wattier (Alfortville); general secretary, M. Léon Travailleur (Montreuil); assistant secretary, M. Trudon (Rosny-sur-Bois); treasurer, M. Carr (Champigny). Northern and southern groups are being formed.

ART NOTES.

The Yerkes Collection. The sale of the Yerkes collection of art treasures, which was begun the week before last comprised two hundred canvases. On the first day forty-three pictures realised £35,000, the highest price being £4,500 for Sir L. Alma-Tadema's "Spring." Only one canvas by an American artist was in the collection—a "Landscape at Sunset," by George Inness—which fetched £1,700. Many of the pictures went for less than Mr. Yerkes had paid for them, notably Meissonnier's "Reconnaissance," which fetched only £1,060 against the £2,700 paid for it in 1891, and a Burne-Jones "Princess Led by a Dragon," bought in 1901 for £1,200, was knocked down for £410.

On the second day, the total proceeds amounted to 769,200 dollars. The highest bid was £25,800, which secured for Messrs. Duveen Brothers what is regarded as the finest example of Turner's genius ever seen in the United States—the "Rockets and Blue Lights." The same painter's "St. Michael's Mount" realised about £5,000. Corot's "Morning" fetched £10,000, and his "Fisherman" £16,100. A Reynolds ("Lady O'Brien") fetched £4,500. The sale in all realised over £450,000.

The Rokeby Venus. Mr. James Greig, who some time ago announced in the "Morning Post" his discovery of the signature of Bol on the picture ascribed to Rembrandt in the Winter Exhibition at Burlington House, and who afterwards recorded the finding of the signature of Samuel van Hoogstraeten on an alleged De Hoogh in the Salting Collection, has now announced (in the "Morning Post" of April 5th), "with every sense of responsibility," that on careful examination of the Rokeby Velasquez, which was purchased for £45,000 and presented to the nation, he has found on the low left-hand corner of the painting, about 12ins. under the left foot of the Venus, close to the frame, a signature which suggests to him the initials J.B.D.M., which he takes to be those of Juan Bautista Del Mazo, son-in-law of Velasquez, and his successor as Court Painter to Philip IV. Mazo, it is explained, was a wonderfully expert mimic of the methods of other artists, especially those of Velasquez, and was the real author of the portrait of Admiral Adrian Pulido Pareja, which was bought as a Velasquez for the nation at about £18,000. Mr. Greig, however, is careful to qualify his statement by saying that it is "without prejudice," and he has no doubt that the authorities will have the glass removed so that a careful examination of the picture may be made and a photograph taken of the canvas in which Mr. Greig sees the signature. It strikes us that perhaps it would have been more satisfactory if the statement had been post-



WATER; EARTH; FIRE: MURAL PAINTINGS BY M BONNEFOY ON THE WALLS OF AN INFANTS' SCHOOL, RUE CHARLES BAUDELAIRE, PARIS.



AIR; WIND; THE PLAIN: MURAL PAINTINGS BY M. BONNEFOY ON THE WALLS OF AN INFANTS' SCHOOL, RUE CHARLES BAUDELAIRE, PARIS.

poned pending the exhaustion of all means of verification; and we must also confess to a feeling of dread lest such revelations, whether or not they are fully authentic, may deter the owners of supposed old masters from lending them for exhibition in public. Sir W. B. Richmond, who has for some time held strongly the opinion that the "Venus" is not by Velasquez, whose technique, he declares, "was entirely unlike any shown upon the picture in question," feels sure that the signatures of a different artist are present, but declines at present to commit himself to an opinion as to their identity.

A committee of scrutiny, comprising Messrs. Claude Phillips, Herbert Cook, Lionel Cust, Roger E. Fry, C. J. Holmes, Robert C. Witt, D. S. MacColl, and Sidney Colvin, having minutely examined the picture in the presence of Mr. Greig, report that they have satisfied themselves "that the marks and cracks detected by that gentleman and pointed out to him by us do not show the vestiges of any monogram or signature."

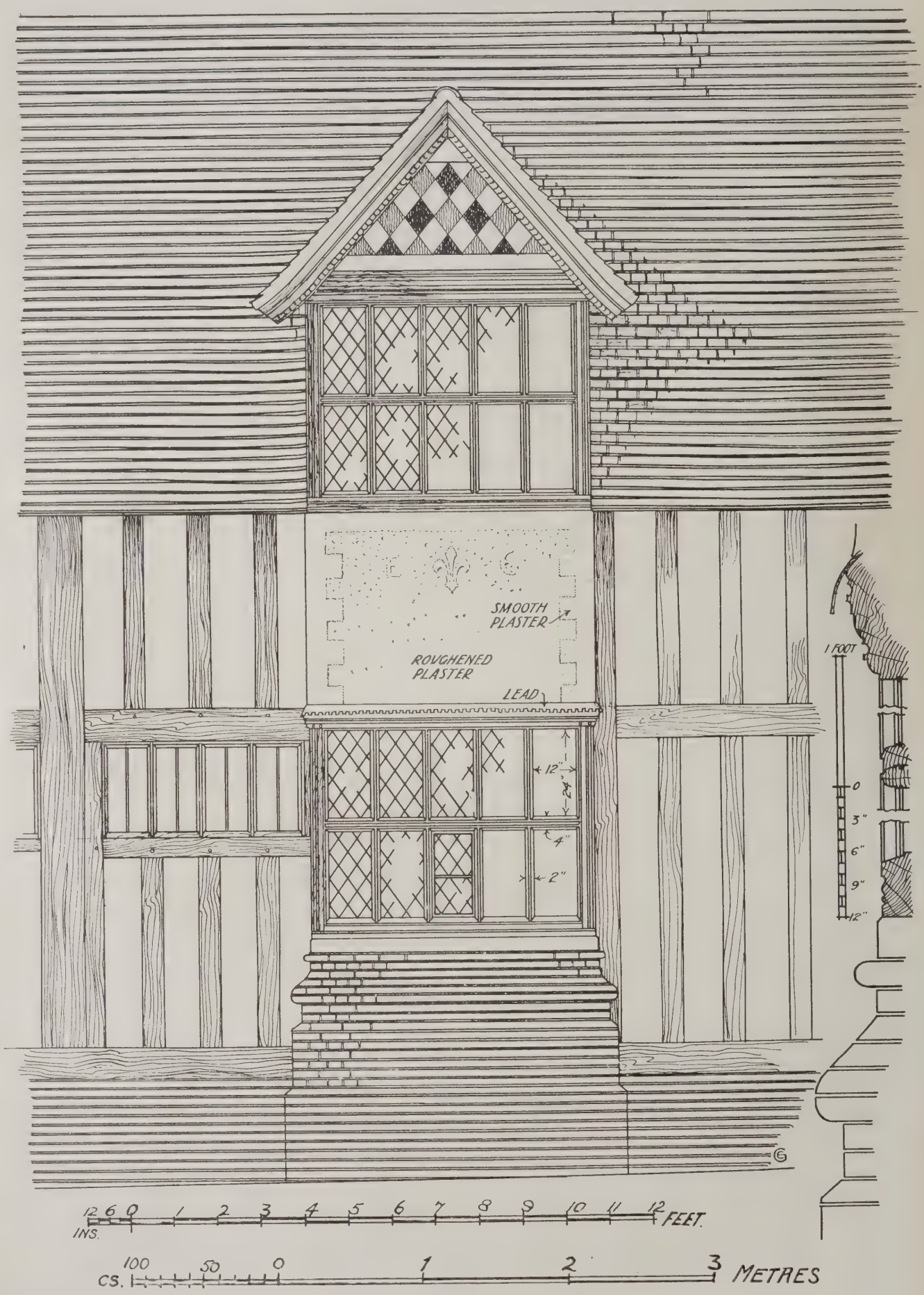
Mr. Charles Sims's Exhibition. Mr. Charles Sims, A.R.A., has now completed the exhibition of paintings in oil and water colour upon which he has been engaged for the last four years, and it was opened at the Leicester Galleries, Leicester Square, on Saturday last, April 16th. Included in the collection will be the finished sketches for his well-known academy pictures, "The Land of Nod," "An Island Festival," and "The Fountain," the latter of which was purchased under the funds of the Chantrey Bequest in 1908, and hangs in the National Gallery of British Art.

"Parking" Wimbledon and Putney Commons. The useful verb "parking," which we understand is already employed in America, may perhaps be used in describing the contemplated extensions of Wimbledon and Putney Commons. The Wimbledon and Putney Commons Extension Fund is being influentially backed, the Lord Mayor of London having promised to preside at a meeting to be held at the Mansion House on April 26th in support of the objects in view, while more than £3,500 has been already subscribed locally. By agreement with the owners of the land which it is sought to acquire successive belts or portions, the council of the fund desire to secure at once an area of about 30 acres when (1) the existing commons would be connected by a broad stretch of greensward and woodland with the Robin Hood Gate of Richmond Park; (2) a strip of finely wooded land more than a mile in length would be secured on the western side of the Beverley Brook (at present only one-half of the stream belongs to the common); while (3) the portion of the stream nearly half a mile in length between the common and Coombe Lane on the south would, for the first time, become accessible to the public, and would give access to the heart of the common for the districts on the south. The price of this mile and a half of wooded stream, and of the open meads connecting the commons with Richmond Park—in all, 29 acres—is £7,370, the average rate per acre being £251, but the purchase must be completed at an early date. All friends of town planning will wish the movement the utmost success.

The Art Journal. The "Art Journal" contains an article by Mr. Dircks on "Mr. Ernest George, A.R.A.," chiefly in regard to his drawings, of which a good many illustrations are given. We quite agree with Mr. Dircks's estimate of them, but a little more about Mr. George's architectural work, which, after all, is his central work, would not have been out of place. The only article touching on the arts connected with architecture is an original one on "Decorative Woodwork." The writer says truly that it would be a great pity if the development of fireproof construction in domestic architecture should lead to the abandonment of woodwork as a decorative feature of the house. There is not really much fear of that, however; in country houses, at all events, fireproof construction need hardly extend beyond the walls, floors, and roofs; in street houses it may be different. Among the illustrations there is an exceedingly simple staircase, praiseworthy for its characteristic treatment of the material, also a hall and staircase by Mr. G. L. Sutcliffe, with simple panelling on the walls, and balusters of the old spiral pattern, which is, after all, one of the most effective that have been invented. A bold piece of ornamental carving and a couple of strapwork panels, by the School of Art Wood Carving, deserve mention. As a whole, however, we do not know that the article helps forward the subject very much.



THE MOUNTAIN; THE RIVER; THE SEA: MURAL PAINTINGS BY M. BONNEFOY ON THE WALLS OF AN INFANTS' SCHOOL, RUE CHARLES BAUDELAIRE, PARIS.



In this drawing some restorations have been attempted, as in the case of the upper window, the original form of which is clearly evidenced. A modern window has been omitted; and the timber, at present roughly patched in cement, has been restored. Kersey was an important centre of the cloth trade during the fifteenth and sixteenth centuries, and the name is familiar in Elizabethan dramatic and other literature.

BAY AND GABLE TO OLD HOUSE, KERSEY, SUFFOLK. DRAWN BY EDWIN GUNN, A.R.I.B.A.



Few finer examples of old half-timbered houses can be found than this one of Kersey. The date of the house is probably fifteenth century, as evidenced by the mouldings of the blocked windows between the bays; but the latter are sixteenth century. One bears a Tudor rose, and the other a *fleur-de-lis* in plaster. The diaper in the gables is in black, white, and buff.

BAY AND GABLE TO OLD HOUSE, KERSEY, SUFFOLK

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HOUSE, CARLTON HOUSE TERRACE, LONDON.

The interior of this house was entirely demolished and rebuilt; the external walls alone remained to retain the present uniformity of the terrace. The staircase and entrance hall are built of Painswick stone, with floors and staircase of Pentelikon and Irish black marbles. The balustrading to the staircase and galleries is of bronze. On the first floor are two drawing-rooms connected by a saloon from which the ballroom is approached. The second floor contains the private rooms of the family, and the third floor accommodates the household. The offices in the basement are connected with this floor by a lift and a staircase. Messrs. Detmar Blow and Fernand Billerey were the architects. The electrical work was carried out under the direction of Mr. E. Wingfield Bowles, the wiring being executed by Crittall and Co. The bronze balustrading and other work was made by W. Bainbridge Reynolds, Ltd., of Clapham, London. The staircase is lighted with fused silica glass supplied by the Thermal Syndicate, Walls-end-on-Tyne. The general contractors were George Trollope and Sons and Colls and Sons, Ltd., London.

NEW BUILDINGS.

PROPOSED.

Bishop's Stortford.—Sir Walter Gilbey's offer of a site to the Bishop's Stortford Urban Council for the erection of open-air swimming baths for the town, and also to give the Council the control of the sluice on the upper waters of the River Stort, to enable them to regulate the supply of water, has been accepted.

Chorley.—The Highways and Buildings Committee of the Town Council has decided to make application to the Local Government for their sanction to a loan of £4,350 for armouring the main road with granite cubes from the Fish Pond to the northern boundary of the borough. The committee has also approved the following plans:—House in intended street off Bolton Road, wash-houses to two houses in Bolton Road, bath-room and w.c. at Wheat Sheaf Hotel, St. Thomas's Road, two houses in Leigh Row, three houses in Regent Road, addition to house in Railway Road, house in Windsor Road, four houses in Congress Street.

Dundee.—The following plans and sections have been lodged at the office of the City Engineer:—Adelaide Place, addition to villa; Arkley Street, alteration of boiler-house; Duff Street, alteration of cottage; Farrington Street, dwelling-house; Farrington Terrace, cottage; Nelson Street and Wellington Street, temporary building; Paradise Road, addition to dwelling-house; Reform Street, alteration of property; St. Peter Street, stable, etc.; Union Street, alteration of property; Victoria Road, alteration of property; Hilltown, additions to property; Arbroath Road, additions to property; Stirling Road, alteration of property; Forfar Road, addition to villa.

Falmouth.—At a recent meeting of Falmouth Town Council, the General Purposes Committee further reported that they had considered an amended plan of a pavilion at Gyllyngdune at a reduced cost of £1,550, and had resolved that the same be approved, and that the necessary steps be taken for obtaining the Local Government Board's sanction to the borrowing of the amount.

Glasgow.—It is expected that building operations in connection with the new Glasgow music hall—the Alhambra—to be erected on the site of the Waterloo Rooms—will be commenced in a few weeks. The hall will provide seating accommodation on the ground floor and two galleries for about 2,400 people.

Prestwick.—At a recent meeting of Prestwick Town Council it was reported that plans for the proposed kiosk and minstrels' stand on the beach, prepared by Mr. William Cowie, architect, Ayr, had been approved, and to meet the cost the Attractions Committee recommended that the Town Clerk be authorised to borrow £900.

Salford.—The Town Council has agreed to the recommendation of the Buildings and Bridges Committee to accept the tender of Messrs. Heenan and Froude, Limited, to carry out the work of strengthening and repairing the Palatine Bridge, at a cost of £5,642, for which sum borrowing powers have been obtained.

Swansea.—The Harbour Executive Committee, has let to the Welsh Fuel Company, Ltd., a site at the eastern end of the north side of the King's Dock, for a patent fuel works. The committee has also decided to advertise for tenders for a new swing bridge, across the passage connecting the access, to the area reserved for future dock extensions, costing from £6,000 to £8,000.

Saltburn.—The new Primitive Methodist Church has been opened, and will accommodate 500 worshippers. The cost of the church and schools was £5,200, and the style of architecture is of Late Gothic in red brick with terra cotta dressings. Electric light is installed, and the ventilation and heating are on the latest principles. The school comprises a large central hall with eight classrooms.

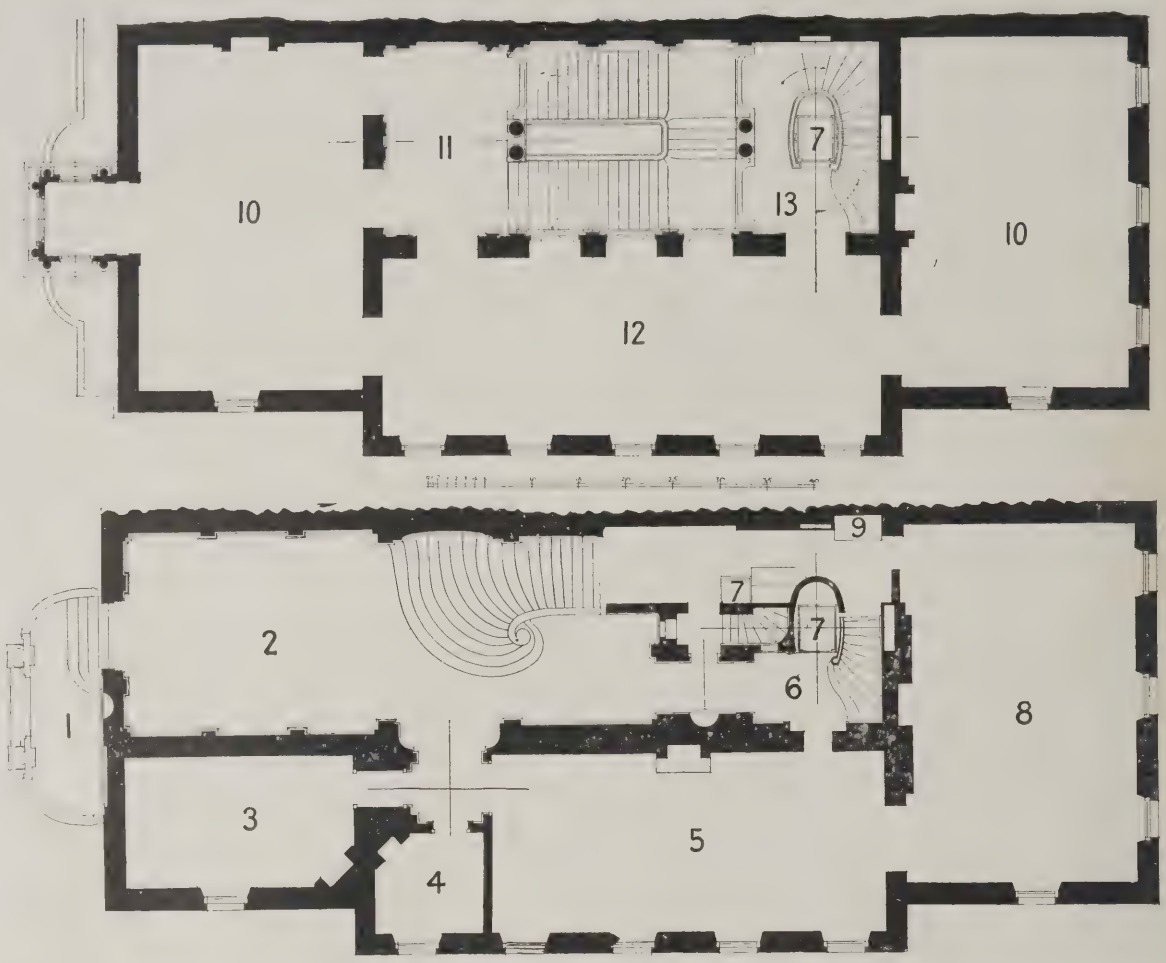
Southend.—The Town Council have passed the following plans:—Two houses in Leigh Road East; seven houses, Central Avenue; two houses, Belle Vue Road; twelve houses, Moseley Street; three houses, Southview Drive; two houses, Brightwell Avenue, 17 houses, Hainault Avenue; three houses, Electric Avenue; 20 lock-up shops, Eastern Esplanade, and an entertainment hall, Royal Hill; Welcome Club, Station Road; five houses, Brightwell Avenue; two houses, Gloucester Terrace; six houses and shops, Leigh Road West; flats, Whitefriars Crescent; two houses, St. Ann's Road; one house, Sea View Road; two houses, Hildaville Drive; two houses and shops, Station Road, and house and shop, near Whitefriars Crescent; a house, Cliff Gardens.



Photo: E. Dockree.

The staircase and hall are built of Painswick stone, with floors and steps of Pentelikon and black marble.

HOUSE, CARLTON HOUSE TERRACE, LONDON: NEW ENTRANCE HALL AND STAIRCASE. DETMAR BLOW AND FERNAND BILLEREY ARCHITECTS.



HOUSE, CARLTON HOUSE TERRACE, LONDON: GROUND AND FIRST FLOOR PLANS.
DETMAR BLOW AND FERNAND BILLEREY, ARCHITECTS.

New Buildings Continued.

IN PROGRESS AND COMPLETED.

Balby.—It has been decided to proceed immediately with the enlargement of the Balby Church at a cost of fully £2,000, which will include the erection of a new east end, and the present seating accommodation will be doubled.

Barry Dock.—The foundation-stones of the new Wesleyan Methodist Chuch, which is in course of erection in Halton Road, were recently laid, and the building, when completed, will accommodate 650 persons, while beneath there will be a hall capable of seating several hundred. The contractors are Messrs. Lloyd and Tape, Barry Dock, and the architect Mr. Henry Budgen, Cardiff.

Blackpool.—The Corporation has approved the following plans:—New street, Preston Old Road; three houses, Preston Old Road; 13 houses, Hawthorn Road; house, Little Layton; house, Highbury Avenue; house, Norwood Avenue; houses, Norbury Avenue; houses, Lincoln Road; 2 houses, Holmfield Road and Warbreck Drive and Mere Road; 2 houses, Halifax Street; 2 houses and store room, Rothesay pump room and stores, New Road; alterations, Whinney Heys Hall; alterations, Metropole Hotel; alterations and additions, Central Beach; additions, Gorton Street; additions, Beech Avenue and Brian Road; bay windows, wash-house, etc., Preston Road; extensions, Kent Road; alterations, Brighton Hydro; additions, Clifton Street; alterations, Central Drive; shed, Gloucester Avenue; additions, Mere Road; alterations, Derby Road; alterations, Raikes Road; greenhouse, Caunce Street; additions, Victoria Hall, Waterloo Road; alterations, Bolton Street, Manchester; additions, Ribble Road, Tadcaster Brewery; verandah, Carshalton Road and Boothrodon.

Fenton.—The new school, designed by Mr. S. B. Ashworth, architect to the Education Committee, has been completed at a cost of £3,400. The general contractors were Messrs. Ball and Robinson, of Stoke-on-Trent, and the principal sub-contractors were: Minton, Hollins and Co., glazed tiles; Homan and Rodgers, fireproof floors, etc.; J. Gibbons, Wolverhampton, steel casements, gas and cloak-room fittings; and Mellows, Sheffield, roof glazing. The school will accommodate 380 children.

Gretna.—The old Parish Church, which has been undergoing extensive alterations, including addition of a bell tower, an aisle and short transept, and the filling of the four pointed front windows with plain geometrical stone tracery, has been completed, at a cost of £1,500. Mr. Barbour, of Dumfries, was the architect.

Huntly.—The Dean of Guild Court has approved the plans of extensive additions to the hosiery factory of Messrs. W. Spence and Son, Gordon Street, and two new dwellings, Littlejohn Street.

Leyland.—The Urban District Council has approved a plan for seven cottages in Spring Street, subject to the requirements of the surveyor being complied with.

Llanelly.—Messrs. Richard Thomas and Co. (Limited), tin-plate manufacturers, have just started the building of a new tin-plate works at Llanelly. The site of the new works is adjoining the South Wales Works, and it will be built on the most modern lines.

Northampton.—The new parochial building adjoining St. Lawrence Church have been opened on completion. The work has been executed at a cost of upwards of £2,000 by Messrs. E. D. Sharman and Son, builders, Northampton, from the designs of Messrs. M. H. Holding, A.R.I.B.A., and Edward de W. Holding, of the Corn Exchange, Northampton.

Oban.—The new post office, erected on ground adjoining the municipal offices, has been completed, and has a frontage of 82ft. to both Albany and Shore Streets. The whole building is constructed on fire-resisting and hygienic principles. The elevations to Albany Street, which are designed in the style of later Scottish baronial, are faced with granite rubble from Balachulish quarries, with Giffnock sandstone dressings. The cost of the buildings was over £9,000. The architect is Mr. W. T. Oldrieve, F.R.I.B.A., H.M., Principal Architect for Scotland.

Peckham.—The re-building of St. Mary Magdalene Church has been commenced owing to the risk of injury incurred by the worshippers. A surveyor reported that the east end was liable to collapse, and that the whole edifice was in an extremely unsafe condition. A contract has been signed for £2,600.

Marsden.—A scheme begun in 1892 at St. Bartholemew's Parish Church, is now about to be completed by the erection of a tower 100ft. in height, at the west end of the nave, involving an expenditure of £3,800.

Southampton. — The Polygon Baptist Church and Schools, of which the foundation-stone was recently laid, will be faced with red bricks with Bath stone dressings, and the complete scheme embraces church with tower, and schools, a portion of which are to be omitted for the present. The contract for the present portion amounts to £5,795, and is let to Mr. J. Nichol, of Bitterne Park, Southampton. The architects are Messrs. George Baines and Son, 5, Clements Inn, Strand, W.C., whose designs were selected in a recent competition.



hoto : Bedford Lemere ana Co.

HOUSE, CARLTON HOUSE TERRACE, LONDON: THE SALON DETMAR BLOW AND FERNAND BILLEREY, ARCHITECTS

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Southgate.—The Urban District Council has approved the following plans:—Extension at the rear of No. 8, The Market, Green Lanes, Palmers Green; 8 stables and coach-houses at the rear of Nos. 14a to 19, The Promenade, Palmers Green; 2 dwelling-houses in Conway Road, Southgate; 10 dwelling-houses in Greenwood Gardens, Palmers Green; 3 dwelling-houses in Broomfield Lane, Palmers Green; 7 dwelling-houses in Burford Gardens, Palmers Green; 5 dwelling-houses in Fernleigh Road, Winchmore Hill.

Sutton-on-Sea.—The new Wesleyan Church and Schoolroom have been opened on completion at a cost of £4,200, the architects being Messrs. John Wills and Son, Derby and London, and the contractors Messrs. D. Panks and Son, Grantham.

Uxbridge.—The Streets and Works Committee of the Urban District Council has approved the following plans:—Additions at rear of No. 4, Vine Street; pair of houses, Chiltern View Road.

Wanstead.—The foundation-stone of the new West Ham Union Receiving Homes, situate in Aldersbrook Road, has been laid, and the building when completed will consist of three blocks with accommodation for 250 children. The builder is Mr. F. J. Coxhead, Leytonstone, whose price is £20,493, and the architects are Messrs. William and John Jacques, 2, Fen Court, E.C.

York.—The Streets and Buildings Committee of the Corporation has approved the following plans:—Rebuilding staircase wing, 38, Stonegate; 10 cottages, Moorgate; temporary store, Prospect Terrace, Bishophill; Promenade Road Club, w.c. and re-drainage, Promenade Road; 4 houses, Grosmont Terrace; 2 cottages, Howe Hill Road; 2 houses, Lime Avenue, Stockton Lane; St. Peter's School, w.c.'s and urinals, Clifton Garth, Clifton; new factory, Haxby Road; combined drainage, Faber Street.

Ynysybwl.—The erection of Christ Church Parish Hall at a cost of £1,150 is in progress, and the foundation-stones were recently laid. Messrs. T. E. Richards and Kaye, Pontypridd, are the architects, and Messrs. Williams Bros., Ynysybwl, the contractors.

FOREIGN NOTES.

New Law Courts for St. Petersburg.

The Russian Ministry of Justice has decided to erect new law courts for St. Petersburg at a cost of £250,000, exclusive of the land, which the municipality is asked to provide free or on easy terms of payment.

Harbour Works at Venice.

The accommodation at the maritime station at Venice is shortly to be extended at an estimated cost of £240,000, and arrangements have been made for the execution of the work by Signor Edoardo Almagià. The extensions include a dock parallel to the existing one, the opening of subsidiary canals, the construction of embankments, quays, and walls, and other accessory work, the whole to be completed within 52 months. The main navigation canal leading to the large basin to be built at the Bottenighi, near Mestre, is then to be excavated to a depth of 10 metres. The basin itself will be 1,000 metres long, 200 metres wide, and 10 metres deep, and the quays will be provided with cranes, stores, and other necessary equipment.

Italian Builders' Huge Strike.

Thirty-five thousand workmen at Milan have been thrown out of work as the result of a proclamation of a general strike in the building and allied trades. All work of this kind is at a standstill not only in the city but within a five-mile radius of Milan. A similar strike is fast extending over the entire province of Piacenza. The situation is regarded as very serious, because, apart from the failure of the local prefects in their efforts to promote an understanding, there is the coincidence of a great building strike in Germany, which involves another 100,000 Italian hands, and precludes the possibility of an interchange between the two countries.

Labour Troubles in Germany.

The "Tageblatt" stated that the Government had decided to offer its mediation with a view to prevent the imminent general strike in the building trades. A conference of representatives of the masters and men was subsequently held at the Imperial Ministry of the Interior. Individual firms are also making energetic efforts to effect a reconciliation at the eleventh hour, and the tone of the Press became more hopeful than it was when reporting, a day or two before, that delegates representing about 300,000 of the masons and joiners of Germany had been holding sittings at Berlin in order to determine what attitude they should adopt towards the conditions which have been laid down by the Employers' League for the German building trade. If the negotiations fail, a general strike will begin on April 23rd. The agreement between employers and employed, which was drawn up in 1908, expired on April 1st for all branches of the building and allied trades. The Employers' League resolved a fortnight before upon a new form of agreement, acceptance of which they now demand. The main points are that in future all agreements shall be concluded between the central bodies of employers and the workmen's organisations respectively, that the system of piecework shall be definitely recognised, that labour exchanges organised by employers alone shall be secured from interference by workmen's organisations, and that the whole agreement shall hold good for three years. The attitude of the workmen's organisations towards these proposals is distinctly hostile. The employers, backed by bankers and other opponents of socialism, are determined to crush trades-unionism.

Dwellings and Workshops in Vienna.

At last Vienna has set about the task of improving the housing of the working-classes, and not only the housing but the workshop condition of the workers. In the Margarethen suburb an imposing square block of workshops and living-rooms has been erected, and at a rentage below that usually charged for damp, dark, and unhealthy quarters. This seven-storeyed building contains 150 separate workshops, and some forty model dwellings, and is but the first instalment of the new improvement scheme.

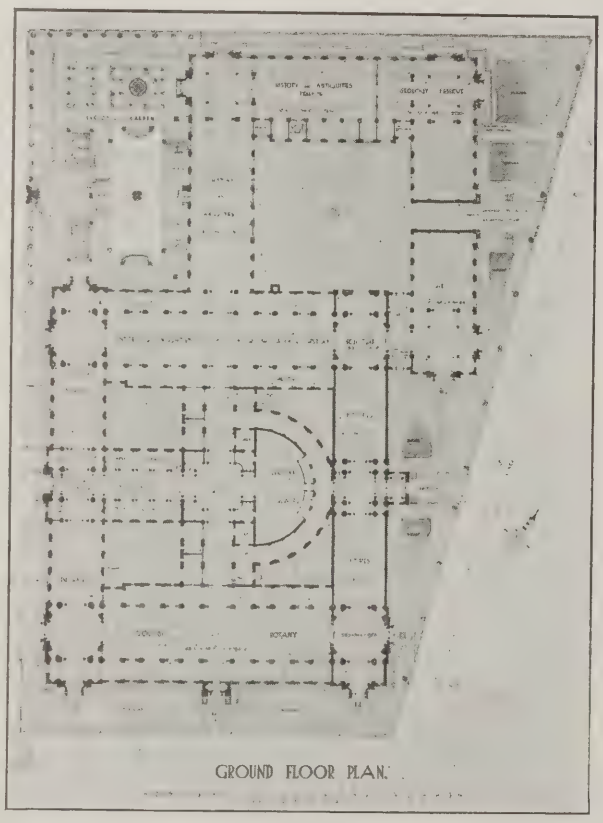


Photo: E. Dockree.

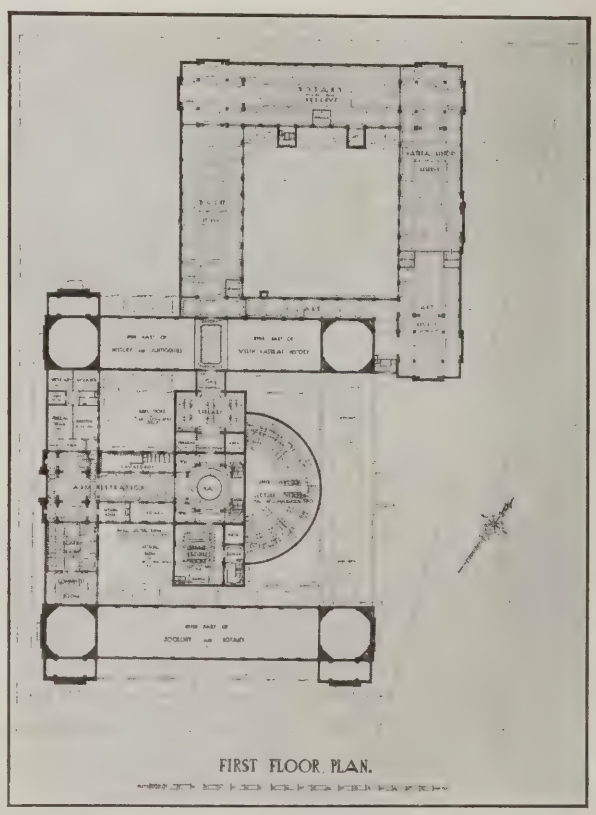
The walls are of Painswick stone, the steps of black marble. The balustrading (only partly fixed as shown here) is in bronze.

HOUSE, CARLTON HOUSE TERRACE, LONDON: THE TOP OF THE STAIRCASE. DETMAR BLOW AND FERNAND BILLEREY, ARCHITECTS.





GROUND FLOOR PLAN.



FIRST FLOOR PLAN.

THE WELSH NATIONAL MUSEUM COMPETITION:
DESIGN PLACED FOURTH. MILNE AND HEPBURN, ARCHITECTS.

CORRESPONDENCE.

[The Editor declines responsibility for the statements made or opinions expressed by correspondents.]

Licentiates R.I.B.A.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—May I venture to commend to the careful consideration of all architects (whether principals or assistants) who are not members of the R.I.B.A., the advisability of taking the present opportunity of becoming Licentiates of the central representative body. The title of Licentiate is conferred by Royal Charter; as a title it has its parallel in the L.R.C.P. of the medical profession, and the power for Licentiates to become Fellows, should they so desire, is secured by the Charter. There are already several hundreds of applicants, and it is hoped that every bona-fide architect will be enrolled. The next step will be the consideration by the general body of the Bill now being drafted to secure statutory recognition.

EDWIN T. HALL.

London, W.C.

NOTES ON COMPETITIONS.

New School, Dumbarton.

The report of Mr. Samuel Preston, Master of Works, Govan School Board, assessor, on the plans submitted for the proposed new school at Braehead, Dumbarton, has been considered by the Dumbarton School Board. Mr. Preston has selected the design of Mr. John Rogerson, Dumbarton, and the Board has appointed Mr. Rogerson as architect, subject to some modifications to reduce the cost.

Church Schools, Bromley, Kent.

The award of the assessor, Mr. H. P. Burke Downing, F.R.I.B.A., of Westminster, in the limited competition for Church Schools at Masons' Hill, Bromley, was submitted at the last meeting of the trustees and managers and unanimously adopted. In his report Mr. Burke Downing says:—

"I award the first place to the design marked 'D.' The main building is well situated on the site and the entrances and exits are well placed. The scheme is an economical one, and the plan solves the problem of arrangement of the classrooms and halls in a very workable manner, and one most helpful to good school administration. The design is very happy in its suitability to the character and purpose of the building. The estimate of £4,930, based on a foot cube rate of 7d., is, in my opinion, a fair one, and it should be practicable to erect the building at that cost."

When the sealed envelopes containing the names and addresses of the competitors were opened, it was found that the author of the design placed first was Mr. C. H. B. Quennell, F.R.I.B.A., and he was appointed architect for the erection of the schools. On the recommendation of the assessor an honorarium of 20 guineas was assigned to the authors of the design marked "A," Messrs. Russell and Cooper, FF.R.I.B.A. To each of the remaining competitors an honorarium of 10 guineas will be paid. The drawings are hung in the Art School, Bromley.

LIST OF COMPETITIONS OPEN.

APRIL 23. COUNTY OFFICES, NAVAN. Particulars given in our issue of March 16th.

MAY 2. STOCKPORT NEW LIBRARY. Architects desirous of competing for the designs of the library which the corporation propose to erect are invited to send their names, with information as to their experience in and qualifications for carrying out such work, to the undersigned on or before Monday, May 2nd, 1910. From the names sent in the corporation propose to select a number to compete for the work. Canvassing will be regarded as a disqualification. Robert Hyde, Town Clerk, Town Hall, Stockport.

MAY 31. MUNICIPAL OFFICES, KARACHI. Particulars given in our issue March 16th.

JUNE 11. COVENTRY. ENLARGEMENT OF SCHOOL at STOKE. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

JUNE 15. ELEMENTARY SCHOOLS, ACTON. Particulars given in our issue of March 16th. The Royal Institute of British Architects has requested architects not to compete.

AUGUST 31. COVENTRY. NEW ELEMENTARY SCHOOL in Centaur Road. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

NO DATE. PROPOSED USHER HALL, EDINBURGH. The Corporation of the City of Edinburgh desire to receive competition designs for the erection of a new hall in Lothian Road, Edinburgh. They have appointed Sir Aston Webb, C.B., R.A., London, as assessor, Mr. J. A. Williamson, A.R.I.B.A., City Chambers, being associated with him. Three premiums are offered. Particulars and plans of the site will be supplied to competitors on payment of a fee of two guineas, which will be returned on receipt of a design in accordance with the conditions. Should architects on receipt of the particulars not desire to compete, the deposit will be returned, provided the papers are returned within four weeks. Inquiries to be addressed to Thomas Hunter, Town Clerk, City Chambers, Edinburgh.

PRACTICAL NOTES.

Defects in Plastering.

Such frequent trouble is now experienced by architects and builders in connection with plastering on walls and ceilings that it is perhaps a question whether more attention may not deservingly be bestowed on this rather subsidiary but none the less very evident item in a building's visible factors, in order to ascertain the probable causes and possible remedies for such oft-recurring defects.

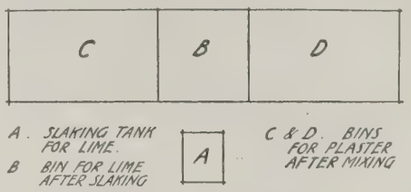
The failures may be attributed to two main sources—(a) careless workmanship, (b) unsuitable material.

(a) Perhaps the most common of all defects comes under the former head, viz., the crazing of surfaces with a network of fine hair cracks, quite distinct from the occasional more serious cracks and blisters caused by the blowing particles of unslaked lime. This defect is probably as largely due to scanty application of "elbow grease" as to any other cause, though it is aided by too rapid absorption of moisture by dry undercoats.

The remedy is the proper moistening of the surface of each coat of plaster before the next coat is applied, and insistence on the floating being consolidated by well scouring with a hand float, and plenty of "elbow grease" after the stuff has been laid.

This scouring should be done after the coarse stuff has stood long enough to permit of shrinkage, and of the formation of a firm surface, but not so long as to allow it to become dry. The plasterer holds the float in one hand and a stock brush in the other, with which he sprinkles water on the surface, vigorously working the float with a rapid circular motion meanwhile. Any slight inequalities left from the floating rule can be filled in with a little soft stuff. The success of the work is wholly dependent on the workman performing this work evenly, neither missing any part nor scouring one part more than another. All floating should be scoured twice, with an interval of between three and five hours between the operations, and first-class work should be finally scoured again after a further interval of one day, the scouring being continued until little or no moisture is left on the surface. This of course leaves a close grained and somewhat smooth surface, offering little adhesion to the setting coat, and if setting is intended, it should be keyed or roughened as soon as finished. Many architects now, however, apply Duresco or other washable distemper direct on a floated surface, the result giving an agreeable texture in the finished work.

Ordinary "coarse stuff," composed of lime, sand, and hair, is commonly mixed upon large building works in the following manner:—Bins are constructed as shown.



The lime is slaked in tank A, then run through a fine sieve into bin B. When the lime has sufficiently cooled, the hair is added and well mixed in with a hair hook, which distributes the hair in the lime. When thoroughly mixed the sand is added and again larried with the hair hook. The mixed coarse stuff is left for a time, to allow surplus water to drain off, and when sufficiently consolidated it is turned out into bins C and D, and again larried to obtain thorough mixing.

The quantities dealt with at each mixing of a 2 to 1 plaster would be about 4 cube yards unslaked lime, 8 cube yards sand, and one hundredweight bag of hair. The proportions of the various materials are ordinarily specified by architects with considerable care, but an important detail frequently omitted or left to the doubtful initiative of the workmen, is the stage in the operations at which the hair is to be added. It should not be mixed with the plaster until immediately before application, as if left too long in contact with hot lime, the quality of the hair may be entirely destroyed—losing all tenacity and becoming brittle and thin.

An examination of mixed "coarse stuff" immediately before application should always be made, and will frequently disclose the hair to be in this condition, which may be from the above cause, or (b) the use of hair from an American tannery. A common form of specification reads, "fresh bullocks' hair well beaten free from dust, but on no account to be washed or wetted before using."

In the case of hair removed from the hides after treatment of the latter with lime, as practised in old-fashioned bark tanneries, this stipulation was probably quite right. Now that chemical processes have almost entirely supplanted this old-time treatment (surphuric aid being one of the chemicals employed), it is a question whether washing should not be specified as likely to do less harm than good, though it may be doubtful whether hair once acted upon by destructive chemical solutions will ever be entirely freed or retain its toughness. It is probably now wiser to omit hair altogether from the plaster, substituting manila, jute, or cocoanut fibre. The latter is already largely used by manufacturers of slab plaster, and appears to give satisfactory results.

The use of unsuitable sand is another frequent cause of the failure of plastering, which in the case of ceilings often becomes sufficiently friable to fall within a very short period of its execution.

Admittedly inferior sands of a loamy nature are of course mistrusted and frequently rejected in good class work, but a certain type of clean ferruginous sand making very excellent cement mortar for ordinary building work, and on that account often preferred, may also be very dangerous for use in plastering. It is well known that common lime plastering is a very porous material, and readily absorbs a considerable amount of moisture from the atmosphere. It may be conjectured that oxidation and swelling of the ferruginous particles takes place from this cause, destroying the cohesion of the plaster with the result before mentioned.

SOCIETIES' REPORTS.

R.I.B.A.

The following gentlemen have been nominated for election at the meeting on June 6th, 1910:—*As Fellows*: E. R. Barrow, London; A. W. Cooksey, London; W. D. Dawson, London; H. Gilbert, London. *As Associates*: G. L. Alexander, London; W. J. Beall, Pietermaritzburg; N. W. Hadwen, Triangle (Yorks), J. F. Munnings, India; D. J. Roberts, Erdington, Birmingham; H. Sutcliffe, Melbourne, Australia; E. A. Taylor, Sydney, N.S.W.; M. Thompson, Doncaster.

The Concrete Institute.

The deputation of members of the Concrete Institute have returned from Paris, where they have been making a special enquiry into the durability of reinforced concrete. For this purpose, visits were paid to about a dozen important structures in and near Paris, including bridges, culverts, tunnels, reservoirs, and buildings, all of reinforced concrete. These were of various ages, the oldest being the roof of a large house constructed no less than 58 years ago by the late M. Coignet, whom many consider to have been the first inventor of this material. The programme of visits was arranged by Professor Rabut, the Chief Engineer for New Works of the French State Railways. The deputation were specially invited to dine with the "Association des ingénieurs des Ponts et Chaussées." In the absence of the president, the visitors were received by M. Colson, Membre de Conseil de l'Etat, a former Inspector-General of this distinguished Corps. The visitors were also hospitably entertained by the "Chambre Syndicale des Constructeurs en Ciment armé," whose president, M. Edmond Coignet, is a son of the famous inventor, and by M. Hennebique, whose reputation as a designer of reinforced concrete is world-wide. The deputation consisted of:—Sir Henry Tanner, K.S.O., F.R.I.B.A., Mr. William Dunn, F.R.I.B.A., Mr. F. A. White, Mr. A. Ross, M.Inst.C.E., Mr. C. H. Colson, M.Inst.C.E., Mr. W. G. Kirkaldy, A.M.Inst.C.E., Mr. J. S. E. de Vesian, M.Inst.C.E., Mr. F. E. Wentworth-Sheilds, M.Inst. C.E., Mr. E. P. Wells, J.P., Mr. H. K. Dyson, Mr. H. K. G. Bamber, A.M.Inst.C.E., F.C.S., Capt. Gibson-Fleming R.E., Mr. G. C. Workman, Mr. P. W. Leslie, Mr. H. Anderson, and Mr. P. M. Fraser, A.M.Inst.C.E. It is understood that the deputation were well satisfied with the results of their inspection which will form the subject of a special report.

TRADE AND CRAFT.

Barrel Locks and Latches.

We have received for examination a sample of Stevens's patent barrel locks and latches, which have been devised upon a new principle as regards the mechanism. The chief advantages which the new lock affords are that the comparatively small tube can be fixed in a boring made with a 1in. centre-bit, thus saving very considerably on the labour of mortising, while it does not weaken the door to the extent inevitable under the old system; and that there are no delicate parts in the mechanism, in which a strong spiral spring offers a satisfactory guarantee of long life and efficiency—a most important point for the tenant, who knows that the spring of the ordinary mortice lock is a chronic nuisance. It is evident that the Stevens' lock, owing to the strength and simplicity of its mechanism, will stand any amount of hard wear, and thus not only overcomes the domestic worry consequent on the liability of the spring to get out of order, but is peculiarly adapted for use in public buildings or other places where the doors are in constant use. The lock is made by Messrs. Simkins and Hadley, of Baltic Works, Willenhall, Staffs, and can be had of all builders' merchants.

A Self-acting Room Ventilator.

To obtain ventilation without draught is to achieve health and comfort combined, and in the matter of ventilation, it is rather difficult to conceive that the draught which gives rise to discomfort is in any way healthy; the very feeling of discomfort being, in fact, in the nature of a warning of impending danger. Yet it is not easy to secure a regular supply of fresh air, nor even to provide for the escape of vitiated air, without, in the same action, setting up a draught, which may possibly do at least as much harm as good. Mr. E. G. Wright, of Guildford, is the inventor of cowl ventilators and appliances for the prevention of down-draught, and has now turned his attention to the ventilation of rooms by means of a modification of the principle which he has successfully employed in his cowls. The device is at once quite simple and very ingenious. The object is to prevent back draught. Obviously, a plain grating, or a simple air brick, in a wall is rather apt to become a pronounced nuisance when it happens that the wind blows directly against it. Either the vitiated air is denied egress, or is blown back by an uncomfortable inrush of air of lower temperature. Mr. Wright's self-acting room ventilator has been designed to overcome this difficulty. It consists of an oblong metal box, of about the length and breadth of an ordinary brick, open at the ends, and provided internally with an arrangement of plates set at angles which have been nicely adjusted so as to receive and carry across the outer air, no matter how strong the wind, which, in fact, instead of opposing the egress of air from the room, actually assists in extracting and carrying it away; and any fresh air that can find its way into the room does not arrive in gusts, but flows in gently and imperceptibly. It is suitable for many services, and apparently has a particular application to geysers, for which the inventor provides a special form of adjustment, by means of which the noxious fumes are conducted to the outer air, rendering the use of the geyser safe and convenient.

Imitation Marbles.

For the decoration of hotels, theatres, and business and other premises where considerations of cost rule out real marble, excellent effects, otherwise unattainable, are secured by the use of the close imitations which are now possible. Among these the Fassio marble is strikingly successful in its close resemblance in colour, figure, and finish to the actual article. It is manufactured from non-inflammable material, in ¼in. thickness, and is supplied from a large range of stock patterns, in slabs, 3ft. by 2ft., and 2ft. by 1ft. thick, for wall lining. It is also made in various thicknesses as required for various other purposes. It is easily and quickly fixed, does not craze, and is not only decorative, but sanitary. Samples may be seen at the offices of Fassio Marble (1909), Ltd., 59 and 60, Chancery Lane, London., W.C.

TRADE NEWS.

We regret to hear of the death, on Sunday, April 10th, of Mr. George Henry Johnson, at his house, "Bryncliffe," Bennetts Hill, Oxted, Birkenhead. Mr. Johnson was formerly in partnership with Mr. J. B. Johnson, of Crown Street, Liverpool, for seven years, from 1890 to 1897, and latterly with his brother, Mr. Ben H. Johnson, trading as Henry Johnson and Sons, from 1897 to March 5th, 1910. This partnership was only just dissolved when Mr. Johnson was taken ill and died from pneumonia. As a member of the firm of Henry Johnson and Sons, he was associated with some of the most important work in England; especially may be mentioned that in connection with the Cotton Exchange, Liverpool; Selfridge's Store, London, and Lancaster Town Hall.

We are asked to announce that Mr. T. Percival Chubb, of Bowley Street, London, E., has been appointed by the (U.K.) "Winget" Concrete Machine Co., Ltd., of Newcastle-on-Tyne, as their sole agent for London and the home counties, for the sale of their well-known "Winget" concrete block-making machines and "Express" concrete mixers.

We are advised that Mr. J. J. S. Davidson has resigned the managing directorship of the British Uralite Company, Ltd., of London and Higham, as, owing to his other engagements, he is unable to give the close personal attention that the interests of the company demand. Mr. Davidson is not severing his connection with the company entirely, as he will continue to act as director. Under his management the company has been put on a sound financial basis; the factory has been reorganised, new markets have been developed for Uralite at payable prices, and the manufacture of Asbestone has been initiated to compete with the cheap Continental materials. We are informed that Mr. Davidson has prepared a scheme for a new power system, and that when this is carried into effect, the company may confidently look forward to a period of continued and expanding prosperity.

COMING EVENTS.

Wednesday, April 20.

ROYAL SANITARY INSTITUTE.—Sir John A. Cockburn, K.C.M.G., on "The Public Health Aspect of Food Supply in the Colonies," 5.15 p.m.

Thursday, April 21.

R.I.B.A.—Literature Committee meets.

ROYAL SOCIETY OF ARTS (Indian Section).—Mr. J. Claude White on "The Arts and Crafts of Tibet and the Eastern Himalayas," 4.30 p.m.

Saturday, April 23.

R.I.B.A.—Council's Annual Report issued.

Monday, April 25.

ROYAL SOCIETY OF ARTS.—(Cantor Lecture). Mr. A. B. Searle's Third Lecture on "Modern Methods of Brickmaking," 8 p.m.

Friday, April 29.

ARCHITECTURAL ASSOCIATION.—Mr. Mowbray A. Green on "The Architecture of Bath." Election of officers. 7.30 p.m.

Monday, May 2.

R.I.B.A.—Annual general meeting.

ROYAL SOCIETY OF ARTS (Cantor Lecture).—Mr. A. B. Searle on 4th and concluding lecture on "Modern Methods of Brick-making," 8 p.m.

Wednesday, May 4.

R.I B.A.—Art Committee meets.

Thursday, May 5.

ARCHITECTURAL ASSOCIATION.—Members' dinner.

Friday, May 6.

ARCHITECTURAL ASSOCIATION DEBATING SOCIETY, 7 p.m.

Saturday, May 7.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Newliston.

R.I.B.A.—Issue of voting papers; election of Council and Standing Committees; publication candidates for membership, June 6th election.

MUNICIPAL AND HEALTH EXHIBITION.—Royal Agricultural Hall, London; opens and continues to May 14th.

Tuesday, May 10.

R.I.B.A.—Practice Committee meets.

Thursday, May 12.

R.I.B.A.—Science Committee meets.

Friday, May 13.

R.I.B.A.—Last day for receiving applications and testimonies of study for June final examination and probationary work for special examination.

Saturday, May 14.

MUNICIPAL AND HEALTH EXHIBITION.—Royal Agricultural Hall, London, closes.

Monday, May 16.

Whit-Monday.—Bank Holiday.

Thursday, May 19.

R.I.B.A.—Literature Committee meets.

Saturday, May 21.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Broomhall, Fife.

R.I.B.A.—Last day for receiving notices of questions for discussion at meeting on June 6th.

LONDON SUBURBS.

WIMBLEDON

Wimbledon, situated about 7½ miles to the south-west of London, is to-day one of its most populous suburbs. Within recent years it has grown from an obscure urban district to an expanding borough, having a population of more than 52,000.

Haphazard Growth.

Wimbledon would serve pretty well for a "striking example" of the need for systematic centrally controlled town-planning. Its principal street is not a main thoroughfare, but merely a branch road, which, after climbing a steep hill, loses itself on the common. The rapid growth from village to town is traceable to three main causes:—(1) The rifle competitions formerly held here, which made the place notorious; (2) the now fast waning natural beauties of the place; and (3) the extraordinary railway facilities (the town is served by three companies).

Historic Houses.

Wimbledon was once insignificant as compared with its neighbour Merton, which, famous for its Augustinian Abbey, established in the 12th century, lost much of its importance on the Dissolution of the Monasteries. It was at Wymbaldune that, in the year 568, the West Saxons under Ceaulin defeated the men of Kent under Ethelbert. After the death of Thomas Cromwell, to whom Wimbledon belonged, Henry VIII. with fine magnanimity, passed Wimbledon on to the Queen who outlived him, Catherine Parr. Wimbledon, about this time, appears to have constituted a Royal plaything to be handed about as a reward to the most favoured courtier. Upon the death of Catherine Parr, or rather Lady Seymour as she was then, the property again became a possession of the Crown. After passing through the hands of many temporary owners, Wimbledon was brought by Thomas Cecil (afterwards first Earl of Exeter), who built the famous Elizabethan house, with its great flight of balustraded steps and its formal gardens. The house was demolished, however, at the instigation of "Queen Sarah," Marlborough's Duchess, upon her acquisition of the estate, and a new mansion was erected from the designs of the Earl of Pembroke. This building was destroyed by fire in 1785. Eagle House, a fine Elizabethan mansion erected in 1615, still stands, and is situated well back from the High Street, in proximity to the common. It is widely known as a rare and excellent example of Elizabethan work, and is the home of Mr. T. G. Jackson, R.A.

The Lay-out.

As to its lay-out, Wimbledon, located as it is, half in a valley and half on the side of a hill, is sharply divided into two distinct parts, north and south, the line of demarcation being that of the railway, which is crossed by a wide bridge. The railways have had a lamentable influence upon the disposition of the southern part of the town. Running from the north-east in a south-westerly direction, the L. and S.W. Railway is joined just before reaching the station, by, on the left, the L.B. and S.C. Railway, and on the right, the District Railway, the junction forming a sharp arrow-head on plan. This has naturally involved the wasting of two triangular pieces of land, and completely ruins the lay-out of this part of the borough. The roads have naturally followed the curvature of the railways, thus rendering impossible any comeliness of town-planning. This is the chief reason why Wimbledon to-day, like many another London suburb, is a hopeless jumble of incongruities.

Lost Opportunities.

This failure is the more regrettable when it is remembered that, but little more than twelve years ago, the greater part of South Wimbledon was open meadow land. The possibilities of convenient and dignified development were enormous, and a little intelligent forethought could have made Wimbledon a model suburb. But the roads were laid out without any obvious consideration for any rational principle of town-planning. The capricious setting-out of thoroughfares in inconvenient and illogical order seems, even at that comparatively recent date, to have been regarded as a merit. Nevertheless, a prosperous time of building activity set in, and very soon the district was covered with rows of small houses with monotonous square bay-windows, each house exactly similar to the others, and most of them covered with creeping plants which lend them the only grace they possess.

Wimbledon is in one way fortunate in having its most important buildings situated at one centre; the Town Hall, the fire station, the police station, and the police court, all being within a few yards of each other, and but a short distance from the railway station. The Town Hall, lately the Urban District Council Offices, is an ordinary example of suburban Renaissance in red brick, with terra-cotta quoins, pilasters, window frames, entablature, etc. The small pediment which surmounts the central first floor triple window has been smothered by the addition of a large two-faced projecting clock. A protracted controversy still rages round the question of a new town hall; and apart from the eternal question of expense, it must be admitted that the town is worthy of a finer building than that in which the affairs of the borough are now administered.

South Wimbledon.

To put the case very mildly, South Wimbledon is not rich architecturally, despite the presence of several churches, of which St Winifride's (Roman Catholic), is perhaps the most notable. Romanesque in feeling, the church consists of nave, aisles, and transepts, and has an impressive interior. In close proximity is the Wesleyan Church, which, although comparing unfavourably with its neighbour externally, has an attractive interior. Both churches are situated on a part of the main road where it turns at an abrupt angle and meanders in the direction of Merton to join the High Street. The most recent addition to Wimbledon's ecclesiastical architecture is the church of St. Andrew's, which has been erected in the south-western quarter of the borough from the designs of Mr. William Thorold Lowdell. The Technical Institute, which is also in this neighbourhood, is a large red-brick building, with stone dressings, and is even now undergoing considerable enlargement.

The extreme verge of the south side of the town houses the poorest classes; and it is in this quarter that some excellent open spaces have been provided. Wandle Park is a recent addition to the Corporation's recreation grounds, which are now five in number. The park, some twelve acres in extent, situated on the river from which it derives its name, is a beautiful piece of scenery in spite of the squalor of its surroundings.

Street Widening.

The recent arrival of the London United Tramways Company, with their heavy and noisy cars, was productive of one good result, namely, the widening of the main thoroughfare. North Wimbledon, that part of the town situated upon the hillside and extending to the common, is mainly made up of middle-class dwellings of fair size. The electric cars run no further than to the foot of the hill, which is of very steep gradient. The main track, however, is continued along Worple Road, through Raynes Park, a rapidly growing district, and on to Kingston and Hampton Court. Having to economise in the matter of widening roads, the Tramway Company have laid only a single track over several sections of the thoroughfare mentioned, giving an appearance, on plan, as of a long snake that has swallowed a series of big boluses at considerable inconvenience to its digestion.

Wimbledon Hill, the continuation of the main thoroughfare, is a broad, steep road, well wooded on each side, the pathway on one side being separated from the roadway by a wide bed, in which shrubs and trees are cultivated. The houses on the other side are chiefly of early Victorian origin, while those on the right are modern and far more comely. At the top of Wimbledon Hill runs the Ridgway, which is said to be one of the early Roman roads; and at the further end of the picturesque High Street, a little beyond Eagle House, stands the "Rose and Crown," where Algernon Charles Swinburne was wont to drink a daily glass of ale. The large area of undulating ground that flanks the greater part of the south-east side of the common, latterly a private demesne, in which the great Elizabethan mansion stood, is now being developed in the builders' sense. The hilly nature of the estate has had considerable influence upon the setting-out of the roads, and consequently the architects have encountered many interesting problems. A little beyond the confines of this estate stands the Parish Church of St. Mary, a somewhat uninteresting version of Late Gothic, erected in 1843. The Conqueror's Survey mentions a church as standing within the Manor. The church, situated on a lofty eminence, commands a delightful prospect of the park below; and a short distance past the church, along the Arthur Road, may be obtained a view of what is undoubtedly the finest piece of scenery in Wimbledon. A deep valley curves away from the feet and stretches up to wooded heights beyond. A large lake shimmers at the bottom, and the club house of the Wimbledon Park Golf Club stands on its edge. The links are immensely popular. In north-west Wimbledon is situated the Roman Catholic Church of the Sacred Heart, an ornate building of modern erection in fifteenth century Gothic style. Approached from the south, the church, which consists of nave, aisles, side chapels, and chancel, standing upon a large sloping site, appears of almost cathedral-like dimensions. There is a fine range of flying buttresses round the chancel end. One of the side chapels has an intricately vaulted roof. At the top of Edge Hill, the very steep road in which the church stands, we again come upon the Ridgway, beyond which, and situated in extensive grounds, is King's College School, moved here from London some few years ago. The common is so well known that it calls for no remark.

THE DANGERS OF FÊTES.

The terrible fire in Hungary, which resulted in the loss of about 300 lives, is an astonishing revelation of almost incredible human folly. A large barn-like structure, the coach-house of an inn, was profusely decorated with pine branches, which had become as dry as tinder. To these were added Chinese lanterns with candles burning in them. The occasion was a dance; and all the ticket-holders having arrived, the single narrow door to the building was nailed up to prevent the intrusion of unauthorised persons. One of the pine branches caught fire. There was an instant rush towards the nailed up door, against which many persons were crushed to death. The blazing roof fell in, apparently before anyone could escape; and it is a marvel that any human being got out alive from the inferno that was thus gratuitously created. It is easy to say that such an extraordinary disaster could only have happened among the ignorant peasantry of a country that has no great reputation for practical wisdom; but is it not only too probable that all the elements of a similar capacity, except the nailing-up of the one exit, exist in sundry districts of our own land? There is no doubt that the public of all countries are greatly in need of instruction in the mere elements of precaution against fire. Hence our repeated advocacy—so sadly enforced by this disaster at the Hungarian village of Oekoerito—of systematic teaching on the subject in the elementary and other schools.

COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about five days or longer after the date of this issue.
Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders.
The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

April 9—May 3. **DEPTFORD.**—Erection of a branch library on the site in New Cross Road, S.E., for the Corporation, according to the drawings and specification prepared by Castle and Warren, Architects, and to be seen at their offices at Talbot House, Arundel Street, Strand, W.C. Persons intending to tender were to send in their names to the Town Clerk so as to be received by him on or before Saturday, April 9, 1910, accompanied by a deposit of £2 2s. Bills of quantities, prepared by Dow, White, and Gee, of 12, Craven Street, Strand, W.C., together with the conditions of contract, would then be forwarded. Tenders must be delivered to the Town Clerk at the Town Hall, New Cross Road, S.E. The contractor will be required to subscribe to the wages clause embodied in the conditions of contract.

April 25. **BIRKENHEAD.**—(See "Plumbing and Sanitary.")

April 25. **SALTFLEET.**—Rebuilding of the Golden Lion Inn at Fishtoft, and the Crown Inn at Saltfleet, for Soulby, Sons, and Winch, Ltd. Plans may be seen and bills of quantities obtained on application to R. H. Fowler, Architect, Louth.

April 25. **KEIGHLEY.**—Erection of a foundry and machine works at Strong Close, Keighley. Drawings may be seen and bill of quantities obtained, and tenders to be delivered at the offices of Moore and Crabtree, architects, York Chambers, Keighley.

April 25. **SENGHENYDD.**—Erection of 16 houses including sewers and lanes. Plans and specifications may be seen at the office of Arthur Ll. Thomas and Gomer S. Morgan, Architects, Church Street Chambers, Pontypridd, to whom tenders must be sent.

April 25. **HALIFAX.**—Alterations and additions to the Halifax Golf Club. Plans and specifications may be seen and bill of quantities obtained at the offices of Utley, Hebblethwaite and Utley, architects, 10, Waterhouse Street, Halifax. Tenders are to be sent to the architects.

April 25. **EAST MOLESEY.**—Alterations and additions to manufacturing premises at Creek Road. The drawings may be seen, and specification and form of tender obtained, upon deposit of £1 1s. Tenders to be delivered at the office of the Architects, Fuller, Horsey, Sons, and Cassell, 11, Billiter Square, E.C.

April 25. **EASTBOURNE.**—Alterations and additions to the entrance lodge at Ocklynge Cemetery, for the Burial Board. For plans and specifications apply to C. Montague Wood, architect, 79, Whitley Road, Eastbourne. Tenders to be sent in, addressed to Coles and Sons, and Tilburn, Clerks, Claremont Chambers, Eastbourne.

April 25. **ORRELL (Wigan).**—Persons desirous of tendering for the whole or any separate trade required in the erection of the Primitive Methodist Sunday School, are requested to forward their name and address and trade to W. G. Smithson, A.R.I.B.A., 13, Bond Street, Leeds, when bills of quantities will be supplied when ready.

April 25. **BEDWAS.**—Erection of fourteen semi-detached houses at Bedwas for the Tydfil Road Building Club. Plans and specifications may be seen at the Blackwood office of Ralph Simmonds, Architect and Surveyor, Blackwood, or at Bedwas by appointment. Tenders to be delivered to the Chairman, E. Lewis, Church Street, Bedwas.

April 25. **EGREMONT (Cumberland).**—Converting buildings into masonic hall, and for building ante-rooms, lavatories, etc. Also for gutting and reconstructing dwelling house, erection of boundary wall, gates, etc. Particulars can be obtained upon application to James Lowery, secretary to the Trust, 59, Main Street, Egremont, and tenders will be received by the Secretary.

April 25. **COVE (Southampton).**—Erection of a new Council school for 140 children at Cove. Plans, specifications, and conditions of contract (no quantities) may be seen, and other information obtained, at the office of W. J. Taylor, County Surveyor, The Castle, Winchester, on and after Monday, April 4. A copy of the plans and specification will also be deposited at the existing school at Cove. Tenders are to be delivered to H. Barber, Clerk of the County Council, The Castle, Winchester.

April 25. **KEADY AND GORAGHWOOD (Ireland).**—Erection of station-master's house at Keady, and two cottages at Goraghwood, for the Great Northern Railway Company (Ireland). Parties wishing to tender may see the plans and specifications at the office of F. A. Campion, chief engineer, Amiens Street Terminus, Dublin, or copies of them at the office of the District Engineer, Belfast, and can obtain at the offices forms of tender. Tenders should be delivered to T. Morrison, secretary, Amiens Street Terminus, Dublin.

April 25. **EASTWOOD (Essex).**—Erection of a cowshed for eight cows, on land adjoining the Council school at Eastwood, for the Essex C.C. The cowshed must comply with the dairies, cowsheds, and milkshops orders, and any regulations made thereunder, and also with any local bye-laws, and subject thereto, it should be constructed of weather-boarding on a brick foundation, with concrete floor and tiled roof. Tenders (with plans and specifications) should be sent to the Clerk of the Council, Shire Hall, Chelmsford.

April 26. **DURHAM.**—Erection of house. Plans, etc., at City Accountant's Office, 6, Saddler Street, Durham, where bills of quantities are obtainable.

April 26. **ABERCYNON.**—Erection of 16 or more cottages, for the Goitre-Coed Fawr Building Club. Plans and specifications may be seen at the office of William Dowdeswell, Architect, Treharris. Tenders to be delivered to Edwards Bros., Accountants, etc., Cambria Chambers, Dowlais.

April 26. **FRIZINGTON (Cumberland).**—Erection of a dwelling house, Frizington, for Jos. Jackson. Plans and specifications can be seen at The Result, Frizington, also on application to W. G. Scott and Co., architects and surveyors, 2, Park Lane, Workington, who will receive tenders.

April 26. **POOLE.**—Extension of the scullery at the workhouse, in accordance with the plan and specifications, which may be inspected on application to Ed. Van Schepdael, Architect, Tincleton Villa, Wimborne Road, Poole. Tenders must be sent to P. E. L. Budge, Clerk to the Guardians, Union Offices, 139, High Street, Poole.

April 26. **ILFORD.**—Erection of a block of offices at the Electricity Works, Ley Street, for the U.D.C. Plans, specification, and form of tender may be obtained on application to H. Shaw, M.I.C.E., Engineer and Surveyor to the Council, Town Hall, Ilford, on deposit of £2 2s. Tenders must be delivered to Adam Partington, Clerk and Solicitor to the Council, Town Hall, Ilford.

April 26. **ROCK FERRY (Birkenhead).**—Erection of a sorting office, Rock Ferry, Birkenhead, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to W. Gilruth, H.M. Office of Works, Head Post Office, Liverpool. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

April 26. **CHELMSFORD.**—Works in their cattle market, for the B.C.:—1, construction of a roof over Rodd and Slipper's stand; 2, construction of a roof over Offin and Rumsey's auction ring; 3, erection of a small horse shed of corrugated iron; 4, fixing new manger in, and repairing, existing horse shed. Specification and form of tender, and full particulars, may be obtained, and the plans may be inspected, at the Borough Surveyor's Office, 16, London Road. Tenders must be delivered at the office of W. Smith, Town Clerk, Municipal Offices, 16, London Road, Chelmsford.

April 26. **GLASGOW.**—Clearing the site, putting in foundations, etc., in connection with the erection of a labour and telephone exchange in College Street, for the Commissioners of H.M. Works and Public Buildings. Tenders are required for the whole work, and not for separate trades. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to Kennedy, Clerk of Works, General Post Office, Glasgow (Hanover Street Entrance). Bills of quantities and forms of tenders may be obtained at H.M. Office of Works, 3, Parliament Square, Edinburgh, on deposit of £1 1s. Tenders must be delivered addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

April 27. **DUBLIN.**—Erection of a building and other alterations, at the Queen's County Infirmary, for the Committee of Management. Plans and specifications to be had at infirmary.

April 27. **TONYREFAIL.**—Erection of 34 houses at Coed Ely, Tonyrefail, for the No. 2 Coed Ely Building Club. Plans and specification may be seen at the office of Arthur LL. Thomas and Gomer S. Morgan, Architects, Church Street Chambers, Pontypridd. Tenders to be sent to J. R. Thomas and Watkins, Market Chambers, Pontypridd.

April 27. **WIGAN.**—Erection of the People's Palace and Opera House in Wigan, for the William Benson Theatre Enterprises, Manchester Chambers, Market Street, Manchester. Persons desirous of tendering can see plans and obtain bills of quantities and particulars from the architects, Heaton, Ralph, and Heaton, King Street, Wigan, Lancashire. Tenders to be sent to the architects.

April 27. **BROOMFLEET.**—Erection of a house, stables, granary, cart and waggon sheds, and for the construction of a road, for the Humber Conservancy Board. Plans and specifications may be seen and further particulars obtained on application to the Engineer to the Board, A. E. Butterfield, and tenders should be delivered to Alfred W. Franklin, Clerk, Humber Conservancy Offices.

April 27. **KENNINGTON (Ashford).**—Rebuilding of Bybrook bridge, Kennington, near Ashford, for the Bridges and Roads Committee. Persons desirous of tendering can obtain the necessary bill of quantities and tender form at the office of Frederick W. Ruck, County Architect, 86, Week Street, Maidstone, when the plan and specification can also be inspected. Tenders to be delivered to the Architect.

April 27. **LONDON (Westminster).**—(See "Engineering.")

April 27. **CREWE.**—Erection of a sorting office, Crewe Station, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster, Head Post Office, Crewe. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

April 27. **WOOLWICH.**—Additions, alterations, and repairs to a mission hall in Francis Street, North Woolwich, to adapt same for use as a branch public library, for the B.C. Persons or firms desirous of tendering may, upon depositing the sum of £1 1s., obtain copies of the drawings, specification and form of tender at the office of J. Rush Dixon, M.Inst.C.E., Borough Engineer, Town Hall, Woolwich. The person or firm whose tender is accepted will be required to pay Trades Union rates of wages, to observe Trades Union hours of labour, and to enter into a formal contract. Tenders must be sent to Arthur B. Bryceson, Town Clerk, Town Hall, Woolwich.

April 28. **GLASS HOUGHTON (Castleford).**—Erection and completion of the new "West Riding Hotel," at Glass Houghton, near Castleford. Send names to Ernest E. Pickersgill, Architect, Brewery Offices, Pontefract, before April 21. Quantities may be obtained, and plans and specifications inspected after that date at same address.

April 29. **DEWSBURY.**—Enlargement of the dispensary at the Dewsbury and District General Infirmary. Plans and specifications may be seen and bills of quantities obtained, from April 22, at the offices of Kirk, Sons and Ridgway, F.R.I.B.A., Architects, Surveyors and Valuers, Market Place, Dewsbury. Tenders to be delivered to the architects.

April 29. **DANBURY.**—Erection of a small brick water tower and other work incidental thereto at Danbury, for the Chelmsford R.D.C. Drawings may be seen and a copy of the conditions, specification, and form of tender obtained on application to James Dewhirst, A.M.I.M.E., Engineer and Surveyor, Bank Chambers, Chelmsford, to whom tenders must be sent.

April 29. **WHITBY.**—Erection of a new Drill Hall, and for carrying out sundry alterations to the Union Mill for converting it into headquarters for the local Territorial Force. Plans and specifications for the work may be seen at the architect's office, from whom bills of quantities may be obtained, and to whom tenders are to be sent. Edward H. Smales, A.R.I.B.A., Architect, 64, Baxtergate, Whitby.

(*Continued on page xii.*)

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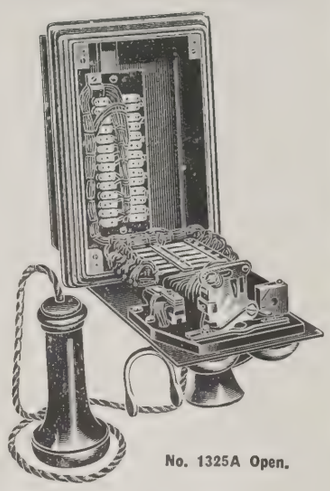
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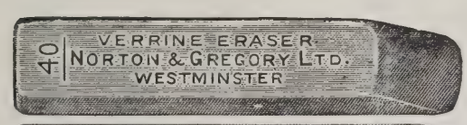
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April 29. **LEYTONSTONE.**—Erection of a new county high school for 300 girls, to be erected at Forest Road, Leytonstone, Essex, for the Education Committee, in accordance with plans and specifications prepared by the architect, W. Jacques, A.R.I.B.A., 2, Fen Court, Fenchurch Street, London, E.C., at whose offices the plans and specifications, together with forms of contract, may be seen on any day except Saturday. Builders and contractors wishing to tender must send their names and addresses, together with a deposit of £5, to the Architect, on or before Monday, April 11, 1910. The contractor whose tender is accepted will be required to give the bond of an approved guarantee society in the sum of £1,000 as security for the due performance of the contract. Tenders to be delivered to R. Dempsey, Clerk to the Leyton District Sub-Committee.

April 30. **BLENNERHASSET.**—Erection of new cloakrooms, at the Council school, for the Cumberland Education Committee. Plans and specifications can be seen at the office of the Clerk of Works, 13, Earl Street, Carlisle; or on application to F. Richardson, Solicitor, Aspatria.

April 30. **FALMOUTH.**—Additions and alterations to the Falmouth Grammar School, for the Governors, the work including heating of the premises by hot water, according to plans and specifications, which may be seen by appointment at the school, or at the office of the Architect, Sampson Hill, Green Lane, Redruth. Tenders to be sent to R. J. Loney, Clerk, 26, Norfolk Road, Falmouth.

April 30. **WINTERBOURNE (Dorset).**—Alterations and additions to farmhouse, buildings, and cottages, at Winterborne Zelstone Farm, in order to adapt them for small holdings, etc., for the Dorset C.C. Plans, specifications, and forms of tender may be seen at the cottage occupied by Leonard Young, Winterborne Zelstone. Tenders to be sent to E. Archdall Ffooks, County Council Office, Sherborne.

April 30. **GLASGOW.**—Materials and jobbing work required in the various departments for one year from June 1 next, as follows:—1, ashlar; 2, ashphalte grouting; 3, ashphalte paving;; 4, brick work; 5, Caithness and Arbroath pavements; 6, cartage work; 7, causeway work; 8, joiner work; 9, manholes and gratings; 10, painter work; 11, paving and drainage works; 12, plaster work; 13, plumber and gasfitting work; 14, repairing barrows, etc.; 15, smith work; 16, slater work; 17, whin and granite metal and blinding. Specifications and forms of offer may be obtained on application at the office of public works, City Chambers, 64, Cochrane Street. Offers must be sent to A. W. Myles, Town Clerk, City Chambers, Glasgow.

April 30. **GOODMAYES (West Ham).**—Alterations and additions, Little Heath House, Goodmayes Asylum, for the Borough Council. Plans and specification may be seen, and form of tender, bills of quantities, and further particulars obtained at the office of John G. Morley, Borough Engineer, Town Hall, West Ham, E., upon deposit of £1 1s. Note.—No tender will be considered unless the same is delivered at the office of the Town Clerk, Town Hall, West Ham, E., in the envelope supplied, by registered post. The contractor will be required to enter into a bond with one surety for the due performance of the contract, and no work will be ordered under the contract until such bond has been duly executed. The contractor whose tender is accepted will be required to pay the whole of his workmen such rate of wages and observe such hours of labour as are recognised by the workmen's trade unions, and shall not assign nor underlet or make a sub-contract with any person or persons for the execution of any part of such work. In the event of any breach of such agreement the Council will enforce the penalty clause in its entirety.

May 2. **SALFORD.**—Erection of a covered way to connect the Municipal secondary school for girls and the Education Office, for the Education Committee. Specification and drawings may be obtained from the Director of Education, Education Office, Chapel Street, Salford.

May 2. **PONTYPRIDD.**—Alterations and additions to Trallwn Bakery, Trallwn, Pontypridd, for Hopkin Morgan. Plans and specification can be seen and bills of quantities obtained on deposit of £2 2s. Tenders to be sent to A. O. Evans, Williams, and Evans, Architects, Pontypridd.

May 2. **LONDON.**—Erection of stables in Scotland Yard, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to Sir Henry Tanner, I.S.O., at H.M. Office of Works, Storey's Gate, London, S.W. Bills of quantities and forms of tender may be obtained at the same address on deposit of £1 1s. Tenders must be delivered, addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

May 2. **LUTON.**—Erection of school buildings to accommodate 350 children on Beech Hill, Dunstable Road,, for the B.C., in accordance with plans, specifications, and conditions of contract, which have been prepared by J. R. Brown and Sons, Architects, Castle Street, Luton, and which may be inspected at their offices. Bills of quantities and forms of tender may be obtained from the Secretary to the Committee, Town Hall, Luton, on deposit of £1 1s. Deposits must be made by cheque payable to the Corporation of Luton (Education Account) and crossed "Messrs. Barclay and Company, Limited, Luton Bank," or particulars will not be sent. The person whose tender is accepted will (subject to the consent of the Local Government Board to the necessary loan being obtained) be required to enter into a bond with approved sureties to an amount of £2,000, for the due performance of the contract. Tenders are to be delivered to Bruce Penny, Town Clerk, Town Hall, Luton.

May 4. **MANCHESTER.**—Alterations to the boiler-house at the Swinton schools, for the Guardians. Bills of quantities may be had from the office of A. J. Murgatroyd, Architect, 23, Strutt Street, Manchester, upon deposit of 10s. 6d. Tenders to be delivered to James Macdonald, Clerk to the Guardians, Poor Law Offices, New Bridge Street, Manchester.

May 4. **CAMBRIDGE.**—Erection of two cottages in Albion Row. Plans and specification may be seen at the office of the Surveyor, Guildhall, where further particulars, together with form of tender, may be obtained. Tenders to be sent to J. E. L. Whitehead, Town Clerk, Guildhall. The contractor will be required to enter into an agreement for the due performance of his contract.

May 4. **WANSTEAD.**—Erection of a foreman's cottage at the Wansted Sewage Farm, Empress Avenue, Manor Park, for the U.D.C. Copies of plans and specification can be obtained on application to the Surveyor, C. H. Bressey, Council Offices, Wanstead, N.E., on deposit of £1. Tenders to be delivered at the Council Offices, Wanstead, N.E. For terms of payment and other conditions, see draft contract, which can be inspected at the Council Offices during office hours.

May 6. **WEST RIDING (Yorkshire).**—Whole or separate tenders for the following:—Hensall Council School—Alterations and additions; Denby and Cumberworth Birdsedge Proposed Council School—Builder, joiner, slater, plumber, plasterer, painter; for the Education Committee. Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders must be addressed to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

May 17. **BRIDGEND.**—Erection of a new boardroom and offices at the workhouse, for the Guardians. Plans, etc., may be seen, and all particulars obtained at the office of P. J. Thomas, architect, Bridgend. Tenders to be sent to R. Harmar Cox, Clerk, Union Offices, Bridgend.

May 17. **HARTLEBURY.**—Provision of all materials for, and the erection of new schools, in accordance with the drawings and specification prepared by the Architect to the Governors, S. S. Reay, F.R.I.B.A., 4, Unity Street, College Green, Bristol. Drawings and specification may be seen at the offices of the Architect. Quantities may be obtained on deposit of £2 2s. Tenders to be delivered at the office of C. Hugh Watson, Solicitor, Stourport, Clerk to the Governors.

No date. **HOLYWELL.**—Erecting new chancel and vestries at Greenfield Church, Holywell. Plans and specification may be seen and quantities obtained from Minshull and Muspratt, Architects, 25, Old Bank Buildings, Chester.

No date. **MOLD.**—Erection of a proposed residence at "Pendre," Mold, for John James Pownall. Those desirous of tendering should apply for further particulars, to F. A. Roberts, Architect and Surveyor, Earl Road, Mold.

ENGINEERING.

April 25. **ROTHWELL (Yorks.).**—1, laying of about 583 yards of deep sewer with 9in. earthenware pipes, together with manholes, etc.; 2, laying of about 197 yards sewer with 9in. earthenware pipes, together with manholes, etc., for the U.D.C. Plans and general conditions may be seen and form of tender and bills of quantities obtained (on deposit of cheque for £1 1s., made payable to the Treasurer of the Rothwell U.D.C.), upon application to J. Southwart, Engineer and Surveyor, Council Offices, Rothwell, near Leeds. Tenders must be delivered to Walter Dodgson, Clerk, Council Offices, Rothwell, near Leeds.

April 25. **CLECKHEATON.**—Provision, laying and jointing of about 1,820 yards of 12in. stoneware pipe sewer (partly in tunnel), together with the necessary manholes, etc., and also for the construction of settling tanks, storm tanks, percolating filter. Drawings and general conditions may be seen and specifications, bills of quantities, and form of tender obtained at the office of Clifton Lund, Engineer and Surveyor, Town Hall, Cleckheaton, upon deposit of £2 2s. The successful contractor will be required to enter into a contract and bond (with sureties), for the proper execution of the work. Tenders to be delivered to John H. Linfield, Clerk to the Council, Town Hall, Cleckheaton.

April 27. **WITTERSHAM (Kent).**—Laying about 650 yards run of 6in. pipe sewer, and other works in connection therewith; also for constructing a concrete retaining wall, in the parish of Wittersham, for the Tenterden R.D.C. Plans and specifications may be seen by appointment, at the office of W. L. C. Turner, District Surveyor, Tenterden. Tenders to be sent to J. Munn-Mace, Clerk, Tenterden, Kent.

April 27. **FISHGUARD.**—Construction of a sewer consisting of 66 yards of 9in. pipes, manholes, etc. Plans, specifications, and forms of contract can be seen with D. J. Wilcox, the Council's Surveyor, at his offices, High Street, Fishguard, from whom copies of specifications, quantities, and tender, can be obtained, on deposit of 10s. Tenders must be delivered to A. J. Hodges, Clerk to Council, Offices, Town Hall, Fishguard.

April 27. **LONDON (Westminster).**—Construction of a subway beneath Orange Street, Westminster, S.W., for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to H. N. Hawks, I.S.O., at which address bills of quantities and forms of tender may be obtained on deposit of £1 1s. Tenders must be delivered, addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

April 28. **GUILDFORD.**—Providing and laying about 600 yards of 9in. stoneware pipe sewer in Warren Road, for the B.C. A plan may be seen and specification obtained on application to C. G. Mason, Assoc.M.Inst.C.E., the Borough Surveyor, at his office in Tun's Gate. Tenders to be sent to F. S. Miller, Town Clerk, Town Clerk's Office, Bridge Street, Guildford.

May 2. **PETERSFIELD.**—Heating apparatus and alterations to the ventilation of Petersfield Petty Sessional Court. Persons desirous of tendering may see plans and specification (no quantities) and obtain any further information at the office of W. J. Taylor, County Surveyor, The Castle, Winchester. Copies of the plans and specification will also be deposited at Petersfield police-station. Tenders on forms to be obtained from the County Surveyor, must be delivered to H. Barber, Clerk to the County Council, The Castle, Winchester.

May 3. **PADSTOW.**—Construction of a reservoir, trenching, and laying the pipes and fittings, etc., in connection with the Trevone water supply, for the St. Columb Major R.D.C. General and detail drawings and specifications may be seen and form of tender obtained at the office of the Engineer, G. A. Evanson, Market Hill, St. Austell, or at the office of Chas. E. Whitford, Clerk, Council Office, St. Columb. A deposit of £2 2s. will be required. Tenders must be delivered at the Council Office, Fore Street, St. Columb, and sureties will be required.

May 4. **COWES.**—Construction of a breakwater, 900ft. in length, on the Shrape in Cowes Harbour, in ferro-concrete (Hennebique system), for the Harbour Commissioners. Plans and specification may be seen, and form of tender, together with other particulars obtained from John W. Webster, engineer, Cowes, I.W. Tenders to be sent to H. C. Damant, Clerk to the Commissioners, High Street, Cowes, I.W.

May 4. **NAAS.**—Construction of pipe sewers, manholes, flush tanks, storm overflows, lamp holes, fences, filters, septic tanks, and concrete effluent carriers, the preparation including under drainage of about half a statute acre of land for irrigation ground, and other works, in strict accordance with plans and specification prepared by the Council's Engineer, F. Bergin, B.E., for the R.D.C. Plans, etc., can be seen at the office of D. J. Pursell, Clerk of Council, Council Offices, Naas, on any day (except Wednesdays and Saturdays), or at the office of the Council's Engineer, 36, Westmorland Street, Dublin. Tenders must be accompanied by a schedule of prices, and contain the names and addresses of two solvent sureties, willing to join in a bond of £500 for the performance of the contract within the specified period. The contractor will be expected to give preference to local labour.

May 7. **BELFORD (Northumberland).**—Mains, etc.—Supplying and laying of mains, etc., in connection with Beadnell and Swinhoe water supply, for the Belford R.D.C. Specifications and forms of tender can be had on application to C. A. Lake, district surveyor, Warenford, Chathill. Tenders to be sent to Adam Douglas, Clerk, Alnwick.

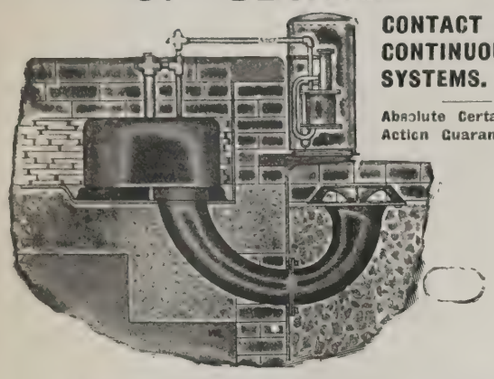
May 7. **SALE.**—Widening of Sale bridge, in reinforced concrete, for the Sale U.D.C. Full particulars, together with plans, may be obtained on application to the engineer, Henry Mattinson, A.M.I.C.E., 55, Piccadilly, Manchester, on deposit of £2 2s. Designs and estimates to be addressed to D. Hallewell, Clerk, Council Offices, Sale.

May 7. **SALE.**—Designs, estimates, etc., for a portion of the widening of sale bridge, Sale, in the County of Chester, in reinforced concrete, for the U.D.C. Full particulars, together with plans, may be obtained on application to the Engineer, Henry Mattinson, A.M.Inst.C.E., 55, Piccadilly, Manchester, on deposit of £2 2s. Designs and estimates to be addressed to D. Hallewell, Clerk, Council Offices, Sale.

May 18. **BIGGLESWADE.**—Construction of about 7¼ miles of stoneware pipe sewers, varying in size from 15in. to 6in., together with manholes, lamp-holes, ejector chambers, and other works; also for the laying of about 1¼ miles of cast-iron and steel rising and compressed air mains, from 10in. to 2½in. diameter, for the U.D.C. Plans and specifications may be seen, and bills of quantities and schedule of prices obtained, at the offices of the Engineer, J. T. Eayrs, M.Inst.C.E., 30, Corporation Street, Bir-

(Continued on page xiv.)

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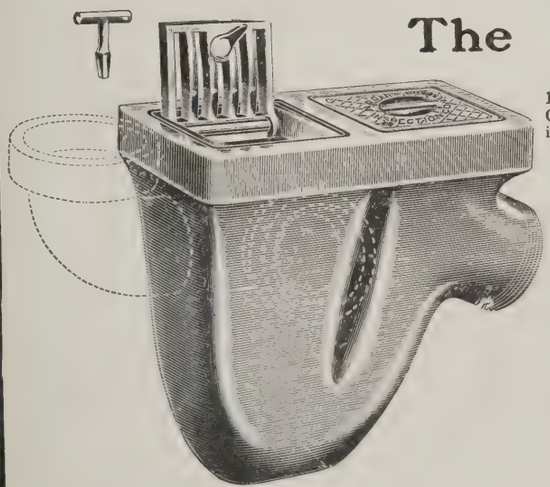
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The illustration shows the inspection socket fitted with brass patent lever stopper, which can be released from top of manhole.

H.D 27. **LAMBETH, LONDON, S.E.**

mingham, April 25 to April 30, and also at the office of the Surveyor to the Council, Market Place, Biggleswade, from May 2 to May 7, on deposit of £3 3s. Tenders to be delivered at the office of Henry Chaundler, Clerk to the Council, Council Offices, Biggleswade, Beds. It is hoped that only substantial contractors with extensive experience in similar works will apply.

June 1. **MONTE VIDEO (Uruguay).**—H.M. Legation at Monte Video have forwarded copies of the specification, plans, etc., in connection with the invitation, by the Administration of the port of Monte Video, for tenders for the construction of two reinforced cement warehouses and six reinforced cement sheds. Tenders will be received up to 3 p.m. on June 1, at the Oficina de Trafico y Conservacion, Consejo de Administracion del Puerto de Monte Video, Calle Cerrito 185, Monte Video. The above-mentioned copies of specifications, etc., may be seen by British firms at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, London, E.C.

IRON AND STEEL.

April 25. **CLECKHEATON.**—Gates and railings in connection with their new secondary school, for the U.D.C. Full particulars may be obtained upon application to W. H. Thorp and Son, Phœnix Chambers, South Parade, Leeds. Tenders to be sent to the Clerk to the Council, Town Hall, Cleckheaton.

April 25—May 2. **BRISTOL.**—Steel.—Supply of wrought iron and mild steel, during year ending December 31, 1910, for the Sanitary and Improvement Committee. Specifications and forms of tender may be obtained at the offices of the City Engineer, 63, Queen Square, Bristol, on deposit of 10s. Sample bars as named in the specification must be delivered at the offices by 10 a.m. on April 25. Tenders must be delivered to the offices of the city engineer.

April 27. **ROCHDALE.**—Manufacture and delivery of about 400 tons of 12in. cast-iron pipes, for the Corporation Waterworks. A copy of the specification and form of tender can be obtained at the offices of H. Rofe and Son, 8, Victoria Street, Westminster, on deposit of £5 5s. Tenders to be sent to Wm. Henry Hickson, Town Clerk, Town Hall, Rochdale.

April 27. **LEICESTER.**—Supply and delivery at their Beaumont Leys sewage farm of about 1,000 yards of 9in. cast-iron socketted pipes, also a quantity of 6in. cast-iron socketted pipes and various special pipes, for the Sewage Works and Farms Committee. Copies of the general conditions, specifications, and quantities may be obtained at the office of E. George Mawbey, M.I.C.E., borough surveyor, Town Hall, Leicester, on deposit of 10s., which will be returned on receipt of a bona-fide tender. Cheques, etc., should be made payable to the Leicester Corporation. Tenders must be addressed to the Chairman of the Farms Committee.

No date. **BUCKHAVEN.**—Iron and steel work required in connection with the erection of a public slaughter-house, for the T.C. Forms of tender, schedules of measurement, and any other information required can be had from William D. Telfer, Burgh Surveyor, Municipal Buildings, Buckhaven, on deposit of £1 1s.

PAINTING.

April 25. **NEW MALDEN.**—Cleaning, distempering, and painting at the Central Homes for Children, Kingston Road, for the Guardians. Specification can be obtained on application to Chas. W. Dash, Clerk, Union Offices, Coombe Road, Kingston-on-Thames. Tenders should be sent to the Clerk. Contractors to pay the fair rate of wages current in the district, and for this purpose the fair rate of wages shall mean Trade Union rate.

April 26. **DUNDEE.**—Painter work to be executed on Nos. 93 and 95, Commercial Street, for the Water Commissioners. Specification and form of tender may be obtained on application to George Baxter, Engineer and Manager, Water Engineer's Office, 93, Commercial Street, Dundee. Tenders should be lodged with Wm. H. Blyth Martin, Clerk of the Commissioners, City Chambers, Dundee.

April 27. **ABRAM.**—Internal decoration of the Council offices. Specification, with full particulars, may be obtained from W. H. Roby, the Surveyor to the Council. Tenders to be sent to William Aspinall, Clerk to the Council, Council Offices, Abram, near Wigan.

April 28. **BLACKHILL (Durham).**—Painting and colouring the following Council schools:—Burnope, Consett Infants', Iveston, Edmondbyers, and Waskerley, for the Durham C.C. Education Committee. Tenders must be sent to J. R. W. Sherwood, 22, Queen's Road, Blackhill, from whom forms of tender may be obtained.

May 6. **MANCHESTER.**—Painting the iron bridges on the line of aqueduct, from near Ambleside to Agecroft, near Manchester, for the Waterworks Committee of the Corporation. Specification, form of tender, and all other information may be obtained on application to the Secretary, Waterworks Offices, Town Hall, Manchester.

May 7. **STANWIX (Carlisle).**—Outside painting, etc., of Stanwix Cemetery, for the Burial Board. Specifications may be seen, and the work pointed out, on application to the Curator. Tenders to be delivered to Wm. Dobinson, Clerk, 10, Bank Street, Carlisle.

June 12. **KIRKBY-IN-FURNESS.**—Re-painting the cottages at Herschell Terrace, for the Kirkby-in-Furness Co-operative Society. Specifications can be seen at the stores on application to the manager.

No date. **LEEDS.**—Painting outside of Crown Works, Harehills, Leeds.—For particulars apply, S. T. Midgley and Sons (Ltd.), Bramley, Leeds.

PLUMBING AND SANITARY.

April 25. **BIRKENHEAD.**—Construction and completion of an underground convenience and lavatory in the Market Square and Hamilton Street, for the Corporation. Plans and particulars may be seen and form of tender, with a copy of specification and bills of quantities, obtained at the office of Charles Brownridge, M.I.C.E., borough engineer and surveyor, Town Hall, Birkenhead, upon deposit of £1. Tenders to be sent to James Fearnley, Town Clerk, Town Hall, Birkenhead. Rate of wages, etc., clause to be observed.

ROADS AND CARTAGE.

April 25. **UXBRIDGE.**—Supply of granite, gravel and flints, the haulage of materials, and the purchase of surplus road sand and trimmings, for the Uxbridge R.D.C. Tenders must be sent to John William Harrison, engineer and surveyor, Corn Exchange, Uxbridge. Forms of tender, and any further information required, may be obtained from the Engineer.

April 25. **BURGESS HILL (Sussex).**—Supply of 775 tons broken granite, between 1¼in. and 2in. gauge, and 70 tons fine granite for binding. To be delivered free at Burgess Hill railway station, as required, by June 24, for the Burgess Hill U.D.C. Tenders on forms to be obtained from A. F. Hardwick, Clerk, Burgess Hill, with samples, to be delivered to the Surveyor of the Council.

April 25. **PENGE.**—Private street works in Kingsdale Road, within their district, for the U.D.C. Plans and specification may be see, and copies of the bill of quantities, with form of tender obtained on application to Herbert William Longdin, Surveyor, Town Hall, Anerley, S.E., on deposit of £2. Tenders, accompanied by priced quantities, to be sent to C. W. Dommett, Clerk to the Council, Town Hall, Anerley, S.E.

April 25. **LONDON.**—Supply of about 100 to 200 loads of good binding small gravel, suitable for garden paths, to their workhouse, 42, Clifden Road, Lower Clapton, N.E., the same to be approved by the Master and delivered at such times and in such portions of the grounds as he may direct, for the City of London Guardians. Estimates to be addressed to Edward R. Woodward, Clerk to the Board, 61, Bartholomew Close, E.C.

April 25. **STEVENAGE.**—Tar-paving the footpath (about 2,200 superficial yards), along the east side of High Street, the south side of Basil's Approach, and the north side of Providence Row. Also for paving with tar macadam the roadways (about 500 superficial yards) in Middle Row and Baker's Row, within their district, for the U.D.C. A plan of the proposed work can be seen, and a copy specification and form of tender can be obtained at the offices of the Council in Orchard Road, Stevenage. Tenders to be delivered to Wm. Onslow Times, Clerk to the Council, Urban District Council Offices, Stevenage.

April 25. **REIGATE.**—Supply of the following materials:—Granite macadam, basalt, and flints; granite kerb and setts; Kent ragstone; tar-paving material; artificial stone paving; gravel; concrete beach; pea beach; compo, grit; Portland cement. Forms of tender, conditions of contract, and full particulars may be obtained upon application to Fred T. Clayton, the Borough Surveyor, and every person tendering will be required to deposit at his office, at the Municipal Buildings, Reigate, a sample of the materials for which he tenders. Tenders are to be delivered at the office of Alfred Smith, Town Clerk, Municipal Buildings.

April 26. **GOSFORTH.**—Carriageway and footway construction, for the U.D.C. All particulars may be obtained from George Nelson, A.M.Inst., C.E., Engineer and Surveyor to the Council, Council Chambers, High Street. A deposit of £2 2s. is required for quantities.

April 26. **HAZEL GROVE.**—Supply of broken stone, setts, kerbs, chippings, ashes, pipes, and other materials during the period ending March 31, 1911, for the U.D.C. Forms of tender and any other information can be obtained on application to G. Severn Doncaster, Surveyor, Council Offices, Hazel Grove. Tenders to be addressed to Frederick Pidgeon, Clerk, Council Offices, Hazel Grove, near Stockport. Contractors will be required to pay the trade union rate of wages and observe the trade union number of hours as are usually paid and observed in the district.

April 27. **HALE.**—Making-up of Alan Drive, for the U.D.C. Plans and specifications can be seen, and bills of quantities and forms of tender obtained, at the office of the Council's Surveyor, S. A. Pickering. Tenders to be sent to J. G. Whyatt, Clerk to the Council, Council Offices, Ashley Road, Hale, Cheshire.

April 27. **WOODHALL SPA.**—Supply of about 400 tons of granite (XX), to be delivered at Kirkstead or Woodhall Spa Stations, during the months of July, August, and September next, in such quantities, and at such times, as the Council or their Surveyor shall require, for the U.D.C. Samples to be sent to E. E. T. Bolton, Surveyor, Woodhall Spa. Tenders to be sent to J. E. Chatterton, Clerk, at 4, Church Lane, Horncastle.

April 27. **LEIGH.**—Supply of filtering material for six percolating filters, now being constructed for the Joint Sewerage Board, at their sewage works at Mather Lane, Leigh, Lancashire. The material may consist of suitable destructor works or other clean clinker, of clean stone, suitable slag, or other material fitted for the purpose. Particulars of the conditions may be obtained from Banks, Fairclough, and Stephen, Assoc.M.Inst.C.E., Leigh, Lancashire, the Board's engineers. About 11,000 cubic yards are required. Tenders to be delivered to D. Schofield, Clerk to the Board, Atherton Town Hall.

April 28. **CHATHAM.**—Supply of broken granite or other hard stone and surface picked flints, for the T.C. Specification, schedule, and form of tender can be obtained on application at the Borough Surveyor's Office, Town Hall, Chatham. Tenders to be delivered to Charles Day, Borough Surveyor, Town Hall, Chatham.

May 4. **ROMNEY MARSH.**—Supply and delivery of 220 yards of quartzite, to the following parishes and roads:—100 yards 2nd inch, Straight Road, Brookland; 200 yards 1in., Straight Road, Brookland; 20 yards 1in., Guldeford Road, Brookland; 20 yards 1in., Alliance Road, Brookland; 20 yards 1 in., Ivychurch Road, Brenzett; 20 yards 1in., Brenzett Road, Snave; for the R.D.C. To be delivered before September 1, 1910, and yarded at the expense of the constructor, in such manner and in such quantities as the Surveyor may direct, and subject to his measurement. Tenders to be delivered to William B. Smith, District Surveyor, New Romney.

MISCELLANEOUS.

April 30. **GLASGOW.**—(See "Buildings.)

April 30. **WAKEFIELD.**—Asphalting of play playgrounds at Westerton School, West Ardsley, and Wrenthorpe School, near Wakefield. Specifications of the work may be obtained from Alexander Angus, 128, Northgate, Wakefield, with whom tenders must be lodged.

LATE TENDERS.

Wambrook (Chard).—For alterations and additions to Wambrook schools, near Chard, for the Managers. Symes and Madge, architects, Somerset House, Chard. Quantities by architects.

J. E. Fursland, Bridgwater	£547	0	0
R. G. Spiller, Chard	449	10	0
J. Layzell, Broadway	445	10	0
Parsons Bros. and Dunster, Berry Street, Chard	429	0	0
John Strawbridge, Chardstock	425	0	0
R. Harris, Wadeford	414	0	0
C. Bryer, Junr., Bridgwater	410	0	0
Relleen and Griffiths, Ilminster	398	0	0
F. J. Collins,* Wambrook	389	13	4

*Accepted.

Weaste (Manchester).—Accepted for extensions to the Parochial Institute, Derby Road, Weaste, near Manchester. Thomas A. Fitton, 29, Corporation Street, Manchester, architect.
Thomas Harrison, Pendleton, £2,400.

Wellington (Salop).—For erection of public baths, for the Wellington Urban District Council. Revised tenders.

Barnsley	£2,846	7	6
Woodcock and Riley	2,442	14	0
Dallow and Co.	2,345	0	0
R. and J. Millington, Oakengates	2,320	0	0
J. Bright, Wellington	2,219	8	11
Hovsep, Wellington	2,182	16	2
Hopkins	2,170	0	0
A. Pearce, Wellington	2,117	10	0
J. and T. France	2,060	8	3
A. Holmes*	2,021	16	4

Rest of Birmingham.
*Accepted.

Windygates (Scotland).—Accepted for the works required in erection of hall and houses at Windygates, for the L.O.A. Shepherds. G. Charles Campbell, Methil, architect and surveyor.

W. Black and Sons, Edinburgh, mason	£1,246	0	0
D. Dewar, Methil, joiner	800	0	0
W. and J. Easton, Kirkcaldy, plasterer	298	0	0
W. Nicol, Buckhaven, plumber	193	15	3
W. Currie, Kirkcaldy, slater	126	0	0
W. B. Wardlaw, Windygates, smith	135	6	3
J. Haxton and Co., Kirkcaldy, glazier	22	18	2
M. Allan, Markinch, painter	67	11	0

Yorkley.—For erection of new handicraft room at Yorkley Council school, for the Gloucestershire Education Committee. R. S. Phillips, architect.

W. G. Nelmes, Coleford	£389	0	0
Dean Forest Road Rolling Co., Soudley	373	6	0
F. W. Peer, Gloucester	307	0	0
T. Merrett and Son, Churchdown	292	0	0
E. J. Flewelling,* Lydbrook	288	12	6

*Accepted.

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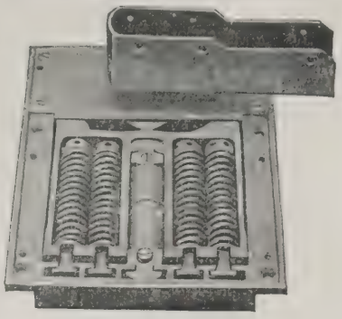
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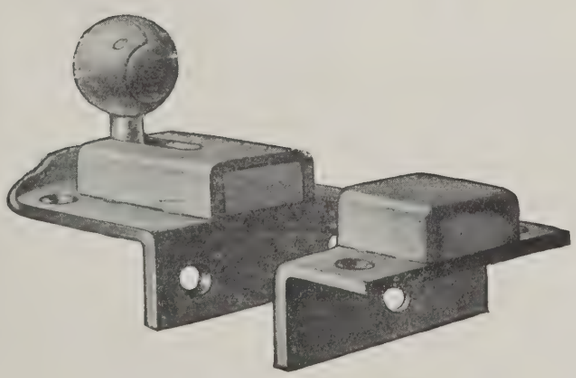
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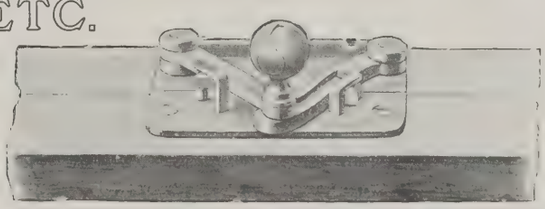
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Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Bidford-on-Avon.—For the erection of a detached bungalow residence, for Mr. A. G. Phillips. Dicks and Waldron, architects and surveyors, Journal Buildings, Evesham.

J. E. White, Evesham	...£640
Stanley Bros., Broom	... 635
W. White, Evesham	... 615
A. Cliff and Co., Evesham ...	... 610
Espley and Co., Ltd.,* Evesham	... 595

* Accepted.

Briton Ferry (Wales).—For erection of a public hall and institute at Briton Ferry. H. A. Clarke, Briton Ferry, architect.

L. Gower, Briton Ferry ...	6,962 0 0
M. Cox, Port Talbot	6,790 0 0
W. E. Willis, Ystrad, Rhondda	7,852 14 0
J. Goodridge and Sons, Neath	6,993 0 0
Jones and Thomas, Baglan, Briton Ferry	6,779 0 0
D. Davies and Sons	6,626 0 0
Knox and Wells	6,547 0 0
G. Thompson and Co., Victoria Square, Birmingham ...	6,527 10 0
D. W. Davies and Howell, St. Mary Street	6,500 0 0
J. M. Broadfoot, Rutland House, Swansea	6,328 0 0
W. Williams, Pearl Street ...	6,244 0 0
A. J. Colborne, County Road, Swindon	6,199 10 0
Radford and Greaves, Drewry Lane, Derby	6,186 7 6
E. R. Evans and Bros.,* Cwennyth Street	6,141 0 0

*Accepted.

Cirencester (Glos.).—For new superintendent's house, etc., at Cirencester Police Station, for the Gloucester County Council. E. A. Sinnott, county surveyor.

E. Preece, Filton, Bristol ...£1,350	0 0
A. Estcourt and Sons, Gloucester 1,315	0 0
T. C. Giuyas, Bedminster, Bristol 1,300	0 0
W. Jones, Gloucester 1,260	0 0
E. Love, Redland, Bristol ... 1,229	0 0
Orchard and Peer, Stroud ... 1,215	0 0
W. F. Drew, Chalford 1,203	10 0
Collins and Godfrey, Tewkesbury 1,149	0 0
Saunders and Sons, Cirencester 1,140	0 0
A. J. Dolman, Gloucester ... 1,122	14 3
G. F. and E. Newcombe, Cirencester 1,107	0 0
A. J. Colborne, Swindon ... 1,073	15 0
H. Fleetwood, South Cerney ... 1,058	10 4

Cwmlai Tonyrefail (Glam.).—Recommended for acceptance for erection and completion of a new Council school at Cwmlai Tonyrefail, for the Glamorgan County Education Committee. D. Pugh-Jones, F.S.I., Cardiff, county architect.
F. Bond, Beda Road, Cardiff, £5,292 17s. 4d.

Donington (Lincs.).—For erection of an elementary school at Donington, for the Governors of Cowley's Charity, Donington, near Spalding. Jas. Rowell, Church Lane, Boston, architect.

Tapster and Sharp, Sleaford ...£1,081	0 0
J. Banks and Son, Sleaford ... 1,078	3 9
G. Gilchrist 1,060	0 0
W. Pattinson and Sons, Ruskington, (near Sleaford) 1,050	0 0
Wright and Son, Lincoln ... 1,017	0 0
G. W. Heath, March 1,006	11 0
W. Greenfield 998	15 0
F. Peck 989	0 0
G. Barnsdale, Donington ... 983	0 0
E. T. Mowbray, Swineshead (near Boston) 953	0 0
H. W. Parker and Son ... 909	18 0
J. Langley and Son,* Kirton, near Boston 895	10 0

Rest of Boston.
*Accepted.

Devonport.—For the erection of three cottages, Alfred Place, Ford, Devonport, for C. Smale. Mr. E. M. Leest, M.S.A., architect, 14, St. Aubyn Street, Devonport. Quantities by Messrs. Leest and Adams, Devonport.

S. Lethbridge £665	17 6
H. Pile and Son 618	10 0
F. J. Stanbury 575	0 0
Pearce Bros. 574	0 0
G. H. Smith and Son* 569	15 0

All of Devonport.
*Accepted.

Heybridge (Essex).—Accepted for rebuilding the Ware Bridge, Heybridge, for the Essex County Council.
J. Smith and Son, Witham, £1,624 2s. 4d.

Llest Pontyrhyl (Glam.).—Accepted for erection and completion of a new Council school at Llest Pontyrhyl, for the Glamorgan County Education Committee. D. Pugh-Jones, F.S.I., Cardiff county architect.
F. W. Lougher and Co., Pontycymmer, £3,177 10s.

(Tenders continued on page xviii.)

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(*Tenders continued from page xvi.*)

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S. Ellis	2,037
F. Billimore	2,032
Tribe and Robinson	2,610
Higlett and Hammond*	2,549
H. Brand (withdrawn)	2,172

All of Guildford.

*Accepted.

Kirkby-in-Ashfield.—Accepted for erection of a market hall, for the Urban District Council.

Lambourne and Co., £1,000.

Nottingham.—For erecting new business premises on Long Row West, for the trustees of the estate of the late James Dilks. Frederick Ball, 23, King Street, Architect. Quantities by Barnes, Booth, and Richardson, Albion Chambers, King Street.

W. J. Simons	£7,130 0 0
Hopewell and Son	7,070 0 0
T. H. Harper, Carlton	6,920 0 0
Gilbert and Hall	6,779 0 0
F. Evans	6,742 7 2
Vickers and Son	6,725 0 0
E. Hind	6,695 0 0
Maule and Co.	6,667 0 0
Fish and Sons	6,650 0 0
Wm. Crane, Ltd.	6,587 0 0
J. G. Short	6,559 0 0
T. Cuthbert	6,550 0 0
F. Messom	6,480 0 0
J. Wright	6,468 0 0
G. A. Pillatt	6,448 0 0
T. Long	6,345 0 0
T. Barlow	6,280 0 0
Dennett and Ingle*	6,275 0 0

All of Nottingham.

*Accepted.

Newburn-on-Tyne.—Accepted for erection of the new Council premises, for the District Council.

Bolam, Birtley, £2,560.

Prestwich (Lancs.).—For erection of new kitchens, stores, and bakery, and other alterations to the administrative department at the Asylum, for the Committee of Visitors of the County Lunatic Asylum, Prestwich. Thomas Chadwick, A.R.I.B.A., 16, Princess Street, Manchester, architect.

G. W. Dawson, Lower Crumpsall	£9,170
C. H. Normanton and Son, Ltd.	8,385
J. Gerrard and Son, Swinton	8,337
Burgess and Galt	8,233
R. Neill and Sons	8,190
J. W. Leach and Son, Prestwich	8,187
J. Ramsbottom	8,150
J. Partington, Middleton Junction	8,140
S. Megarity and Co.	8,138
Young, Tinker and Young	8,023
G. Macfarlane and Son	7,960
J. Tinline, Bury	7,920
R. Carlyle, Old Trafford*	7,781

*Recommended for acceptance.

Rest of Manchester.

Radyr (Wales).—For erection of a club house at Radyr, for the committee of the Golf Club, Radyr. H. Snell, Hickman Road, Penarth, architect.

D. Davies and Sons	£4,103 0 0
H. Pittard, Longport	4,095 0 0
C. Totterdell	3,997 19 3
J. Harry, Radyr	3,996 13 6
Allan and Co.	3,924 12 2
Griffith and Son	3,902 8 3
E. D. W. Evans	3,891 11 9
J. T. Maggs	3,849 10 0
Turner and Son	3,785 0 0
J. Jones, Penarth	3,598 0 0
W. T. Morgan	3,594 0 0
W. Bowers and Co., Hereford	3,565 0 0
Knox and Wells*	3,525 0 0
D. W. Davies & Howell	3,456 0 0

Rest of Cardiff.

*Accepted.

South Reddish, near Stockport.—Accepted for erection of new branch premises at South Reddish, for the Stockport Industrial and Equitable Co-operative Society, Ltd.

W. B. Beattie, £1,445.

Southall (Middlesex).—For erection of new elementary school, for the Middlesex C.C. H. G. Crothall, architect.

Tennant and Co.	£15,722
W. Rice and Son	13,728
C. F. Kearley	13,660
G. Neal	13,050
G. Bollom	12,791
W. Lawrence and Son	12,700
A. Fairhead and Son	12,537
Fassnidge and Son	12,523
Try and Hancock	12,493
H. Knight and Son	12,484
E. Lawrance and Son	12,446
W. J. Dickens	12,390
A. and B. Hanson	12,328
W. Lacey	11,899
Mattock Bros.	11,820
Treasure and Son, Ltd.*	11,475

*Recommended for acceptance.

Sheffield.—Accepted for erection of a new infants' department for 468 places at Owlerlane Council school, for the Education Committee.

W. R. Unwin, Ecclesfield, £7,806 3s.

Tirphil, Glam.—Accepted for the erection and completion of superstructure for a new temporary school at Tirphil, for the Glamorgan County Education Committee. D. Pugh-Jones, F.S.I., County architect, Cardiff.

W. Williams and Son, New Tredegar, £573.

Tirphil, Glam.—Accepted for the erection and completion of footings, etc., for a new temporary school at Tirphil, for the Glamorgan County Education Committee. D. Pugh-Jones, F.S.I., County architect, Cardiff.

W. Williams and Sons, New Tredegar, £830.

Torry (Aberdeen).—Accepted for the erection of a new Roman Catholic Church.

Mason work, D. Weir, Claremont Street; carpenter work, A. Mercer, Ashvale Place; slater work, J. Durnin, Canal Place; plaster work, J. Bannochie and Sons, Belmont Street. Total cost, about £4,000.

Uppingham.—For erection of Uppingham International Stores. George Baines and Son, architects, 5, Clements Inn, Strand, London, W.C.

	"A."	"B."	"C."
Theobald & Sons	£488 0 0	£130 0 0	£290 0 0
Hawes & Sons	443 0 0	107 0 0	218 0 0
Maxey & Son	404 0 0	99 0 0	230 0 0
Thackeray & Co	384 17 7	111 15 0	222 9 7
Coulson & Lofts	382 0 0	92 0 0	214 0 0
Mason & Son*	345 0 0	75 10 0	172 0 0

*Accepted

Yeovil (Somerset).—For erection of new premises, for the Yeovil and District Co-operative Society, Ltd.

Coles Bros.	£2,469 12 3
W. Wallbridge	2,250 0 0
J. W. and H. Childs	2,234 0 0
C. Bryer, jun.,* Bridgewater	2,170 0 0

*Accepted.

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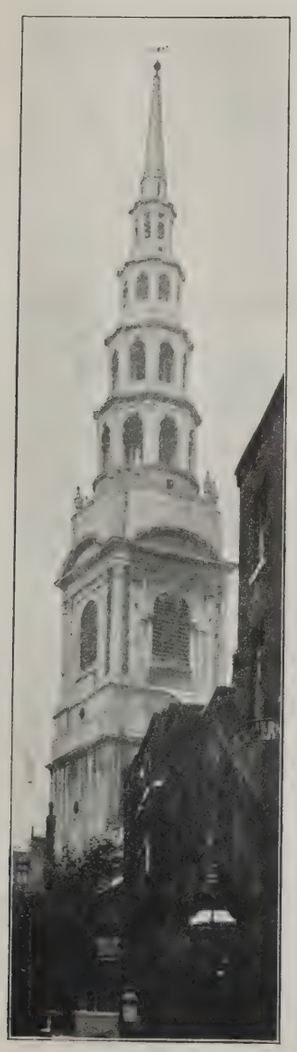
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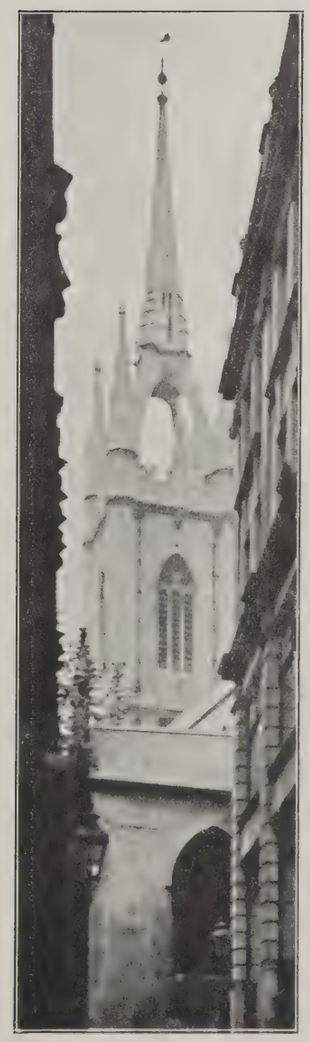
THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
APRIL 27th, 1910.

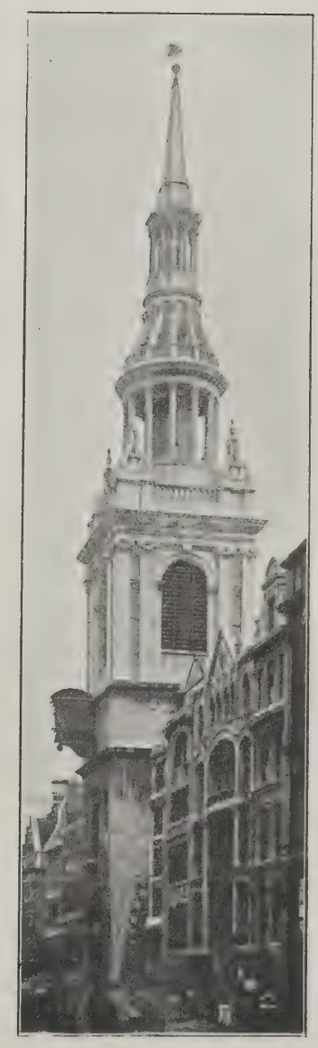
Volume XXXI. No. 795



St. Bride's, Fleet Street.

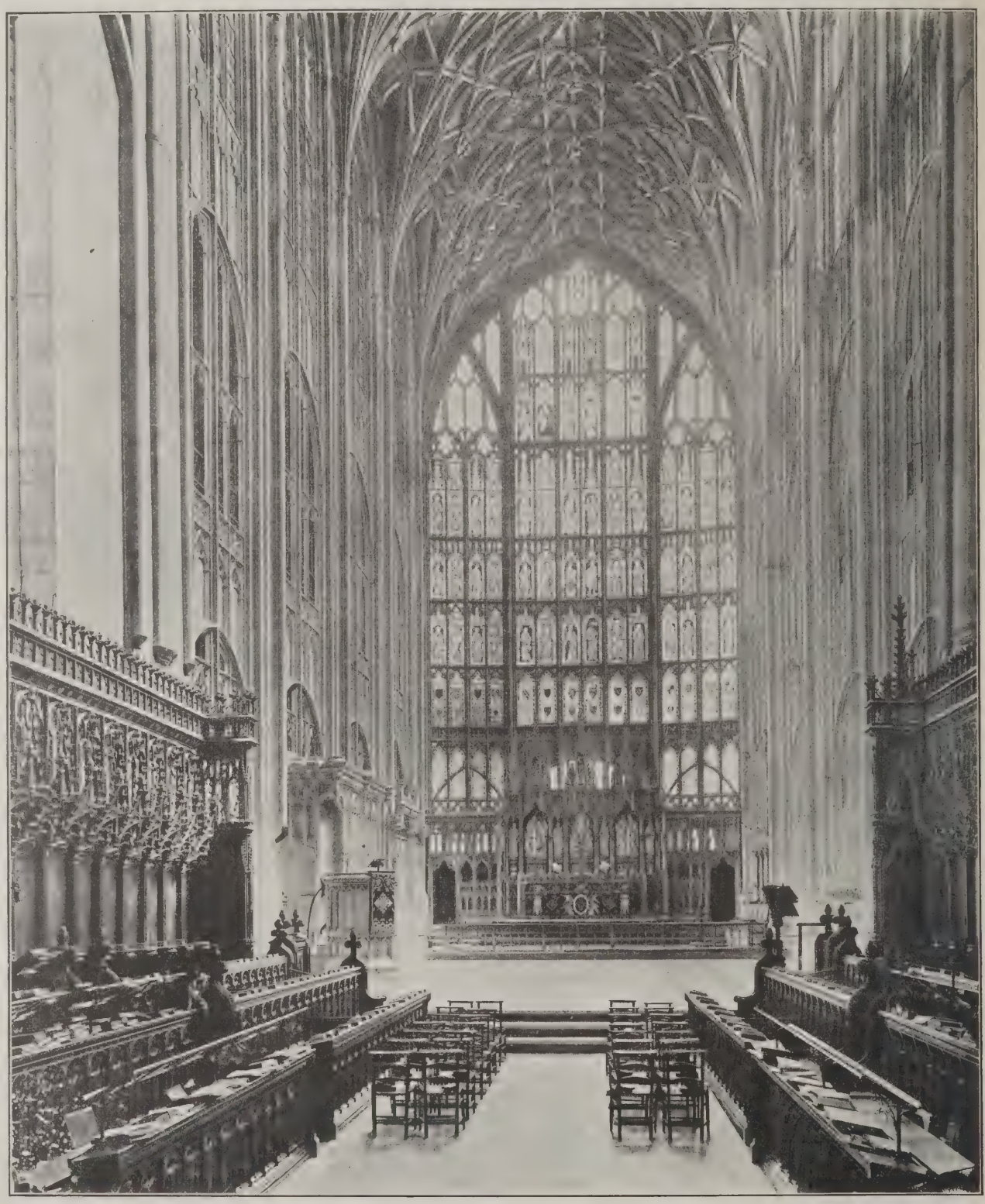


St. Dunstan-in-the-East.



St. Mary-le-Bow.

THREE CITY CHURCH SPIRES BY SIR CHRISTOPHER WREN.



The east window is a beautiful piece of Perpendicular work, its dimensions being 38 feet in width and 72 feet in height. It dates back to the years 1337-1377. The choir is mainly Norman, the visible Perpendicular work being cased over it. The stonework of the east window was repaired in 1862. The reredos was added by Sir Gilbert Scott, R.A., in 1873.

GLOUCESTER CATHEDRAL: THE CHOIR, LOOKING EAST.

THE ARCHITECTS' & BUILDERS' JOURNAL.

APRIL 27, 1910. *CAXTON HOUSE, WESTMINSTER.* VOLUME 31. No. 795.

Note: The List of Contents will be found on Page V of the front advertisments in this and subsequent issues.

Do We Need a New Departure in Architecture?

EVERYTHING that Professor Lethaby has to say about architecture is worth serious attention. Not only does he bring to the consideration of architectural questions a very thoughtful and analytical mind, but he has also the great merit of entire earnestness and sincerity. His ideas upon architecture have often run counter to the prevailing theory and practice of the art; in some instances they may have been thought to be Utopian; but no one could ever doubt his sincerity, or suppose that he spoke or wrote merely for effect. And therefore his paper at the Institute, on "The Architecture of Adventure," deserves serious consideration as an attempt to suggest a new starting-point for modern architecture.

What Professor Lethaby means by "The Architecture of Adventure"—a title which occasioned a good deal of speculation in advance among those who saw it advertised—is the attempt to grapple with some new constructional problem, and his position is that this kind of effort has been at the root of all the great achievements in architecture in past times; *ergo*, that if we wish now to produce architecture which will be a real living art, and will have the same importance as the greatest architectural works of past times, we must found it on the attempt to solve new constructive problems; on "adventure" in grappling with new difficulties in construction.

There is undoubtedly a great deal that is very wholesome and stimulating in such a suggestion, and a good deal of truth connected with it; but the attempt to lay it down as the basis of all great architecture leads to paradoxes. In the first place, we must leave out Greek architecture, in some respects the most perfect of all; for it cannot be pretended that Greek architecture was based on the mastering of any difficult structural problem; the structural element in a Greek temple was of the very simplest, and in any case had been anticipated by the Egyptians. If we sought for some forming motive for Greek architecture, behind mere sense of beauty and fitness, we should look for it rather in the desire to produce buildings which were absolutely perfect in geometric relations of proportion. Secondly, Professor Lethaby's argument rather necessitated his assuming that all the greatest architects were actually engineers rather than what we mean by architect. This is pushing matters a great deal too far. There is no tradition that Ictinus was what we should call an engineer, though he was probably a learned geometrician; he was a man who knew how to set out temples in due proportion and refinement of parts. There was a great deal of the engineer, no doubt, in Anthemius, and Brunelleschi, and Wren; but there was surely something more than mere construction in their minds when they planned and erected their respective domes. Nor can one be satisfied with Professor Lethaby's definition of the mediæval cathedrals as merely the result of the effort to balance stonework high in the air. That is the constructional problem, no doubt, which made the style; but it did not make the designs for the separate buildings. No two cathedrals in England, even in portions of nearly the same respective dates, are alike; they are works of art; each of them produces a different effect on the mind. In France there is rather more similarity of type in buildings of the same date; but in the English cathedrals there is a remarkable freedom of individual design, which cannot be credited to mere construction. And it is the same with Wren's churches. Granted that Wren had a great deal of the engineer in his composition, and that St. Paul's is, in some respects, better engineering than architecture, there is evidence of remarkable versatility of fancy in the varied plans and designs of his churches, of which no two are alike; and that pleasing and interesting variety did not arise out of structural problems.

There are some very interesting remarks by Wren quoted in Professor Lethaby's paper, some of which are certainly new to many of us. It has been overlooked that Wren had, behind all his formal architecture constructed out of "The Renaissance box of bricks" (to quote a phrase of Professor Lethaby's on another occasion), a distinct idea of an art of architecture in the abstract, not necessarily connected with columns and pilasters; but he seems to have thought it hopeless to attempt to carry out architecture except "according to the taste of the age we live in"; a curious admission of the power of the Renaissance superstition—if it is so to be called. Professor Lethaby evidently regards it as such; he says the architects of that day looked to the past instead of the present. But if they had not, should we not have lost a great deal that is exceedingly charming, in the quasi-classic buildings of the Renaissance? And these were not mere copyism, either; Italian Renaissance produced a great deal that was new in architectural design. Another age may say the same of some of the buildings of this age; of two of them, at least, the Houses of Parliament and Westminster Cathedral. Both are founded on ancient styles; but both are effective and original.

To come back to the main question—do we need a new departure based on structural adventure, as Professor Lethaby phrases it? And if so, in which direction are we to venture? Because, after all, if we come to think of it, most of the possible ventures in construction have been gone into already. We can hardly build any larger domes than have been built. At present the one possible direction for Professor Lethaby's proposed adventure seems to be concrete-steel construction, and architects have yet to show what they can do with it.

The Forth Bridge, which was referred to in the paper, is the most remarkable example in modern times of a great structure evolved from a great constructional problem, that of bridging over a space much greater than had previously been attempted. But we can hardly call it architecture; and if we come to the monumental question, the best that the late Sir Benjamin Baker could say, when questioned as to the duration of the bridge, was that "with proper care, he did

not see why it should not last five hundred years." But five hundred years is not much of a time for monumental architecture. It is dangerous to prophesy about new methods in architecture. A very able man, the late E. L. Garbett, thought that the architecture of the lintel and of the buttressed vault having run their course, there was nothing left but the arch, with a tie at the springing; an engineer, he said, "could do as much with a pound of wire as with a ton of stone"; and the arch with tied skewbacks was, he confidently affirmed (some seventy or eighty years ago), "the destined architecture of the future." But his destined architecture has never come off.

What is really left in the way of valuable suggestion from Professor Lethaby's paper, after all deductions, is—first, that architects should be on the look-out for any new problem in construction that may arise, and regard it as a problem to be treated on its own basis, and not with mere reference to precedent; though at the same time we think that new problems in construction, of any such importance as to influence architectural design, are not likely to arise very often in the present day. Secondly, that we should endeavour, in designing a building for any special purpose, to think first of that purpose, and how it may best be provided for and expressed, instead of thinking first of producing a building with a certain external appearance, which would please the reigning taste of the day. This is only a secondary lesson derivable from Professor Lethaby's paper, but it is the most important one, because it is the one most generally applicable. Professor Lethaby, in his final notes of advice, recommended that Soane Medallion competitors should be set to study, for instance, the design and construction of a staircase, or something of that kind; but that line of competition is already especially provided for by the Grissell medal. The Soane Medallion competitions generally demand the plan and construction of a building for a special purpose. That is also a problem, and should be attacked from the practical point of view in the first instance, and let the architectural treatment express that.

Recurring to the question, "Do we need a new departure in architecture?" we should say, then, that new departures, or what are supposed to be such, are apt (like that proposed by Garbett) to prove illusory, and that they cannot be adopted or started self-consciously. If any important new departure does come about, it will probably be in the way suggested by Professor Lethaby, by the effect of a new problem in construction. Failing that, there is at least the secondary conclusion to be deduced from his paper, that architects should consider a church, for instance, not as a Gothic building with certain customary features, but simply as "a church"—what is the best form for it? That they should consider a theatre not as a building on a certain accepted pattern, but as a building capable of improvement on existing patterns, for its special purpose. An increased habit of regarding architecture in that spirit would at any rate save us from the repetition of devices with no meaning—bits of projecting panel cut short off, with meaningless wreaths depending like sausages from them; mere draughtsman's fashions. No permanent good can come to architecture from tricks of design of this kind.

An Archbishop on Art.

AT the opening of the new Art Gallery at Hull last week the Archbishop of York made some generally pertinent remarks as to the part which Art should take in the beautifying of modern life. Holding up for example the great cities of Greece, "so full of imperishable memories," he then referred to the example set for our own time by those gallant public-spirited cities of the Middle Ages in Italy; true enough for Florence and Venice, where there was, in their great days, a noble kind of passion for having all public buildings as artistically perfect as they could be made. There was nothing quite like that in England at any time. It may be true that "our old mediæval life, with its guilds and municipal institutions, was far more picturesque than now," but whether it was altogether "more happy," in its insanitary, violent, turbulent conditions, may be a question. It was happier, however, for the artisan, because in those days he made a thing in the way he enjoyed making it, and not merely in the way he was told to make it by a middleman. That is one thing we want in these days—to get rid of the middleman, who trades on what is falsely called art, and bring the real art-executant to the front and give him personal honour for his personal work; a point which the Archbishop did not touch on. But he made a good point in admitting the work which had been done in rendering our cities more healthy, while deprecating the dullness and the absence of imagination and romance in our modern municipal life. "Now," he said, "something more was wanted; we must bring into these well-built, well-trammed, well-streeted cities a little touch of the spirit of imagination, of colour, and of beauty." In referring to the new Art Gallery as a possible influence in this direction, the Archbishop touched on the importance of filling their Gallery with pictures of a superior order, and not the tawdry stuff which anyone could put upon canvas, "which might give a little passing pleasure, but would do no permanent good, and would certainly not fulfil the intentions of those who were present that day." Therein the speaker touched on one of the greatest difficulties in regard to art exhibitions for the masses—the difficulty of getting them to understand what painting is for, and what is the difference between good and bad painting. And therefore it is essential that the works of art—sculpture, painting, or applied art—for a public gallery should be chosen by a committee of artists or by a competent curator, and not by the municipal authorities. Give the people not what they like or would choose themselves, but what they ought to like. In time their taste will be educated to like it—and that is the real use of a public Art Gallery.

An American Report on American Art.

THE Report of the American Institute of Architects Committee on the present state of architecture and sculpture in America, a considerable portion of which is printed on another page, is in style and expression what might be called a *tirade*. A good many among us have thought it a pity that American architecture should be so much dragged at the heels of the Ecole des Beaux-Arts, instead of endeavouring to make and live a life of its own; but such criticism has hitherto been expressed, in this country at least, in considerate and measured language. The authors of the Report in question seem to think that the time for considerate talk has gone by. They seem, in fact, to have completely lost their tempers, and in the process to have become in places all but incomprehensible. "A period of existence is not a pin-prick in a dotted line, but is an integral increment in the ascending spiral." What are we to learn from this, and why is existence a "spiral"? The anger of the Report is specially directed against the unclean domination of Rome in American architecture; that is to say, that a number of public buildings are erected in the Classic style; very fine buildings some of them are. We read of "The canker of Rome," and find that "the Roman temple blisters the surface of the land, and worse, has gnawed into the brains of the people." One is tempted to exclaim with Mrs. Quickly, "By my faith, captain, these be very bitter words." For England, indeed, such an architectural slavery, we are told, is not surprising. "The social and political life of England, as expressed in its real democracy and its constitutional monarchy, is clearly echoed in its architecture, its half-hearted and lifeless governmental forms harking back to the Roman empire, and its beautiful homes telling of the life of to-day." But we in America, who "are not saddled with a monarchy," what have we to do with these Roman abominations? Well, we doubt whether politics have so much to do with the matter, after all. Under the

same political conditions we have had in England our Gothic revival, our mediæval Law Courts, and our Truro Cathedral; and (oddly enough) the American predilection for public buildings in the Classic style has been specially fostered by the architectural connection of America with another Republic, and by the fact that her leading architects are educated in the French art-school. So that it is evidently not monarchy (necessarily) that blisters a country with Roman temples. Architectural tradition has more to do with the matter than forms of government. Something might certainly be said against the tendency of modern America to take all her architectural ideas from France; but it should at least be put in a reasonable manner and with a perception that there in another side to the question. This Report is in the tone of a kind of scream, and stultifies itself by its own violence. One is reminded of the warning given to Artemus Ward when he went south with his show: "The American eagle, sir, is screaming all over the length and breadth of this bright and beautiful land"; and one is almost tempted to adopt Artemus Ward's reply: "An' what's he screaming for? Don't his victuals sit well upon his stomach?" In this case they evidently do not.

The Usher Hall Competition.

The competition announced for the building at Edinburgh to be called the "Usher Hall" seems likely to be an important one. The cost of the building is to be £65,000; designs which the assessors judge to exceed that sum by £5,000 to be excluded. The premiums are on a liberal scale—£250, £150, and £100 for the second, third, and fourth designs respectively; the author of the design placed first to carry out the building. The assessors are Sir Aston Webb and Mr. Williamson, the city architect. It will undoubtedly be a most fairly conducted competition; but there are some considerations in regard to it which ought not to be overlooked. We gather from the published information in the "Scotsman" that the building is essentially a concert hall; whether it is contemplated to use it also for any other kind of entertainment does not appear; yet this is a very important point. If it is for a concert hall only, the floor ought not to be flat, but to rise to a certain extent from front to back; if it is to be available for other uses, of course the floor would have to be flat, but it would not in that case be so good for a concert-hall. It is rightly said that "acoustics are of great importance, and particulars should be given of the principles adopted to ensure a satisfactory result." But who is to decide on this point? The acoustics of buildings is far from being an exact science—perhaps never will be so; but something is known of it by those who have given experience and observation to the effect of music in differently constituted rooms. Then there is the question of the planning of the orchestra and organ. Most architects know nothing whatever about this. Some years ago, when there was a competition for enlarging and rearranging a large concert-room in a provincial town, the assessor selected a design in which the planning of organ and orchestra was about the worst possible for musical performance. Someone who knows something about orchestras ought to be consulted on this head. One of our principal concert-rooms is completely faulty in the arrangement of the orchestra and in the placing of the organ. Then, among further conditions, we read: "The building must be constructed in all vital parts of fire-resisting materials." What is meant by "vital parts"? Corridors and stairs, no doubt, can be so treated, but if "vital parts" is to include the main floor, it will be a failure as a music-room. Nothing but a wooden floor is good for a music-room, and it ought to have a space under it. Wood-block on concrete has not resonance enough. There is one other point on which we are certain all intending competitors will be agreed; the time allowed is much too short. The 9th of July is fixed. The problem set to competitors is a very elaborate and difficult one, and it cannot be properly considered and the drawings made in that time

TOWN PLANNING IN PARLIAMENT.

In the House of Commons, on the 19th inst., a series of questions were addressed to Mr. John Burns, President of the Local Government Board, by Mr. Boyton, with regard to the carrying out of the Housing, Town Planning, etc., Act of 1909.

Mr. Burns said the question of prescribing general provisions under Section 55 of the Act was receiving his consideration, but he did not contemplate the immediate prescription of such provisions. When issued they would be laid before Parliament. Six local authorities had been in communication with the Board with a view to the preparation of town planning schemes, but he did not think it desirable at this stage to make the names of these local authorities public. For the purpose of inquiries in relation to appeals under Sections 15, 17, 18, and 19 (relating to contracts by landlord closing orders, and demolition orders, and the redemption of annuities) as well as for other inquiries under the Housing Acts, the services of the staff of inspectors attached to the Department would be available. He had increased this staff by the appointment of three inspectors selected by himself from a long list of candidates, as specially qualified for this purpose, namely, Messrs. Clifton, Collin, and Leonard. Each of these gentlemen had had ample experience in connection with building construction. For the purposes of inquiries under Section 16 of the Housing Act of 1880, he had made an addition to the staff of medical inspectors by the appointment of Dr. Carnwath, who was formerly assistant medical officer of health to the Manchester Corporation, and who had had special experience in the administration of the Housing Acts.

The regulations under Section 56 of the Act of 1909, were to be issued at an early date.

Mr. Boyton asked whether, pending the publication of such regulations, a local authority, to whom plans had been submitted by an owner of land which was about to be developed for building purposes might decline to approve or might delay their decision as to their approval of such plans, in a case where the plans were in accordance with existing by-laws in force in that district.

Mr. Burns said the answer was in the negative, but if the local authority contemplated the making of a town-planning scheme in regard to land for the development of which plans as to new streets and buildings were submitted to them for approval, they would probably think it desirable to draw attention to the provision of Section 58 (2) of the Act.

Mr. Boyton asked whether all appeals relating to questions arising in London and the provinces under Sections 15, 17, 18, and 19 of The Housing Town Planning, etc., Act, 1909, would be dealt with by officials in London, or whether officials would be allocated to and would reside in or near the various districts or counties for the purpose of dealing with matters arising within their respective districts; and whether, either before or after the passing of the Act, any, and, if so, what, estimate was prepared of the probable increased expenditure payable out of local rates which would be incurred by local authorities in consequence of the administration by them of the Act in the administrative county of London, elsewhere in England and Wales, and in Scotland, respectively.

Mr. Burns replied that inquiries in regard to any matters arising under the Housing Acts would be held locally by such members of the staff of inspectors as might from time to time be found convenient, having regard to the general arrangements which were made for the purpose of local inquiries under the Public Health Acts and other Acts. As regards the latter part of the question, no estimate, so far as he was aware, had been or could be prepared of the additional expenditure, if any, which would be incurred by local authorities.

THE A.A. PLAY.

[*The annual play of the Architectural Association was this year "Arctia: A Legend of the Far North," written by Mr. Gervase Bailey, with music by Mr. Leonard Butler. It was produced at the Royal Court Theatre on the 18th and 19th inst. with great success.*]

Remembering the heavy tax of last year's production, it was obvious wisdom on the part of the A.A. Players to take play less strenuously by reviving one of their old successes; and although "Arctia" was first produced, we believe, some eight years ago, the numerous topical quips and allusions were evidence of very thorough revision for the present revival. Yet so slight a plot on true love running unsmoothly retains some flavour of the musical comedy of eight years ago. Mr. Gervase Bailey finds his milieu in the old legend of a green land in the far north, where the sun shines and the flowers bloom all the year round. Arctia is the name given to this favoured spot, ringed round with an impassable barrier of ice mountains, over which the outer world has never advanced. The love interest necessitated the introduction, once more, of the fair sex, and the A.A. Players were assisted by many charming relations and acquaintances. These ladies of the Court of Arctia feel the disadvantages of their segregation. There are no nice men to marry; there has been so much intermarriage that the whole race is inter-related. Moreover, they feel convinced that their fashions have become positively prehistoric.

Deliverance, fortunately, is near at hand. Sigurd, a viking chieftain, with his friend Count Ripolin, arrive in the latter's airship; and, while the Count is detailing the story of their adventures, the Princess Hilda is deputed to show Sigurd the sights of Arctia. Sigurd finds no fairer sight than the Princess herself, and by the time they have returned from their tour the score, as Vinolia, the Chief Architect, observes, is "Two-love." Now, Rudolph, the King, in the words of Sapolio, the Prime Minister, is "a wobbler," with no particular desire except to find the North Pole. But his Queen is a very forcible lady, and having decided that her daughter is to marry Vinolia, she plots with the Architect to circumvent the lovers. Sigurd, Vinolia observes, "has declared hearts, presumably being weak in diamonds"; but the Queen declares that she holds the trumps, and will bring off a "grand slam." In the archives she discovers a law on immigration, which condemns to death the first alien crossing the boundaries of Arctia; and this unenviable distinction is held by Sigurd. Fortunately the Prime Minister keeps up his sleeve handy amendments to most of the Arctian laws, and he produces one which enables the venturesome immigrant to escape the death penalty by discovering the Northern Pole within twelve lunar months, in which event he is not merely secure from unhappy dispatch, but can claim the hand of the Princess in marriage. Accordingly, Sigurd sets sail in the airship to find the Pole, armed by the Princess with a magic staff which will indicate the position of the Pole by standing up without support when placed over it.

The twelve months have elapsed by the opening of the second act. Sigurd has not returned, and the Princess is once more condemned to matrimony with Vinolia. Preparations for the wedding have been made, the day has come, flags are flying, and bells are ringing. Into the middle of this festivity, Sigurd staggers, despairing and unsuccessful. He wonders at the general rejoicing, until suddenly the truth occurs to him, and he sinks overwhelmed on the steps of the Palace terrace. Here the Princess finds him, their troth is renewed, and they arrange to elope in the airship. But Vinolia, shadowing the Princess, overhears the plot, destroys the airship, and despatches a squad of troops to arrest the lovers when they enter the shed in which it is placed. So that later, as the wedding ceremony is about to commence, the two, as prisoners, are brought before the King. Sigurd welcomes his inevitable fate, but claims time to return the magic wand to the Princess, and, lo! as he kneels before her the staff straightens up in his hand, and remains without support, thus indicating the Pole, where, as the King says, "I never thought of looking for it." Thus the plotters are foiled and the lovers united.

Into this story Mr. Bailey has woven some clever repartee and several good songs. Vinolia gets the pick of the latter. From his first song we quote one verse:—

> In the days of competition,
> It was made the first condition
> That the Architect-in-Chief was to assess.
> With absolute discretion
> To announce in due succession
> Each competitor in order of success.
> But I found out to my pain,
> Plans would often cheques contain,
> Or a bank-note of a value past belief;
> So in order to checkmate them
> I resolved to confiscate them—
> 'Twas my duty as the Architect-in-Chief.
>
> Yes, in cases of commission,
> In a public competition,
> You must set an Architect to catch a thief;
> Like his Majesty's most implicated,
> Irritated, aggravated,
> Antiquated Architect-in-Chief.

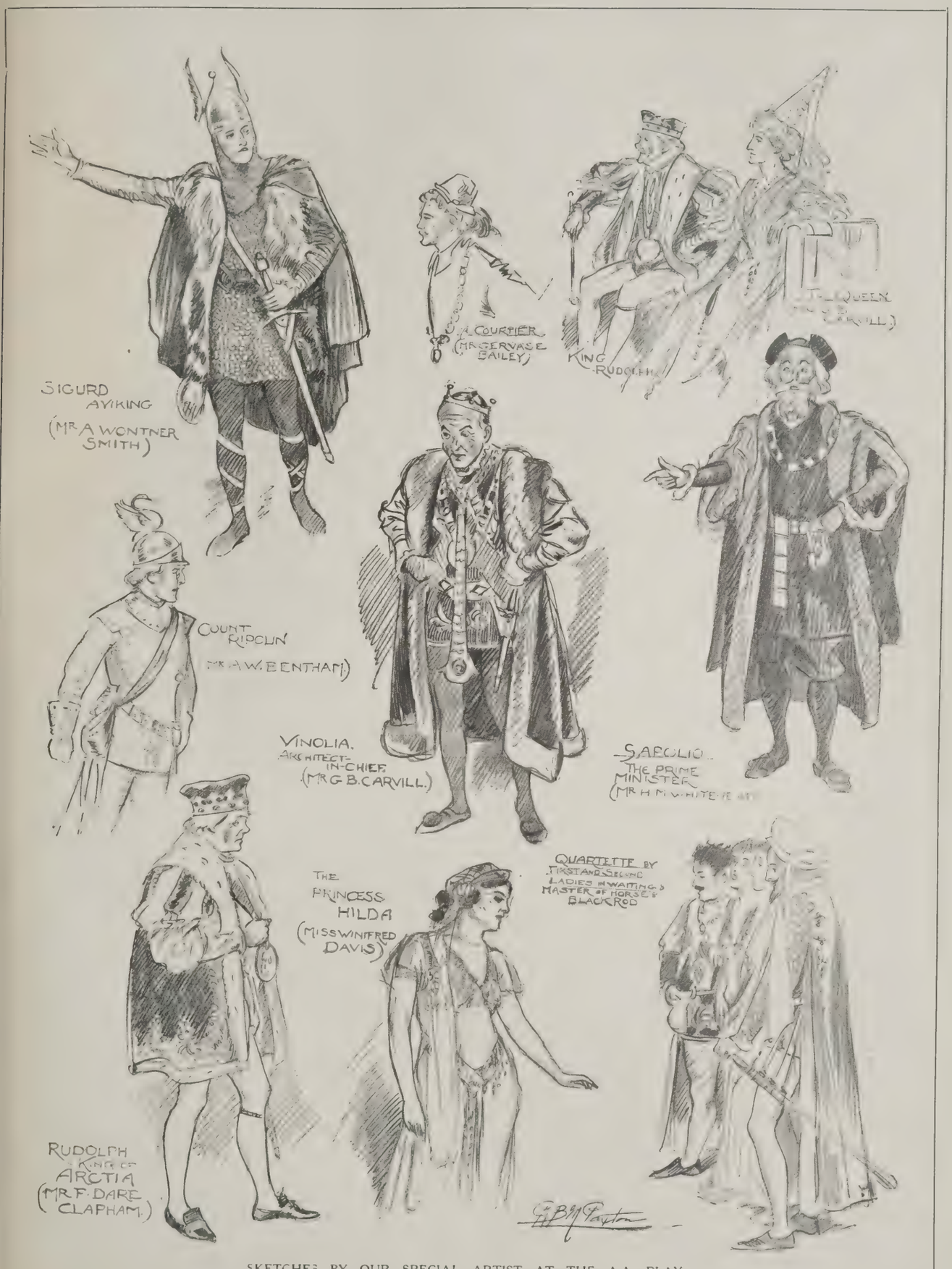
His last song, to the prospective scholars of his newly founded Architectural College, is a parable on the A.A. itself. The last verse runs: —

> You shall make some full-size details—far too wonderful to use,
> Or trace a drainage block-plan which you'll paint in brilliant hues,
> Blue and pink, puppy, pink, pink, pink.
> And in time it is just possible, though not beyond a doubt,
> With care and with attention in three years or thereabout,
> You will suddenly discover you're beginning to find out,
> How to think, puppy, think, think, think.
> *Chorus*:—
> Drink, puppy drink,
> Let every puppy drink
> From the free-flowing fountain of knowledge;
> You shall learn your little duty
> To build in truth and beauty
> At the Royal Architectural College.

One does not require to look too closely into little points of detail; but it appeared to us as a rather unnecessary anachronism that a Viking Chieftain and a mediæval Count in chain armour should turn up together in an airship. It would have been more logical, considering the airship, to have made them and their followers modern men in modern dress; but we are not insensible to the fact that the *tout ensemble* would have been less picturesque, or that Messrs. Wontner Smith and Bentham would have been deprived of two good buccaneering songs.

Mr. Leonard Butler's music is melodious and delicate; his best number is perhaps the "Little Bird" duet of Sigurd and the Princess, quite the daintiest of all the songs. The setting of "Winds in the Night-Watch," sung by the Princess, and "There is One Hour," sung by Sigurd, are marked by considerable breadth and feeling. The quartette, too, in the second act must not be omitted from commendation.

Where all worked so ably for the general success consideration of the acting becomes somewhat invidious. Some of the principals had very little to do; Sigurd, for instance, had few opportunities, and for the greater part of the second act was absent from the stage altogether; and Mr. F. Dare Clapham had to work very hard to infuse life into the somewhat colourless part of the King. Mr. A. W. Bentham made a great deal of Count Ripolin. He played the part with just that dash of exaggeration and bravura which it required. To Mr. G. B. Carvill fell the part of the villain, the Architect-in-Chief, and he made him Machiavellian indeed; but we think his reading suffered at times by being taken too slowly. Mrs. Carvill played the shrewish Queen, and made the most of a small part. Miss Winifred Davis was a very beautiful and fascinating Princess, and her fine voice quickly captivated the audience. Messrs. H. M. Whitehead, W. O. Langbein, Alec Smithers, and Miss May Farnell gave ungrudging support in minor parts. Miss Dorothy Foster, a dainty Lady-in-Waiting, must be praised for her very graceful dancing. The chorus, in which the author figured, worked unflaggingly throughout.



SKETCHES BY OUR SPECIAL ARTIST AT THE A.A. PLAY.

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NOTES AND NEWS.

The Late Lewis F. Day.

We hear with great regret of the death of Mr. Lewis F. Day, a decorative designer and critic of exceptional knowledge and good taste in his special subject. Himself a very able designer of ornament, he also possessed a remarkable faculty for analysing and explaining what may be called the philosophy of ornament, and of rendering such subjects really interesting and enlightening to the reader by means of numerous well-chosen and charming illustrations. In this respect his books on "The Anatomy of Pattern," and on "Nature and Ornament," serve the double purpose of promoting thought as to the meaning and application of ornament, and of educating the reader's taste by the study of numerous illustrations of the beauty of ornament. And Mr. Day's æsthetic perception as to right and wrong in decorative design was singularly sound and true. On questions of this kind it would hardly be too much to say that he was never in the wrong; his critical judgment could always be relied on.

The Licentiate R.I.B.A.

That the new class of practitioners to be admitted to the R.I.B.A. is not universally approved is evident from a letter we have received from an A.R.I.B.A. He says:—

"From the point of view of a country Associate, the action of the Institute in admitting architects as Licentiates does not appear a very wise one, nor fair to the Associates.

"Many Associates have studied hard and worked for years to pass the examinations of the R.I.B.A. They have also paid examination entrance fees, and they pay two guineas a year subscription. They are entitled to write A.R.I.B.A. after their names, and this is about the only advantage the country associates are able to derive from the Institute. It may be granted that it gives them in the eyes of the general public some standing in the profession.

"Licentiates are now to be admitted, without examination or election, probably on the most flimsy evidence as to their standing and ability. They will pay one guinea a year subscription, and will, I presume, be entitled to write L.R.I.B.A. after their names. From the rush there appears to be to obtain this distinction, one would gather that the failures in the profession, and those who have been too lazy or incompetent to pass the Associates' examinations, are seizing the opportunity.

"Do you think the general public will discriminate between A.R.I.B.A. and L.R.I.B.A.? I think not. That the incompetent failures in the profession should be placed, in the eyes of the public, on a level with Associates of the Institute appears very unfair.

"If the Institute wishes to gain the lasting gratitude and regard of the profession let them pass a Bill through Parliament that will prevent joiners, cabinet-makers, and undertakers calling themselves "architects." It does not appear likely that this end will be obtained more easily with the assistance of those now about to become 'Licentiates.'"

House Property Sold by Dutch Auction.

An experiment in the sale of house-property by Dutch auction, or "offer and acceptance," was attempted at the Mart, Tokenhouse Yard, last week, but the innovation does not appear to have met with much approval. Mr. Walter Hall, jun., who offered the property, explained that his chief reason for offering real estate upon a system that is usually associated with the fish market was the desire to discourage the tendency to withdrawals that besets the more usual method. The proportion of withdrawals, he said, is exceedingly high—something like ninety per cent. There is, it therefore appears, a growing custom of "withholding bids until after auction," and the effect of withdrawals is to depress unduly the prices of real estate.



THE LATE MR. LEWIS FOREMAN DAY.

Palace of French Industries for Aldwych.

At length there seems to be a reasonable prospect of the long-talked-of French building for the L.C.C. Aldwych site being realised. It is stated that designs have been passed by the L.C.C. for an imposing pile of buildings, to be called the Palace of French Industries. The site comprises 124,000 sq. ft., and stretches from the junction opposite the Gladstone statue as far as the lofty premises occupied by the Agent-General for Victoria on the Strand side. The architect is M. Ernest Gerard, with whom will be associated an eminent London architect. The main entrance to the Palace will be in Aldwych; and the Strand elevation will comprise five storeys, with, on the ground floor, about 100 shops, which will stand back from the footpath under a colonnade. The scheme includes a theatre to accommodate an audience of 1,500 to 2,000. The capital aimed at is £1,000,000.

Obituary.

We greatly regret to announce the untimely death of Mr. Lionel Gordon Detmar, who has been killed by a fall from his horse at Epsom. Educated at the Forests School, he served his articles with Mr. W. Hilton Nash, F.R.I.B.A., and, later, entered the offices of Mr. Gibson, F.R.I.B.A., and of Mr. John Belcher, R.A., subsequently joining Mr. W. Hilton Nash in partnership. On the last-named retiring from practice in 1905, he entered into partnership with Mr. Theodore Gregg, of 1a, St. Helens Place, E.C. He obtained a gold medal at the Institute of British Architects, became one of the youngest Associates in 1901, and obtained the Travelling Studentship of the Architectural Association in 1902. He was one of the three selected architects to design the British section at the Franco-British Exhibition of 1908, and the Palace of French Applied Arts remains to-day as an honourable record of that appointment. He carried out a good deal of domestic work; the London City and Midland Banks at Putney, Notting Hill, and Willesden, together with the façade to the New Skating Rink at Maida Vale, show the Renaissance influence running through all his work. At the time of his sudden and tragic death he was engaged on an extensive work on the design of Banks, English and foreign, illustrated by his own sketches. The profession has lost a brilliant and promising member, and those who knew him will greatly miss his personal charm.

THE ARCHITECTURE OF ADVENTURE.

By PROF. W. R. LETHABY, F.R.I.B.A.

[In this paper, which was read before the Royal Institute of British Architects on Monday, April 18th, Professor Lethaby enters upon an investigation of some of the principles that underlie the architectural design of various periods and countries. His main thesis is that "when the higher architecture has appeared in the world, it has come as the result of spontaneous interaction of the arts: the architect has wrought according to custom, need, and demand, and sculptors, painters, and the rest have done the same. The resulting unity was not imposed by an architect's artistic ideal, but because all expressed their thought in a common current language." This thesis he elaborates by an examination of historical data, and incidentally he evolves a theory of originality in architecture —of the architecture of adventure.]

Living Force and Active Principle.

By the architecture of adventure, the author means the living force and active principle of all architecture—the spirit of experiment in building. "Architecture" is only "building" written in Latin; but architecture is building enhanced by sculpture and painting, and then stands to building as opera stands to music. But, in any case, mere needful and experimental building is the main substance, force, and origin of the art.

Building that deals with known traditional needs should be customary; to meet changing conditions and ideals it must be experimental. For the former, practical craft education may suffice; but how to meet changing needs is an urgent question. Here, to continue in old ways or revert to past types is impossible. The one thing essential to development is a basis of some general agreement over a long space of time. A school of art is only generated by intensity, the heat of common pressure.

National Predilection.

Proportion properly means what it meant to the Greeks—a definite prearranged relation of measured quantities. Greek artists sought perfection in proportion. The Romans desired bigness and splendour. The Arabs loved bright colours. There is no one and perfect school; there are an infinitude of conceivable perfections. Any strong and general interest in building, felt by a people, will produce a living school of art. With all the variables there is one constant—the *building* interest, the delight in experimental structure, the adventure into the unknown.

The Greek architects seem nearly always to have been engineers. Daedalus, the legendary craft-master, was a mechanician; Callicrates, builder of the Parthenon, also built the fortification called the Long Walls. Hippodamus fortified the Piræus, and was an expert in town planning; and Archimedes himself was counted among the seven great Greek architects. Most of the Roman architects seem to have been engineers. Even Vitruvius was official keeper of war-engines. So in the Byzantine period, Anthemius, the architect of Santa Sophia, was an inventor of machines, and was a highly skilled mathematician, and his associate Isidorus was a skilled mechanic; and Isidorus the Younger, who re-erected the dome after its fall, had constructed fortifications. So it was also in the Middle Ages.

Phenomena and Principles.

Leonardo da Vinci, in whom the spirit of the Renaissance was most completely manifested, was interested always in phenomena and principles. He was a pioneer in town planning as well as in aviation. He was the first to enter on a systematic enquiry as to the mechanics of architecture. The only other artist of the Renaissance who caught the idea of investigating principles—the scientific spirit—was Dürer, in whose MSS. are studies for domes of parabolic section.

Wren, while not a world-genius, like Leonardo, was the one architect we have whose formal thought matters—"I say 'formal' as opposed to the flashes of insight of a dozen men like Pugin." Wren's was a great intellect, most highly trained in all the science and philosophy of an ample age. He was a powerful original genius. He and his friend Robert Hook, another scientific architect, were conversant with the general law of gravitation before Newton brought it to proof. Wren was almost certainly the first in England to apply the methods of scientific investigation to the laws of structure, and Hook is said to have been the first who stated the mechanical properties of the arch. We are fortunate in possessing records, however slight, of Wren's systematic thought on architecture, and the teaching of such a man on his chosen art should have great value and weight, but has been strangely neglected. He knew that the real basis of architecture was necessity, law, geometry. He tells us that he designed the beautiful saucer domes of St. Paul's by borrowing them from Santa Sophia because they were the most mechanically perfect that he could find. Wren was probably the first architect to see that necessity, which he equates with nature, must be one of beauty.

Meaning and Content of Architecture.

The author deduced from his data that the living central stem of architecture has always been rooted in the spirit of active experiment and adventure for the further satisfaction of needs and desires. Two views as to the meaning and content of architecture have been held—(1) That there is a *thing*, Architecture—perhaps revealed in the one perfect form of classical art, or manifested more or less in different forms in divers times, as Greek and Gothic architecture. Further, it is to be attained by a special sense in the artist. (2) That the essence of architecture is proportion, the discovery and use of definite ratios, and that by this method of proportion an absolute architecture may be embodied. There is a third view—that architecture is primarily building according to the natural laws of structure and stability, according to need and order, and always with care and finish: that it must ever vary with ever-changing conditions, and that this ordinary building may have associated with it painted stories and sculptured stories, or inlays and fretted works and gildings, while the essential architecture is still structure, and the method of growth is by continuous experiment in the possibilities of structure. The author must not be thought to urge any quest of originality; all search for it blocks the way to any possibility of realising a true originality, which properly is of the root, not of the appearance. True originality is to be found by those who, standing on the limits of the sphere of the known, reach out naturally to some apprehension and understanding of what is beyond; it is the next step in an orderly development. The author urged concentration on practical, experimental, and scientific education. "What we most need at the present time is the accumulation of power; we want high mechanical training, wide practical experience, and great geometry. And then we want to cover the field by a systematic research into possibilities. The possibilities of walls and vaults, and of relation between the walls and the cell, and between one cell and another, want investigating, as Lord Kelvin investigated the geometry of crystalline structures and the packing of cells. Such a training would not, it is true, include the whole of architecture, but it would open the way to the best we can attain. We might hope thus to give up hugging the coasts of the known, to sail boldly forth under the stars. Thus, and thus only for us, may we enter again upon the architecture of adventure."

The Romantic Brick Kiln.

Of course "imaginative reasoning" is wanted. One finds it in the Forth Bridge; some brick-kilns have the beauty of Byzantine churches; and "the most romantic modern buildings I know are the oast-houses of Kent." When poetry and magic are in the people and in the age they will appear in their arts; but it is not the least good to say, "Let us build magic buildings. Let us be poetic." We should devote the whole of next session to papers on constructive science—get Prof. Karl Pearson to give us the result of his researches on the arch; Prof. Perry to draw up a report on the application of mathematical enquiry to structures, and Mr. Dunn to lecture us on modern constructive problems. Pugin students should be made to analyse varieties of mediæval vaults, Soane students varieties of staircase arrangement, Tites should be sent to study French railway stations, Grissells to work at German hotels, and Godwins to American hospitals. We need first the natural, the obvious, and, if it will not offend, the reasonable; so that to these, which might seem to be under our own control, may be added we know not how or what of gifts and graces. Thus may we hope to combine and reconcile again the two realities, the reality of natural necessity and common experience, and the reality of the philosophers, which is the ideal.

DISCUSSION.

The President, Mr. Ernest George, commented upon the profound wisdom contained in Professor Lethaby's paper, and observed that a good end would be served if they could eliminate from their minds the purely superficial ideas nearest to hand.

Professor Beresford Pite proposed a vote of thanks, and remarked upon the prevailing habit of loading the architectural student with information relative to old styles; he hoped that the paper would help to dissociate this idea from modern architectural education. Archæology, however, helped to a vivid realisation of ancient methods, and should form valuable subject matter for examination. They knew that Wren was a great mathematician and pre-eminently a man of science; but he breathed life and liberty into the Classic style. He (the

speaker) suggested that there must be always a parallel to the scientific side of a character; not the parallel of the monorail, but what might be termed a stream of artistic sympathy, always united with the scientific bent. Thus they would find Leonardo, who, mathematician that he was, could paint the "Last Supper." It was, however, extremely difficult to argue from the outstanding geniuses. If the architectural student was to be trained on the recommendations of Lord Kelvin, he (the speaker) would renounce architecture and take to sketching. He believed that the factor of intercolumniation in a Greek temple, gauging as it did the capacity of marble to hear from point to point, crystallised the whole problem. The reinforced concrete beam, although perhaps in effect the same, dismissed all charm. Engineering works had always impressed him more than any other class of modern building. The whole sense of a deep cutting, a high viaduct, was enormously impressive. One gazed at the Forth Bridge with wonder, and speculated; but the world as at present constituted would not stop there. Should they let it stop there? All the static facts were arrived at and achieved. Knowledge of brickwork requisite for architectural practice was obviously acquired. They had got as far as they need. What should they do next? The only thing was to wait and hope—to try to cast their eyes forward and take an interest in what was before. In the meantime they were the children of the Renaissance. Ever since the Renaissance had put the clock back, science had come forward and despised the past, just as architecture had gone back and despised the future.

Mr. H. H. Statham said he had great pleasure in seconding the vote of thanks for a very remarkable paper. Touching first on one or two details, he did not think that Wren designed the second storey of the nave of St. Paul's for any reason other than formal architecture. It was not necessary to assist the abutment, though it might be so near the dome. He could not call the cone a parabola; the lines of a parabola were not straight, however far produced. The most important sentence in the paper was that to the effect that a strong and general interest in building would be likely to produce a living architecture at any time. That was what we most wanted. That building and the interest in it was a *constant* he quite agreed, but might there not be a "constant" beyond that—adventure in design as well as in construction? Mediæval castles were no doubt pure engineering, however we thought them picturesque now, but he could not agree that the cathedrals were no more than that. He would suggest that architecture was the poetry of plan and section. If all the mosaics and marble were taken out of Santa Sophia, it would still be great architecture. Walter Pater, in one of his essays, said of the architect, "He closes his sadness over him, or wanders in the perplexed intricacies of things, or projects his purpose from him clean-cut and sincere, or bares himself to the sunlight." That was a recognition of abstract architecture as a form of spiritual expression. Nevertheless, he thought Professor Lethaby's idea of adventure in structure a very good one, provided it were considered as the ground-work of adventure in design. The one grew out of the other.

Mr. Paul Waterhouse said they had had a wonderful insight into the higher aspects of architecture. He could not bear to think of the architectural student with his study of old work in any way remitted. He did not know what Morris meant by his statement with regard to the Renaissance, "the past slew the present." The Renaissance was not looking back, but surely taking the blood out of the past ages and inspiring oneself with its vigour.

Mr. R. Weir Schultz observed that some speakers seemed to think if they studied architecture on a scientific and structural basis they would lose all sense of beauty. Was not Gothic the romance of construction? Was not the whole idea of construction, the endeavour to see to what limits it was possible to go? And was not the mark occasionally overshot with disastrous results? They heard a great deal about the wonderful beauty of our domestic architecture. What did it amount to? They had simple pieces of building done in a simple local way. There was no question of plans and details. Modern domestic architecture only approximated to this.

The Lecturer Professor Lethaby, in reply, said he agreed with all the things that had been said. He had in mind two main points: first, method of design to the modern mind; the second he forgot. It struck him that nowadays they were dealing with a multitude of what might be called "flavours." They were trying to imitate, to design things that *looked* like cottages, or *looked* like farmhouses. The circumstances reminded him of a sign that had once appeared in a window: "Fine jam—good strawberry flavour." It was not the flavour they wanted, but good sound jam.

OBITER DICTA.

The English Hedge. If one were asked to name on the spur of the moment the most characteristic feature of the English landscape, there can be little doubt that he would reply—the hedge. It is a peculiarly English institution. Picked up and dropped blindfold into any corner of the isle, you would know, directly your eyes could see, that it was your own land by the hedges. In other countries people put up fences, ditches, banks, railings, what not; but they are by no means the same thing. A hedge implies care in construction, care in preservation, and the careful work of some immemorial ancestor. —"*Spectator.*"

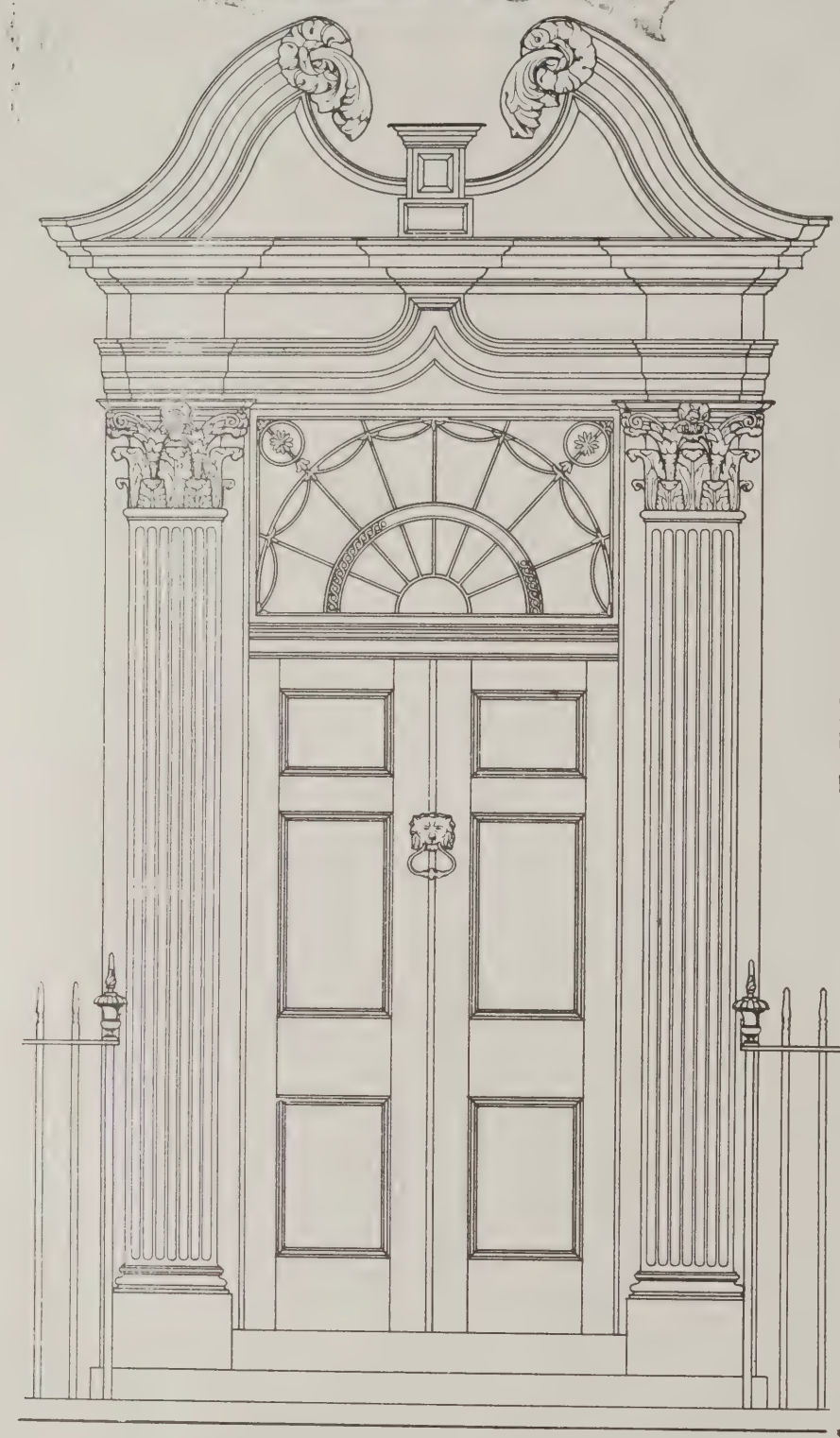
A Living School of Art. I want to be clear about this: that proportion properly means what it meant to the Greeks, a definite prearranged relation of measured quantities. This view is perhaps most clearly brought out in the case of sculpture, to which they naturally came to apply similar schemes of harmonic measures. Polyclitus, the contemporary and equal of Pheidias, wrote a book on the subject, called "The Canon," and made a celebrated statue to illustrate it. The head was one-seventh of the total height, and all the other parts had definite ratios. Moreover, a saying of his is preserved: "Success in art is attained by exactness in a multitude of arithmetical proportions." Greek artists all agreed to such a theory—that is, they set about discovering perfection, and we know what wonders they accomplished in consequence. The Romans as certainly agreed in a desire for bigness and splendour, and they, too, succeeded according to their desires. The Arab builders fell into a love of bright colours, baked into shining tiles, and this, too, gave a character to *their* art. Any strong and general interest in building, felt by a people, will produce a living school of art. There is no one perfect school; there are an infinitude of conceivable perfections. With all these variables, however, there has been one constant, the *building* interest; the delight in experimental structure, the adventure into the unknown.—*Professor W. R. Lethaby, F.R.I.B.A., in a paper read before the R.I.B.A. on April 18th.*

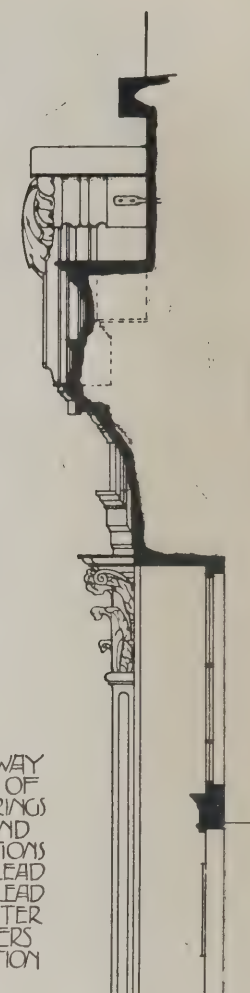
Architecture Racy of the Soil. There is no country in the world where the development of the arts can be so continuously traced as in Egypt. Egypt is the archæologists' land of promise. In a land where rain and frost are seldom known, and the sand is ever at hand to cover and preserve, the monuments of men perish only by the hand of men. Hence it is that the history of Egyptian architecture, sculpture, and pottery can be followed from the beginning of the historical period down to the present day. . . In architecture, the windowless wall of the house or temple was due to the abundance of light, and the blank wall became in consequence a picture-book on which the scenes of this life and the next were represented in sculpture or painting. The lotus of the Nile, again, became a favourite motif, with the builder; the capitals of his columns were shaped into likenesses of the flower, and its leaves were modelled on the blank spaces of the walls. Egyptian architure, like most other branches of Egyptian art, was essentially a product of the Egyptian soil.—"*Saturday Review.*"

Bricks Without Clay. Dealing with the characteristics of a perfect brick the lecturer objected to the use of the term "clay," and preferred "brick-making earth," which should constitute half the material used; the remainder consisting of alumina and silica. There were very many varieties of brick earths, and the selection of a suitable material required great care and a considerable practical acquaintance with geology, chemistry, and physics. Many opportunities had been overlooked in the past, and were still being overlooked, because the persons interested lacked this knowledge.—*Mr. A. B. Searle, at the Roya Society of Arts.*

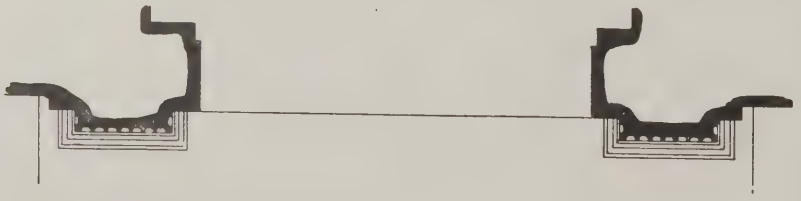
Inartistic Uniformity. Certain artistic souls have had their susceptibilities outraged by the higgledy-piggledy nature of the buildings erected on allotments. For our part we candidly confess that we have been more inclined to admire the ingenuity displayed in making use of most unlikely-looking materials than to deplore lapses from a high standard of architectural art. The authorities, however, propose to institute a standard or model hut which all allotment-holders must copy. We do not believe in uniformity. A group of allotments dotted with huts all of the same shape, size, and colour, would be hideous. Indeed, we would prefer the "glorified bacon boxes" of to-day.—"*Sheffield Daily Telegraph.*"

No. 25 CRUTCHED FRIARS ENTRANCE DOORWAY.



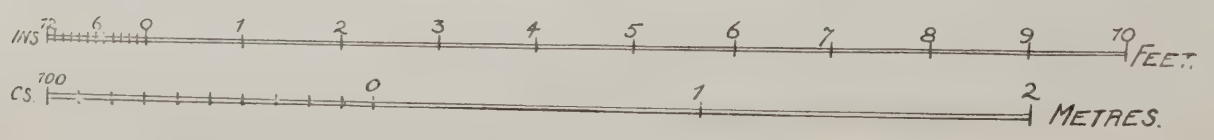


NOTE
THE DOORWAY IS CONSTRUCTED OF WOOD · WEATHERINGS OF PEDIMENT AND OTHER PROJECTIONS COVERED WITH LEAD · THE DOOR AND LEAD FANLIGHT ARE LATER · BASES OF PILASTERS RECENT REPARATION



SECTION

· EDWIN GUNN · MEM · ET · DELT ·



MEASURED AND DRAWN BY EDWIN GUNN, A.R.I.B.A.



This house is a fine old Georgian town house, now used as offices. It contains a richly treated open newel stair of imposing dimensions, rising through three storeys, and other details of interest beside the doorway shown above. In regard to this the vacant central pedestal of the pediment no doubt once bore a shield or emblem, and the general design seems to emphasise this point. The iron railings appear to be original, but the double margin door and delicate lead fanlight are obviously of later date.

DOORWAY TO NO. 25, CRUTCHED FRIARS, LONDON, E.C.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

SCULPTURE AND ARCHITECTURE.

[This report of the American Institute of Architects' Committee on Allied Arts was presented to the Institute at the recent annual Convention. The Committee consisted of Messrs. Irving K. Pond (Chicago), chairman, H. Langford Warren (Boston), Howard V. D. Shaw (Chicago), Edward G. Garden (St. Louis), and Charles Z. Klander (Philadelphia). The report, which is intended to deal mainly with sculpture as applied to architecture, is largely an indictment of modern life and social conditions as affecting architecture and the allied arts. This slashing attack on accepted ideals and conventions makes stimulating reading; but such savage iconoclasm makes one doubt whether the report is not conceived pour faire rire].

Sculpture is singled out in this report because of all the allied arts sculpture is most intimately related to architecture; for sculpture and architecture are arts dealing primarily with form, especially with form as giving character to mass. The architect thinks first in terms of homogeneous and rhythmically composed mass. Colour as affecting the allied arts and the arts of design and applied as architectural decoration or as mural painting does not intimately affect the structure. Colour is really architectural only when as a property of the material of the mass it serves by its qualities, and as adding value to light and shade, to modify general proportions. A closer study of the relations of art, and especially of the art of architecture, to the life of the people is made in this report, that a clear conception of the status of architecture having been established, further studies dealing in detail with the allied arts may have a carefully surveyed field in which to erect their premises.

The intimacy of the domestic arts and even of the arts of design with the characteristics of a people is pretty generally conceded, and in a measure understood; but the monumental arts seem to be conceived as outside—perhaps above—as of another realm. This is not so, however greatly certain workers in these nobler arts may desire, or seem to force, such conclusion. The further any art withdraws itself from the highest in the life of its day, the less effective will be that art in ministering to the particular needs of the time; the less exalted will be its place in history. These particular needs include the needs of the mind, spirit, and heart. Whether in the greater or lesser periods, it is only as one of these factors has been more highly esteemed and more fully developed or has more powerfully influenced the life of the time than have the others, that architecture has taken on its characteristic aspects. The architecture of an age in which no one of these factors is supremely dominant yet which forces one or another of these characteristics will be viewed with but ephemeral appreciation, certainly not with lasting respect.

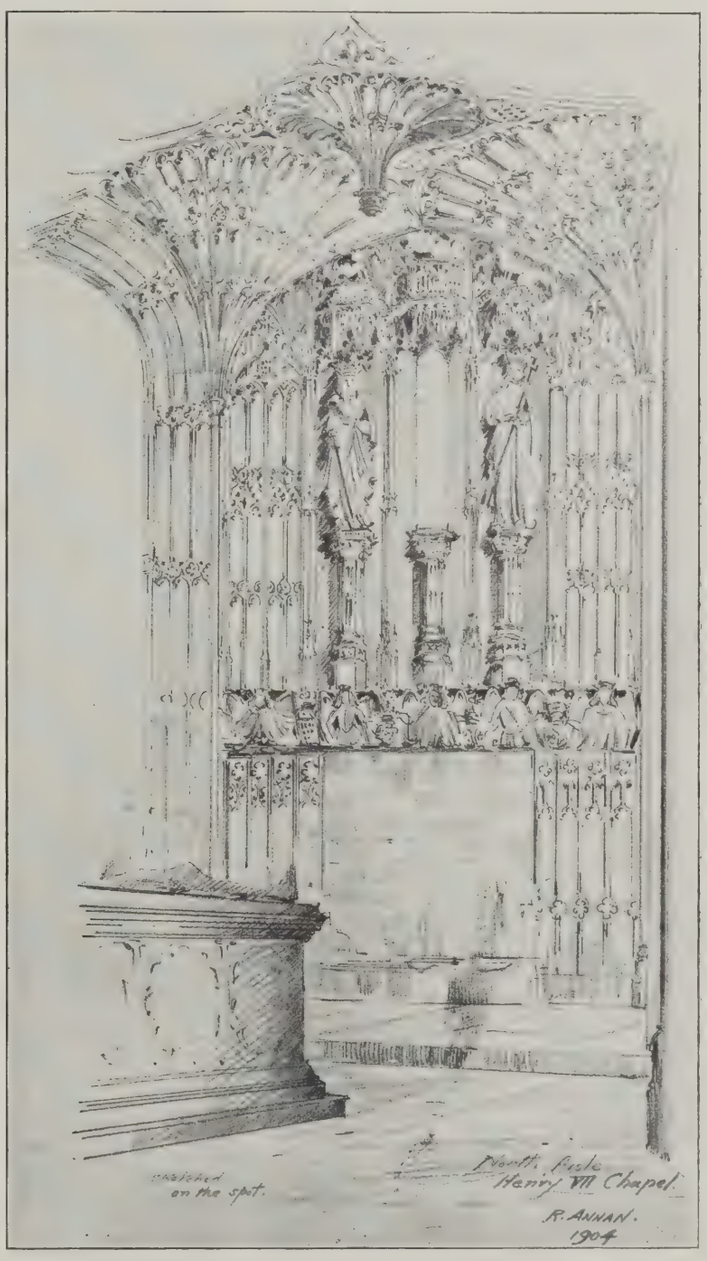
A period of existence is not a pin prick in a dotted line, but is an integral increment in the ascending spiral, and an age finds itself only by relating itself to all that has passed.

To comprehend the status of an art, then, it is necessary to study broadly life and its expression, to view sympathetically that interplay of motive and action which produces the civilization of a period and differentiates that period from another, and to note, if not how, at least that the spirit of a civilisation determines the form of the state and at the same time dictates the manner of the art. To comprehend, therefore, the status of architecture, it is necessary to understand the nature of society and the state and to appreciate that the spirit which produced society and which dictated the form of the state dictated also the forms of architecture, and that without the guidance of that spirit no worthy enduring architecture was produced.

There seems to be an existing idea that through all the periods man was a fixed star and that styles changed; that throughout the evolution from Egyptian to Greek, from Greek to Roman, from Roman to Romanesque, from Romanesque to Gothic, and then to the Renaissance, man was stable, his product alone changing. This is a most erroneous idea, for while the external form of man's body held, his motive and action changed. He was spiritual in this period, intellectual in that, temperamental in another, and true to his animal instincts only in them all. Through most of them he showed signs of intelligence.

The Spirits of the Ages

Glance hastily at certain of the sharply differentiated historical periods, and note the forms of government and of architecture and the racial characteristics: Egypt—with its philosophy of immortality; imbued with a zest of life and a poetical love of Nature; governed by kings whose will was served by slaves, native and alien; symbolic in its expression of philosophy and art and in all its deeper thought; the great pylons and ranged piers of its architecture, almost too massive for columns, wrought in forms symbolic of terrestrial life, over and above which rested the indestructible canopy of heaven, glistening with stars; heart and sentiment for inde-



THE NORTH AISLE, CHAPEL OF HENRY VII., WESTMINSTER ABBEY. SKETCHED ON THE SPOT BY R. ANNAN.

structible beauty everywhere; garb and ceremonials all in consonance. Greece—with a government of changing form but never by the people, although the term "democracy" was used; now a king, now a tyrant, now an oligarchy, never a true republic; an industrialism based on slavery; a unified religious and social philosophy; an intellectual vitality, potent in its logic and definite in its conclusions; a love for Nature only as Nature could minister to the conventional in literature and art and to a religion which was little but literature and art; a great borrower but transmuting alien facts and forms to the likeness of its own unified and æsthetic spirit. The Arabian—daring, poetical, picturesque, unstable, acting on impulse, careless of life; its art fleeting of form and of colour; its religion definite and appealing; touched now and again with the fatalistic philosophy of the Orient, and using the dome to crown the tomb and indicate the finality of all things. The Middle Ages—ascetic, spiritual, giving life and Nature a new and higher meaning; aspiring, poetic; the intellect not overworked, perhaps, but the heart filled and the spirit overflowing. And then, and purposely misplaced as to chronological order—Rome, the imperial—powerful, forceful, dominant, domineering—arms, conquest, spoils, greed, slavery; intellectuality not at a premium, spirit and heart below par; the people slaves to the court, the court slaves to power and passion. Imperial Rome pulled down the results of other civilisations or pulled them up by the roots and transplanted, manipulated, applied, or discarded them; but as imperial Rome was not an empire of the heart; knew naught of altruism; was not an empire of the spirit, knew naught of faith, was not an empire of the intellect, cared naught for logic; but was temperamental and of the body, in conception and in external expression its architecture naturally was not an expression of sincere motive or of logical achievement, but was a superficial application, clothing ofttimes in alluring and impressive garb the massive and bulky expression of a dominant will.

Then the Renaissance—the revival of learning and the forgetting of faith; when people learned the old pieces and spoke them prettily; tried to think like Greeks but could not dress like them, debased the ideal and glorified the idea. The Renaissance was quite as cultured and nearly as learned or knowing as is the Present. The Present—a period of knowledge even to the verge of sophistication! It is questionable if in an age of sophistication any form of sincere art can arise. The art itself will be sophisticated and the thread of sincerity will be snapped. Is not the Present an age of sophistication? Does not the age know overmuch and feel but feebly? Because of its learning and because of its lack of power to feel, this age is imitative, rather than initiative, in art. It would be an age of imitation in science and in philanthropy and reform but that having no precedent to follow in these lines it is forced into new fields and so the age is constructively altruistic while artistically it is imitative. To-day there is an altriusm. We do not conquer to make slaves, but to free them.

The Emulation of Rome.

Then why do we, especially we English-speaking peoples, strive, against the current, to emulate Rome? Is it because we, in America, by our legislation, by our industrial and commercial systems are making a race of industrial slaves and political underlings, that the hard and domineering spirit of Rome forces itself into our commercial architecture, into railway terminals, banking institutions, department stores and warehouses, into our courthouses and government buildings? Perhaps the charitable interpretation is that, lacking in sincerity and sentiment, we must clothe our spiritual weakness in an expression of physical force and mental overpower. That is human nature. When we cannot sway by ideas, by mentality, or by sympathy, we bully by the display of force or power. The church furnishes a concrete example of this. Its grip on the hearts of the people was lost when the spirituality, the aspiration, the mysticism, the ideality of the Middle Ages died out, and it could hold its power over the masses only by essaying the functions of the State. Then the religious structures of the North gave way to buildings which, like St. Peter's in Rome and St. Paul's in London, embodied the domineering governmental type, the one in a grand manner, as became the direct heirs of imperial Rome, the other in a half-hearted way as must be when state and church or a state church attempts to domineer over a race in whose veins runs the red blood of personal liberty and whose pulses beat to the time of the Magna Charta. The restraints of tradition are hard to throw off, and the social and political life of England as expressed in its real democracy and its constitutional monarchy is clearly echoed in its architecture, its half-hearted and lifeless governmental forms harking back to the Roman Empire and its beautiful homes telling of the life of to-day.

We here in America are not bearing the burden of empire. We are not saddled with a monarchy. We are a people ruled by a people (in our minds) and we are untrue to our environment, to our birthright, when we allow our architectural ideal to be expressed in imperial terms or in terms, indeed, of any other life or civilisation than our own. We may make mistakes in our attempts to find ourselves, but such mistakes cannot sum themselves up in so grand a mistake as the huge joke we are perpetrating in our governmental and domestic art.

It is, as already noted, only when a period is vitalised by the potency of at least some one great factor of existence that a characteristic art can arise. As for our nation to-day, have we a vital religion which touches the hearts of the masses? Have we a philosophy of life on which the savants are agreed and with which the people sympathise? Have we a commercial life free from the taint of selfishness—altruistic, broad, and liberal? Have we an industrialism which will make men free and not slaves? Have we a domestic life which is pure, where marriage vows are not violated, and sanctity reigns, where one household does not seek to impress another and the whole community with the sense of its wealth, power, and social station? Have we a Government of the people, for the people, and by the people, presided over by officials who will not tax the many for the benefit of the few? Have we a Government free from the suspicion of increasingly imperialistic tendencies? If we have all this, we are ripe for a great characteristic architecture which shall hold its own in the halls of history. If we have any of these factors fully developed, we are ripe for an individual and vital architectural expression along that line. Have we all this, or any of it? It seems, rather, that we are a lot of negatively charged individualists rattling around in a universe of positive ideas, unattractive and unattracted, and unified socially and artistically only as we are self-hypnotised by intently gazing on that brilliant spot, the focalised spirit of domineering Rome.

The Canker of Rome.

As witness, only one sect in all our religious bodies (and the exalted position of that sect based, in the popular mind, on its social prestige) consistently builds church edifices radiating humility and sincerity and aspiration; the Roman and Christian Science sects, pre-eminently the two which govern by threat and wield the power of excommunication, the two which dictate the mental range of their communicants, which permit this reading and place a ban on that—these two churches build in an avowedly Roman type when the style can be formulated at all. The theatre, expressing the domination of the trust, is clothing itself now uniformly in the garb of the Empire. The Government has virtually adopted the style of imperial Rome for its type and its chief executive is housed behind a washed-out reflection of it. The States—witness the procession of pitiable State houses—have aped the General Government, and the municipalities have taken their cue from the State; the county courthouses and jails have followed. What was good enough for the jail was good enough for the judge, and he dwells in a Romanised Greek temple; and so with squires, landed proprietors, professional men, captains of industry and artisans, till the Roman temple blisters the surface of the land, and worse, has gnawed into the brain of the people.

Insincerity of Modern Life and Building.

How deeply the canker has eaten can well be realised by contemplating the equanimity with which the public has accepted the insincerity and intellectual prostitution manifested in certain commercial and municipal buildings of monumental type. Modern science and ingenuity have given the age a system in the steel construction whereby it is possible to state the architectural problem frankly and solve it with that simplicity and sincerity which make for beauty. But, that the power of empire and the vulgarity and ostentation of misapplied wealth may be enforced, the skeleton has been distorted and the ideal debased. The age artistically is imitative and of the lowest forms. The age is not sincere, but is theatrical in the most puerile sense. We strut about like so many supernumeraries in the garb of Roman soldiers because we are spiritually and intellectually incapable of conceiving and acting the higher and better part. It may not be our fault, but it is our misfortune. It is not the less our misfortune that we of the very Present, being unable physically and mentally to wear the nobler Roman garb, are turning to its more debased forms and are taking our cue from the period of the "periwig and pigtail" which produced the Rococo style of the Renaissance—the character of that period was reflected in its people and in its art! And to-day, when our women, gowned via Paris, crown themselves with domes of false and foolish hair, surmounting all by chopping bowl and peach basket headgear, our architectural creations are reflecting the same spirit, and, Franco-Roman—where once they were frankly Roman—are crowned with monstrously designed and illy proportioned mansard roofs. The individual who assists in this degradation of taste may well take refuge under the protecting wing of the spirit of the age.

Sculpture is taken up in this report because it is, by nature and intention, the allied art most intimately related to architecture—by nature and intention, be it



There are six of these life-size figures in stone on the facade to the Place Boïeldieu. They come below the main cornice of the building, and are the work of Michel, Allan, and Peynot.

CARYATIDES ON THE OPERA COMIQUE, PARIS. LOUIS BERNIER, ARCHITECT.

noted, not by art and practice. Outside the realm of strictly architectural decoration, sculpture is as remote from true architecture as is mural painting. Rather than glorifying the structure it tends to belittle it. It makes of architecture only a background or pedestal. Architecture becomes a mantelpiece on which are displayed to some advantage to themselves objects of sculptural bric-a-brac. It matters not that the objects be arranged in such manner as to illustrate pictorially some notable event or to symbolise some noble idea. It matters not that the objects be so composed as to conform to the mass of the pedestal. That does not make them an integral part of the chimneypiece any more than posing the figures in the tympana—prone, crouching, sitting, stooping, standing, to make the composition conform to the rake of the pediment—makes them architecture. That was about as near to architectural sculpture as the Greeks or Romans ever came. The only architectural sculpture about the chimneypiece is the caryatid, and as the caryatid has been used in history it has been rather as an architectural fancy than as an architectural fact. The beautiful caryatides of the Erechtheum are imitations of columns, the fluting being carried into the draperies, the pillow blocks being carved into capitals Yet however gracefully these maidens may bear the superimposed conditions, however serenely they may smile at their burden, this is philosophy and not architecture, for the neck of the column is never subjected to the bending strain that tasks the necks of more than one of these maidens. In other instances of the Greek use of the caryatid the evidence of strain is thought to be removed by the intervention of the flower basket capital, the distinctive feature of the Corinthian style. This is not logical nor is it good philosophy nor good architectural art, for art does not seek to deny the stress and strain, but it recognises the conditions and meets them with graceful yielding or frank resistance, as the case may be. In the field of sculpture, imperial Rome with its over-elaboration of ornament is dictating to the Present. Our limit in architectural sculpture is reached with the filled pediment and the free standing statue superimposed upon a free standing or engaged column. Is this really our artistic and intellectual limit? Those who have hoped for a future in architecture and in sculpture do not think so. This existing limitation may be due mostly to unimaginativeness and lack of suggestive initiative on the part of the architect; in a lesser degree to the lack of intelligent understanding between sculptor and architect as to the function of sculpture, and in some measure to the attitude of the sculptor whose desire seems to be to create easel pictures and so dispose them that they may be the centre of attraction. The sculptor is willing for a consideration to place his product upon the architectural pedestal, well knowing that his work will not suffer eclipse and that great critical praise will be accorded him if his work is "architectonic." That is all it need be in the present age to command praise—"architectonic!" . In the age of Pericles that was taken for granted. The modern sculptor does not want to be a stonecutter and lose his identity and perhaps his head on the scaffold.

The Future Architectural Sculpture.

The last word has not been spoken in architectural sculpture. The Middle Ages gave a hint as to further possibilities. Then the structure was carved and sculpture was not extraneous except in the case of certain superfluous saints and angels who stood around in niches; but the pedestals were supported by lower types or by agonizing sinners who were integral with the structure, and who, doing the work, were in the eyes of modern philosophy the worthier objects. Can one imagine a pier head so wrought that the sculptural lines shall carry the structural strains from arch or wall to the pier? Can one imagine a sculptured console or corbel the lines of which shall indicate the nature of the stress and be harmonious with the character and individuality of the building? Can one imagine the spirit of the marble itself, the spirit of the granite, the spirit of the softer stone, appearing in the sculptured surface of the wall and readjusting themselves to the new conditions? Can one imagine rich sculpture adorning the parapet, crowning the structure, being the frieze and not

stuck against it? Can one imagine a unified creation with sculpture and structure blended, instinct with the sincerity of the Middle Ages as to structural principle, mystic as of Egypt in its symbolism, clear and limpid as of Greece in its intellectuality? One who can thus imagine need not be discouraged as to the future possibilities of sculpture in architecture. But these possibilities are not to be realised except inadequately in individual instances if the age is not unified in its characteristic attitude toward the great features of life, for in the expression of social or national ideals the individual cannot far exceed the limitations of his age. But the duty of the individual seems clear, for this spirit which finds an external expression in the State, the church, in society, and the social institutions, is not outside of him, it is within him, and it is his duty to express the highest in the attitude of his time and environment; and he is running counter to the laws of life when he conforms himself to the ideals of other and alien times, and does not seek to express that spirit which is within and about him.

Perhaps the architectural profession is thinking too much of itself as a profession and too little of itself as a mouthpiece of civilisation and society. As one in love with love and not with the object, it is in love with technique and not with the ideal. It advances the forms, the formalities, and does not enshrine the spirit, the essence. Not that forms and formalities are not on occasion desirable adjuncts and that on such occasion society should not be taught to respect them, but that always truth, integrity, broad comprehension, and responsiveness to the ideal should be fundamental in the character and equipment of every member of the profession and certainly of this body, and that the application of these characteristics should be made to his work in architecture.

HOUSE NEAR CHESTERFIELD.

PERCY B. HOUFTON, ARCHITECT

Brookside, Brampton, is a house built by the architect for his own occupation, and is situated two miles west of Chesterfield, Derbyshire, on the Chatsworth Road. The walling materials are thin beds of local sandstone of a grey-brown colour, richly stained in parts a reddish-ochre, built in mortar, and pointed in cement. The quoins are Derbyshire gritstone. It was interesting to find that a 16in. wall of these materials, so long discarded by local builders, costs no more than a 9in. wall of pressed brickwork, or of common brick rough-cast. The roof is covered with Barton-on-Humber tiles, which weather very quickly and approximate to the tone of the old local stone roofing slates which are not now quarried. The arrangement of the plan is partly dictated by the site, which has a north frontage to the road, and hence the living-rooms are placed to overlook the garden at the back. The set-back of 70ft. from the road minimises the dust nuisance, and brings the house under the lee of the existing line of trees on the west side. Internally, oak, elm, and white-painted deal woodwork have been used. The cost of the house, including drains and boundary fences, but excluding formation of garden, was £900. The builder was John Wright, of Chesterfield.



THE PRIORY, BURFORD: CHIMNEYPIECE IN THE BALL-ROOM.

IN PARLIAMENT.

(From Our Gallery Representative.)

The Clock Tower.

The conditions which are attached to a visit to the Clock Tower, from which a charming outlook is obtained, are worth knowing. Admission is practically limited to members of Parliament who, however, are allowed to conduct a few friends up the tower. The only other privileged persons are students of horology. In some respects it is a pity that so few are allowed to take advantage of a point of view which is unequalled even by the Campanile of Westminster Cathedral. The Clock Tower is the only place from which a satisfactory view of the general plan of the Houses of Parliament can be had. The river, too, overhung by drifting clouds of smoke in varying and well-defined tints, assumes an aspect at once attractive and familiar. The Victoria Tower is seldom ascended by anybody other than workmen, and the First Commissioner of Works has intimated that he does not desire to increase facilities of visitors to either of the two towers because it would be necessary in that case to appoint a special staff for purposes of supervision.

Housing of Torpedo Factory Workers.

Mr. Watt asked the First Lord of the Admiralty whether the Woolwich torpedo factory workers who were to be transferred to Greenock were raising objections to the housing accommodation procurable in Greenock; whether his department had approached the landowner there with a view to the purchase of land on which to erect suitable houses; and whether the price asked for the land rendered it possible to erect suitable houses for the workers at a reasonable price.

Mr. McKenna said the reply to the first part of the question was in the affirmative, but it was hoped that the objections would shortly be overcome by the erection of cottages by private enterprise. The reply to the second part of the question was in the negative, as the Admiralty had never contemplated buying land there for dwelling houses.

Employment in Welsh Slate Quarries.

In reply to a question by Mr. Ellis Davies, Mr. Masterman, Under-Secretary to the Home Office, has submitted a table showing the number of persons employed in the slate mines and quarries in North Wales during each of the years 1900 to 1909. In the mines the number decreased from 5,041 in 1900 to 3,118 in 1909; the numbers in 1903 and 1904 being the largest, viz., 5,213 and 5,168 respectively. Those employed in slate quarries numbered 9,481 in 1900, and 7,826 last year.



Photo: Richard Keene, Ltd.

This house was built by the architect for his own occupation. The walls, sixteen inches thick, of thin local stone, cost no more than a nine-inch wall of pressed brick or common brick rough-cast, though this stone has long been discarded by local builders.

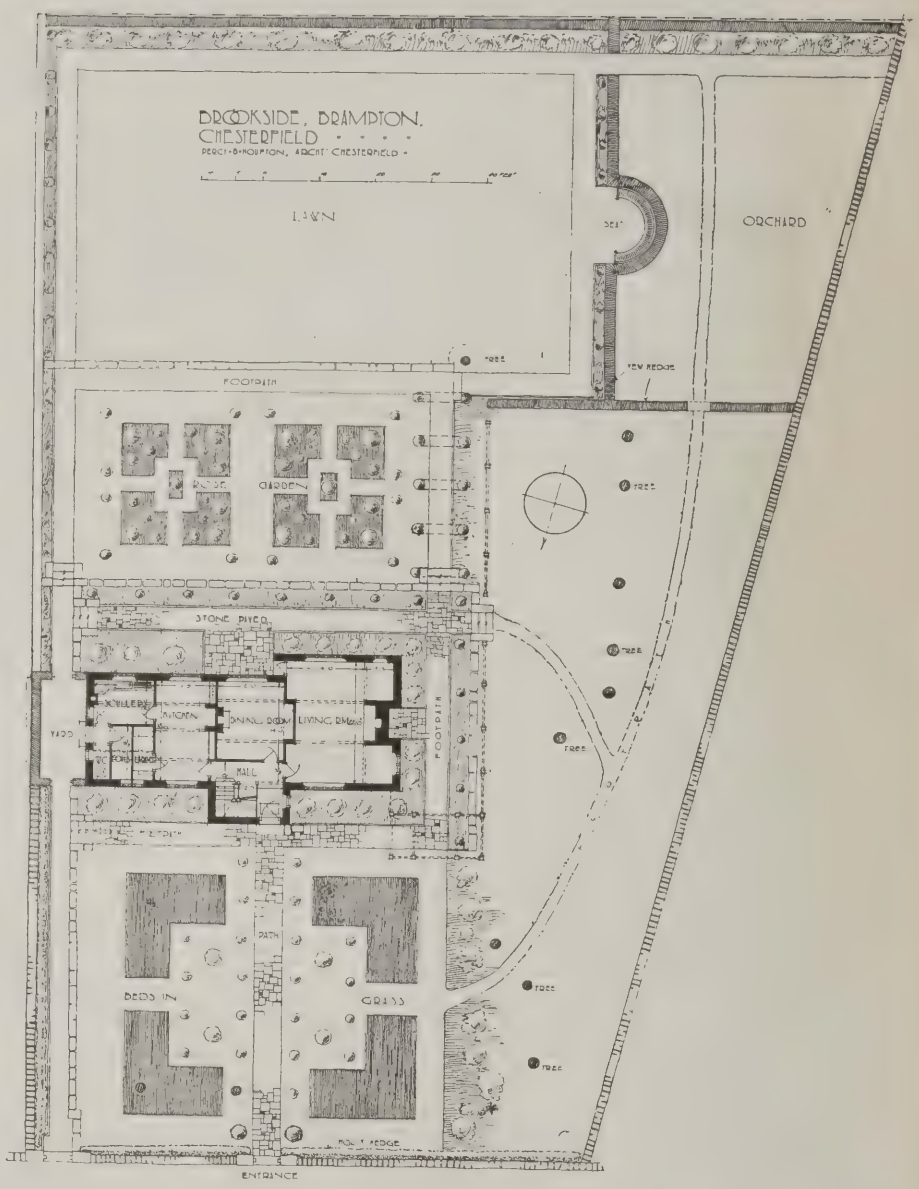
BROOKSIDE, BRAMPTON, CHESTERFIELD: ENTRANCE FRONT. PERCY B. HOUFTON, ARCHITECT.

PICTURE EXHIBITIONS.

Society of Painters in Water Colours.

This is not one of the best of the Society's exhibitions. The most important of the members who deal with figure subjects are not happy. Mr. E. R. Hughes has painted four companion pictures, of the same size and character, dealing with four phases of the moon, each of which embodies an emblematic figure worked into the moon as part of it. These are interesting in a way, and might be arranged to produce a decorative combination; but they are too fantastic in conception to satisfy one as pictures. In "Rude Boreas" Mr. Anning Bell has made a very effective composition of blue-draperied figures blown by the wind, but the whole thing is spoiled by the realistic figure of "Boreas" on the right blowing at the figures from his open mouth. A better sense of humour would have saved the artist from painting what can only raise a laugh. Mr. Crocket's "The Miracle of Roses" is an interesting picture, but as a work of art it does not compare favourably with his previous treatment of more charming though less ambitious subjects. Miss Fortescue-Brickdale has devoted her great gifts to the painting of "A Bread-and-butter Miss" (rather a mature one)—a finely dressed young lady of the early nineteenth century; capital work, but the subject was not worth it. Mr. Walter West's "The First-born" would be thought an admirable interior with Georgian figures, did one not compare it in memory with others still better. No artist can be always at his best, of course; but the fact remains that the exhibition contains no figure-picture of the highest order of interest.

The strength of the exhibition is therefore in landscape, which is as good as usual. Mr. Colin B. Phillip is the most important contributor, with his two fine landscapes, "September Afternoon, Isle of Skye" and "Foggy Morning, Helm Crag, Grasmere"; the latter an effective treatment of a very difficult subject. It is interesting to compare Sir E. Waterlow's "Bridge near Pulborough," an excellent water-colour drawing of the old school, with Mr. North's "By the Dancing Rills," not far from it. The latter is a most beautiful and delicate effect, but it is not Nature, and Sir E. Waterlow's is. Which is best—to produce a poetic but totally unreal effect, or to give the fresh reality of an everyday scene? There will be opinions on both sides, but we are inclined to back Nature to win in the long run. So evidently thinks Mr. Eyre Walker, who represents Nature in her poetic rather than prosaic realities in his eight drawings, of which No. 123, "A Welsh Mountain Stream," a small drawing in an out-of-the-way corner, should by no means be overlooked. Mr. Allan, Mr. Robert Little, and Mr. Paterson are artists who represent Nature indeed, but represent it in subordination to a special style of their own, often with brilliant results; but Mr. Paterson's "Clearing after Rain," is somewhat too "blottesque." Then there is Mr. Albert Goodwin, who sees cities and scenes in a dreamland of his own creating. "Taormina" is the most fascinating of these visions, the remainder of which, like other things in this year's exhibition, are not up to the artist's usual mark. Mr. Arthur Hopkins paints foreground so well (see "Studland Moor") that it is a pity he does not confine himself to this class of subject instead of giving so much of his time to figure subjects in which he never seems able to rise above the commonplace.



There are a good many architectural subjects, those by Mr. Reginald Barratt being, as usual, pre-eminent, especially his fine large drawing of the entrance to the fortress of Gwalior. Mr. Rooke exhibits a carefully studied view of the interior of Siena Cathedral, and Mrs. Allingham makes an interesting picture of the old Clergy House at West Hoathley.

The Leicester Gallery.

A collection of paintings in oil and water by Mr. Charles Sims, at the Leicester Gallery, is well worth attention. Conspicuous among them is the large finished study for his Royal Academy picture "The Fountain," which is perhaps even superior to the picture itself. The variety of talent and of happy effects of colour and composition in this collection is remarkable; indeed, Mr. Sims only needs to take his art a little more seriously to rank as one of the most remarkable painters of his time. As it is, he seems too often to be rather playing with his art, though even in these instances his brilliant ability is manifest. In another room is a collection of "water-colours of the East," by Mr. Henry Simpson. These are good and conscientious work, and include some effective treatment of architectural subjects, especially a fine view of St. Sophia, Constantinople; "A Caravansary, Beyrout," is also a very good study of old buildings.

The Goupil Gallery.

"Camera pictures by Alvin Langdon Coburn and Baron de Meyer," is the title of a collection of black and white work at the Goupil Gallery. We do not understand exactly what is the point of the title "Camera Pictures," but there is a great deal of good work in the collection. Those of Baron de Meyer, chiefly figure studies, perhaps stand highest, but there is not very much to choose between the two artists. Mr. Coburn has some good studies of architectural subjects—street scenes among the high buildings at New York and drawings of old buildings in Holland.

The Royal Scottish Academy.

For the first exhibition of the Royal Scottish Academy in their new buildings next year a special effort is to be made, and it is expected the exhibition will be on a much more comprehensive scale than usual. In view of the importance of the exhibition it has been thought advisable to elect thus early the Arrangements and Hanging Committee as follows:—Mr. A. K. Brown, R.S.A.; Mr. E. A. Walton, R.S.A.; and Mr W. S. Macgeorge, R.S.A. (painters); Mr. Pittendrigh McGillivray, R.S.A.; and Mr. Percy Portsmouth, A.R.S.A. (sculptors); and Mr. G. Washington Brown, R.S.A.; and Mr. John James Burnet, A.R.S.A. (architects).

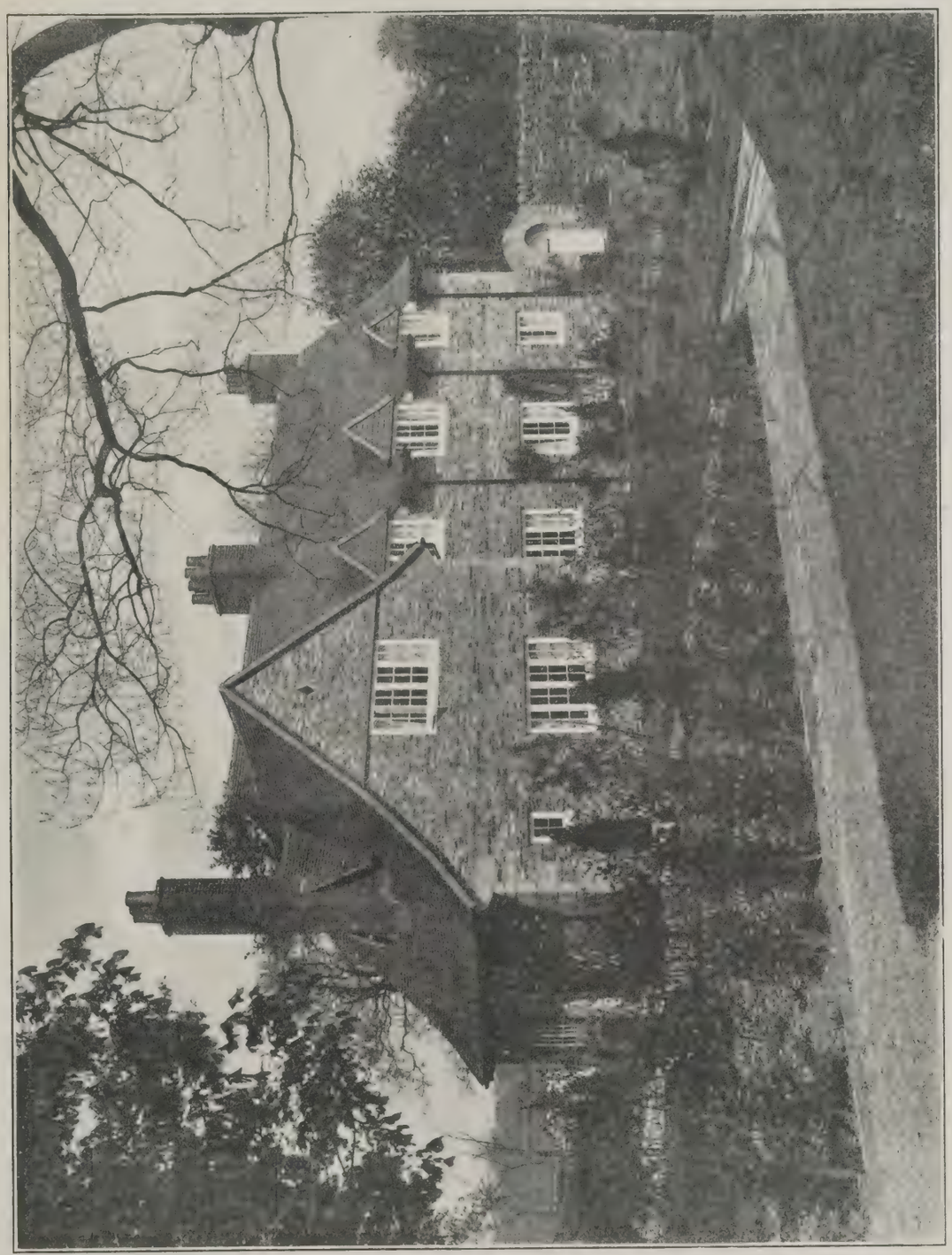


Photo: Richard Keene, Ltd.

The walling material is from thin beds of local sandstone, of a grey-brown colour, richly stained in parts a reddish ochre, built in mortar and pointed in cement. The quoins are of Derbyshire gritstone. The roofs are covered with Barton-on-Humber tiles.

BROOKSIDE, BRAMPTON, CHESTERFIELD: GARDEN FRONT. PERCY B. HOUFTON, ARCHITECT.

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CONCRETE AND STEEL SECTION

(MONTHLY.)

The L.G.B. and Reinforced Concrete. The Local Government Board has been often assailed for its attitude towards reinforced concrete. In short, while it will grant a loan for 30 years on a building of any other construction, it will only allow a period of ten years for the repayment of a loan required by any local authority for a reinforced concrete structure. All sorts of bodies and individuals, influential and otherwise, have tried hard to get the local Government Board to withdraw from this position of "non possumus." It seems little use arguing that other Government departments are in favour of reinforced concrete and employ it considerably, or that numerous eminent authorities and independent engineers are convinced as to its lasting qualities, and even proclaim reinforced concrete as a system of construction, both as regards life and freedom from decay, superior to most other building methods. Nor does it seem to avail to point to the anomaly, the illogicalness, of placing exposed steelwork in the category of construction upon which a 30 years' loan period will be granted, while reinforced concrete, in which the steel is protected against corosion, is only granted 10 years' grace. Apparently there is nothing to be said, though it may be possible by pegging away to secure the removal of the ban. Still, there are some aspects at least in which something may be said that is not quite hackneyed. First, in respect to the life and resistance of reinforced concrete. Of course, in reinforced concrete we cannot point to works of any great antiquity, and the Local Government Board may argue that until the construction has reached a sufficient age to show its lasting quality, it would be unwise to officially sanction it. Apart from the fact that such an attitude is one which, if generally pursued, would retard the progress of any art and discourage invention, it is hardly to be sustained as a sufficient reason for refusing to listen to argument when we have the resources of modern science at our command to test the efficiency of any new invention. We would urge that even if reinforced concrete is comparatively new it is not quite so recent an innovation as to afford no evidence of time in respect to its life. The late François Coignet, who was the inventor of "béton Coignet"—a special concrete composed of hydraulic lime and aggregates mechanically mixed in proper proportions —is said to have constructed work in 1851, in which he reinforced his "béton Coignet" with iron sections. He took a patent in this country in 1855 for a system in which he used a meshwork of iron rods, but previously, in 1854, W. B. Wilkinson, of Newcastle-on-Tyne, had also patented the construction of floors and beams of Portland cement concrete, and from that time onwards did a considerable amount of reinforced concrete in the North of England. Also a M. Lambot, who took out an English patent in 1855, showed a punt of reinforced concrete at the Paris Exhibition of 1853. Afterwards, Matthew Allen, a London builder, patented a reinforced concrete floor in 1862, and built several floors in London. Philip Brannon's patent is dated 1870, and he built houses at Islington and Walton-on-the-Naze. Monier was constructing reinforced concrete abroad from 1873 onwards, and Thaddeus Hyatt executed some reinforced concrete floors in London about 1877. Houses built with reinforced concrete slabs in 1877 by the late W. H. Lascelles, at Croydon, and W. E. Ward's reinforced concrete house, built in 1875 at New York, are standing to-day. There is a building with reinforced concrete floors, walls, and roof in Lincoln's Inn Fields, which was built in 1880. We need not carry our record further, for that takes us back 29 to 59 years. That, surely, is sufficient test of time. Then the second point upon which emphasis may be laid is that because failures have occurred in reinforced concrete, of which the Engineer to the Local Government Board is aware, that is no proof that reinforced concrete construction cannot be satisfactory or that the material possesses inherent weaknesses. Brickwork, masonry, carpentry, and steelwork can be safely constructed, notwithstanding the many failures therewith. None of the failures in reinforced concrete is unexplained—all show negligence or gross carelessness, mostly in construction, and few show weakness in design. It is a simple matter to insist upon proper safeguards in construction and to test work on completion if any doubt is existent. The Local Government Board is not entirely oblivious to argument, however, for it will be recollected that it was induced to reduce the severity of its rural, intermediate, and urban codes of building by-laws, the first-named now permitting reinforced concrete structures to be erected without let or hindrance. The Board is therefore proceeding in one direction to make provision for this new method of construction, and it is, apparently, quite ready to meet local authorities who wish to adopt by-laws for such construction, there being several bodies who have made such provision and others who have started on the road by obtaining by-laws allowing the erection of steel frame buildings. So we must not despair. The Local Government Board's inspectors, of course, only act on instructions, and until they are permitted by the heads of their department to go into the matter of reinforced concrete construction they must dismiss it, except on a 10 year loan period. There have been anomalous cases in which longer loan periods have been granted in reinforced concrete by inadvertence or misunderstanding, but they do not constitute a precedent. Therefore, the responsible technical officer and his departmental chief are the ones that remain to be convinced. Mr. John Burns, the President, is a man of strong personality and fixed purpose, and if he is persuaded, as seems likely, that reinforced concrete is a doubtful system of construction, and one that should be discouraged, he will not be easy to convince, more especially as we have no strong trade union to help us in the matter. But if we do employ some unskilled labour in the execution of reinforced concrete work, this is no more than in other building trades. We also need much skilled labour, both on the part of the workmen and superintendents. Carpenters are employed on the centering and smiths on the steel, engineers on the concrete mixers, hoisting plant, and pile drivers, and the foremen and gangers are trained skilled craftsmen. The trade unions for these workers might obtain attention if they said something, and as reinforced concrete is a truly economical form of construction, it should appeal to such a powerful advocate of economy in local administration as Mr. John Burns. The extended employment of reinforced concrete is bound to redound to the benefit of the community at large, both in the saving of labour and material reduction of fire risk, longer life of structures, sanitary value, and general efficiency. Its extensive employment in Europe and America has proved that its fundamental advantages must cause it to forge ahead, and therefore such obstacles in the path of its progress as the present attitude of the Local Government Board in England are doubly regrettable; first, because they constitute a drag on progress; and secondly because of their futility. We cannot but think that before long the Local Government Board will realise the error of its way and will endeavour to make amends by pushing forward provisions to permit reinforced concrete to be constructed under local building by-laws in all districts, and will without more delay remove the restriction which has too long been suffered to discourage local authorities from employing it freely.

Water Tanks etc., in Reinforced Concrete. Reinforced concrete is particularly suitable for the construction of cisterns and tanks of every description. Wherever sand and gravel are found on or near the site there is the additional advantage of cheapness and rapidity of erection. For the purposes of waterproofing it is usual to plaster the internal surfaces with a rich cement mortar mixed 1 to 1, or a thin layer of asphalte is sandwiched in the concrete. A coating of tar or similar substances is often used but wants renewing from time to time. If the tank is sunk, asphalte coating is used externally to separate the structure from the ground. The bottom slab is often made of ordinary concrete, reinforcement being resorted to where the foundations are bad or doubtful. Tanks for the storage of acids are coated with a mixture of glycerine and red lead, or any of the many patent compositions on the market. Another good finish for such a tank is a lining of glass slabs closely fitted. As regards shape, circular tanks are more reliable than square ones; the latter are likely to become defective at the corners, and it is necessary to adopt heavy reinforcements to prevent bending or bulging out of the side wallings. The additional amount of materials required necessarily adds to the cost. As the stresses increase towards the bottom of tank, it is necessary to build in extra reinforcements for the lower portions of sides or, by equal distances, to increase the sectional area of rods. Vertical rods are principally adopted in order to keep the main rods in proper positions during concreting. The walling is made, as a rule, 4 inches thick at the top, increasing to 5 or 6 inches at the bottom. In case of large areas expansion joints must be provided. Particular attention must be paid to the workmanship, and care taken that the concrete has a uniform density and the various batches, as used, have a uniform quantity of water so as to set and dry out evenly.

REINFORCED CONCRETE SYSTEMS.

THE MOSS SYSTEM.

Messrs. William Moss and Sons, Ltd., of Queen Anne's Chambers, Westminster, who have carried out a considerable amount of reinforced concrete work as contractors upon various well-known systems, have now established a separate and special branch for executing this form of construction, under the direction of Mr. H. M. de Colleville, A.R.I.B.A., their chief engineer. Mr. de Colleville has been prominently connected with reinforced concrete design for some time past, and has been responsible for the design of many of the leading structures of reinforced concrete erected in the United Kingdom in recent years. While Messrs. William Moss and Sons, Ltd., do not propose tying themselves to any one system, holding that it is unwise to adopt any particular system or any particular reinforcing material for all the various members of a structure under the different states of stress to which they are subjected, they have recently introduced a system which is new to this country, though well known on the Continent, where it has been very extensively used, namely, the Pohlmann system. The claims put forward for this system are, in short:-

(1) Extreme simplicity; (2) ease of connecting to other steelwork; (3) rapidity of construction; (4) certainty of reinforcement remaining in proper position as required by the designer; (5) proper spacing and length of shear members; (6) positive bond between tension reinforcement and the concrete; and (7) absence of risk of damage in transit.

The distinctive feature of the Moss or Pohlmann system is the use of a joist-shaped main steel member in beams. There is no number of small rods embedded in any beam, but simply one section of a joist with reduced top flange. In the composite beam formed by using steel for the tensile member and the concrete of the floor plate for the compressive member, the two portions require to be united together in some secure way. In the Moss system this is attained by perforating the steel joist and inserting steel loops in the perforations, locked in position by steel wedges, to serve the triple purpose of giving mechanical bond, uniting the layers of concrete making up the beam, and reinforcing same against shear (diagonal tension) stresses. Fig. 1 shows the Moss reinforcement, and Fig. 2 gives the standard sections in use, while Fig. 3 shows their general application to a reinforced concrete floor. The weight of the various sections is (a) 21.6lbs.; (b) 17.3lbs.; (c) 13.2lbs.; (d) 12lbs.; (e) 9.1lbs.; (f) 6.77lbs.; (g) 5.22lbs. It will be noticed that the floor plate in this system is reinforced with rods in the usual manner, and the beams utilise a portion of same to serve as the compression flange of a T.

Before describing some special details of the system, we may refer briefly to some of the advantages that have been claimed for it in addition to the general claims put forward above. First, then, it is suggested that the combination of perforations, straps, and wedges as shown in Fig. 1 ensures an absolutely secure bond between the steel and concrete, without depending solely upon the adhesion of the steel to the concrete. Secondly, the design of the steel reinforcement in beams on this system in all cases involves fewer members and thereby effects considerable saving in the cost of fixing. Thirdly, the centering needed for the construction of the slabs or arches between the beams may be fixed to the steel girders so that no struts or props are required to the main floor or slab centering. The complete arrangement is a simple one and permits the placing of the steel in exactly the right position according to calculations. Beams reinforced on this system can be connected to cast iron or steel columns and stanchions without any difficulty, while connections to reinforced concrete columns are, of course, made in the usual manner. Another important point to remember is that if deemed necessary the whole of the concrete work in connection with the Moss floor may be carried out after the building has been roofed in, the steel girders being sufficiently strong to carry the incidental loads occurring in course of erection, thus ensuring great rapidity if necessary. Transmission shafts, travelling cranes, and other machinery may be easily fixed after completion of the floor, whereas with other reinforced concrete floors any subsequent fixing is difficult, and in many cases interferes considerably with the strength of the floor.

It is argued generally by Messrs. William Moss and Sons, Ltd., that their system ensures greater safeguard in practice than ordinary reinforced concrete construction, because the strength of ordinary reinforced concrete beams depends upon the adhesion between the concrete and the steel bars, and loading tests on such constructions have shown in many cases that rupture results long before the maximum stress that the steel will sustain has been attained, owing to the failure of the bond, the adhesive stress becoming excessive. It is for this reason that small steel sections are used in ordinary reinforced concrete construction, but this has its disadvantages because, in addition to the difficulty of handling, there is the difficulty of ensuring adhesion to a great number of small sections. Furthermore, it is difficult to keep the reinforcements in actual work in their correct positions as designed, owing to the liability in placing the concrete in the confined position around these bars without displacing some of them. It has often been found in practice that some of the bars are worked up during the concreting, so reducing the effective depth of the girder. Also in ordinary reinforced concrete one often sees stirrups provided to take diagonal tension which have no rigid attachment to the bars, nor any lock into the concrete, simply depending for their effect on adhesion. Now, in the Moss system, there is no need to worry about adhesion, because a complete bond is secured by the perforations and the loops, which are fastened to the steel joists by steel wedges (see Fig. 1), while the special binding straps are looped round so as to completely tie the concrete to the tensile reinforcing member. These loops or stirrups may, moreover, be graduated in spacing and in size to the stresses to be

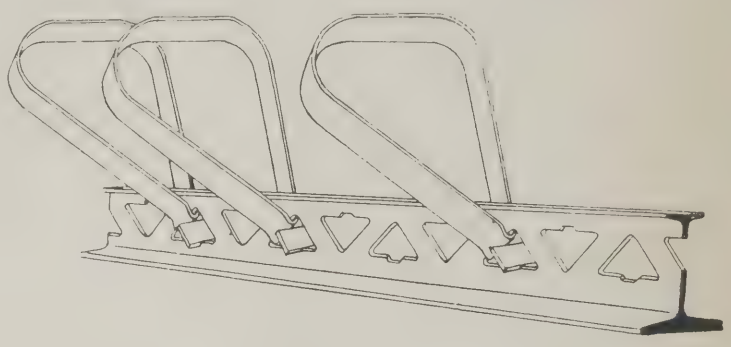


Fig. 1. Showing how the straps are fastened to the perforated girders.

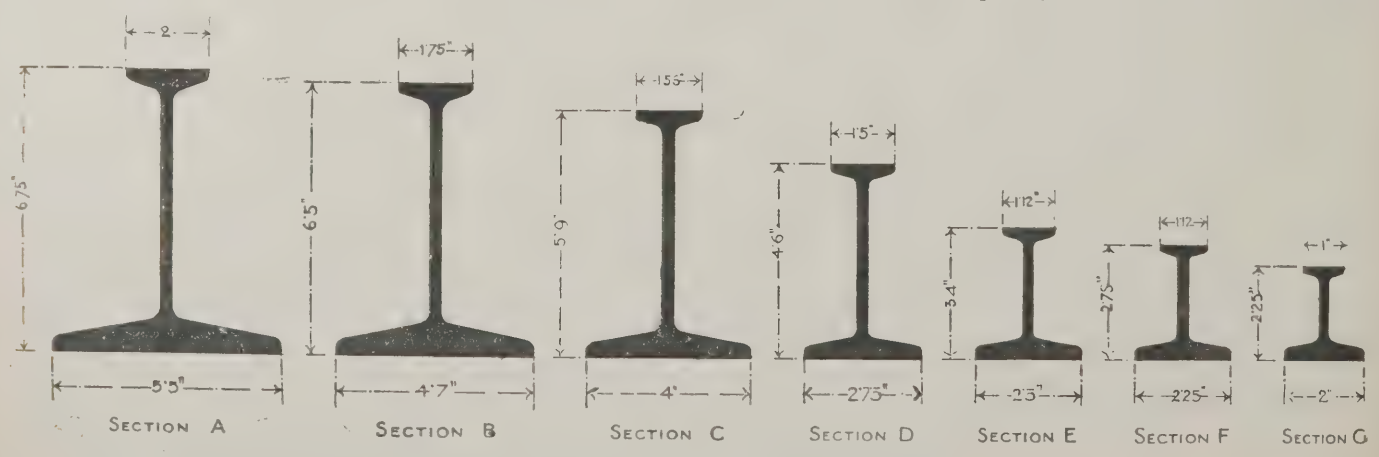


Fig. 2. Standard sections for constructing Moss floors.

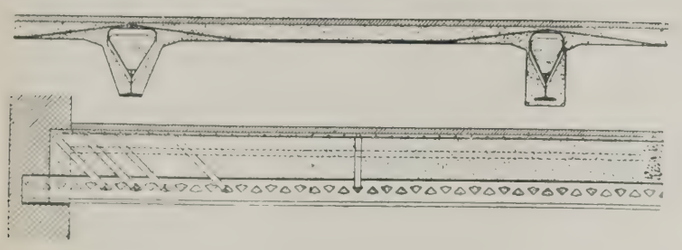


Fig 3. Sections of the Moss floors.

resisted. The usual plan, of course, is to use for the stirrups metal of a uniform section, the increased quantity of steel needed by reason of the increase in the shearing stress being obtained by a closer spacing of the stirrups. This plan Messrs. William Moss and Sons, Ltd., adopt. The stirrups, too, it will be noticed, are inclined at an angle of 45 degrees, which is theoretically the correct angle in a beam if we assume that the concrete affords no resistance in tension, and so is incapable of resisting diagonal tensile forces resulting from shear.

Figs. 4 and 5 show an arrangement for a floor of long span carrying heavy loads. The main beam supports the intercepting or secondary beams, which in turn carry the reinforced concrete flooring. Both main and secondary beams consist of the special standard steel girders, combined with concrete as before described, and no bolts, rivets, or fishplates are required for connecting them. The loops are correctly disposed near the ends of the special sections. Besides uniting the top concrete flange to the lower or tensile member of the T, they are resisting the horizontal shearing stresses which attain their maximum near the ends of the beams.

Fig. 6 shows the arrangement of the steelwork for continuous beams, the flat bars being bent up over supports in order to take up the negative moments produced at these points.

These special joists or girders have been used for other purposes than simply the construction of floors. For instance, Fig. 7 shows their use for the construction of a reinforced concrete foundation for a large chimney in unreliable ground, the reinforcement, as will be seen, consisting of the special perforated joists connected by L irons or rounds. Bridges have also been built on this system, and domes and roofs of all kinds have been reinforced with the perforated joists. In some cases these have been supplied bent to the shape. Messrs. William Moss and Sons, Ltd., are prepared to (1) give estimates for the steel reinforcement only; (2) supply complete designs and give estimates for the steelwork only; (3) where desired, carry out the actual construction of the work in every branch under guarantee.

The Pohlmann system has met with great success in Germany, where it has been used extensively in Government buildings.

Figs. 8 and 9 are views of work in course of construction. The following is a list of a few of the largest structures carried out on the system:—

Palace of Justice, Berlin-Moabit, (40,000 metres²); factory for Siemens and Halske

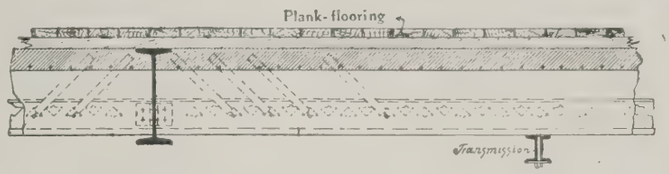


Fig. 4. Combination with main girder: longitudinal section.

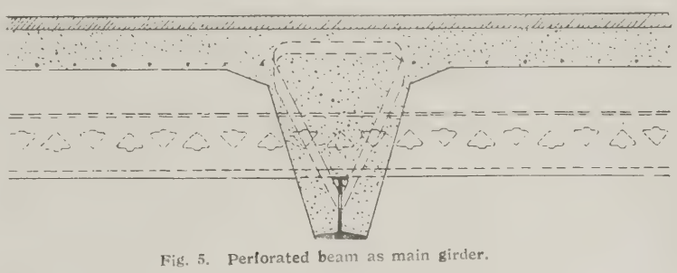


Fig. 5. Perforated beam as main girder.

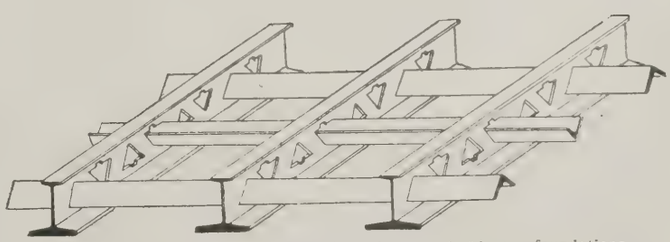


Fig. 7. Grill of perforated girders for column and chimney foundations in unreliable ground.

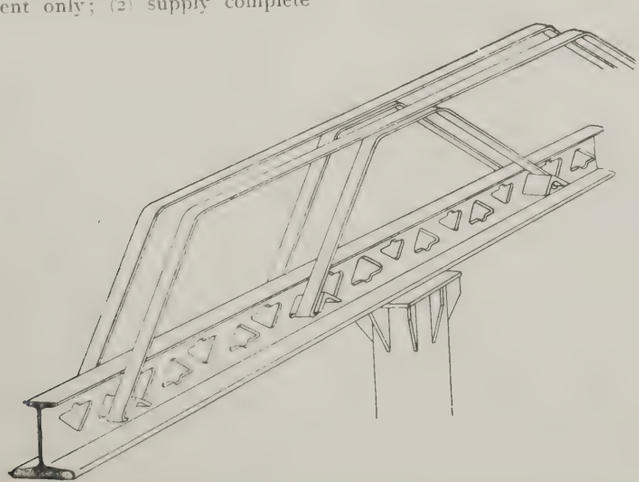


Fig. 6. Framing of flat-bars over the middle support of a continuous beam.

A.G., Wernerwerk, Spandau (50,000 metres²); offices and factory for Siemens and Halske A.G., Charlottenburgerwerk (30,000 metres²); Harbour Werehouses, Templehof, on the Teltow Canal (18,000 metres²); factory, Arnold Kuthe, Lichtenburg (16,000 metres²); business premises for Hiller and Kuhlmann, Charlottenstrasse 7 (12,000 metres²); factory for H. Mittag, Gerichstrasse 23 (15,000 metres²); Industrial Palace, Schlesische Strasse 29/30 (14,000 metres²); and warehouse in Moldau Docks, for Finance Deputation, Hamburg (10,000 metres²).

We may mention, in conclusion, that Messrs. William Moss and Sons, Ltd., were the contractors for the following important works on various systems: Floors and ceilings, Leicestershire and Rutland Asylum, Narborough; roofs of extensions at National Gallery; bridge, stands, and other works at York Racecourse; water towers at York; Ramsdale Hill Reservoir, Daybrook, for Nottingham Corporation; floors at Leicester Causeway Schools, Coventry; floors, Elementary Schools, Gainsborough; and Keldgate Reservoir for the City of Hull.

BOOKS.

The Inspector of Reinforced Concrete.

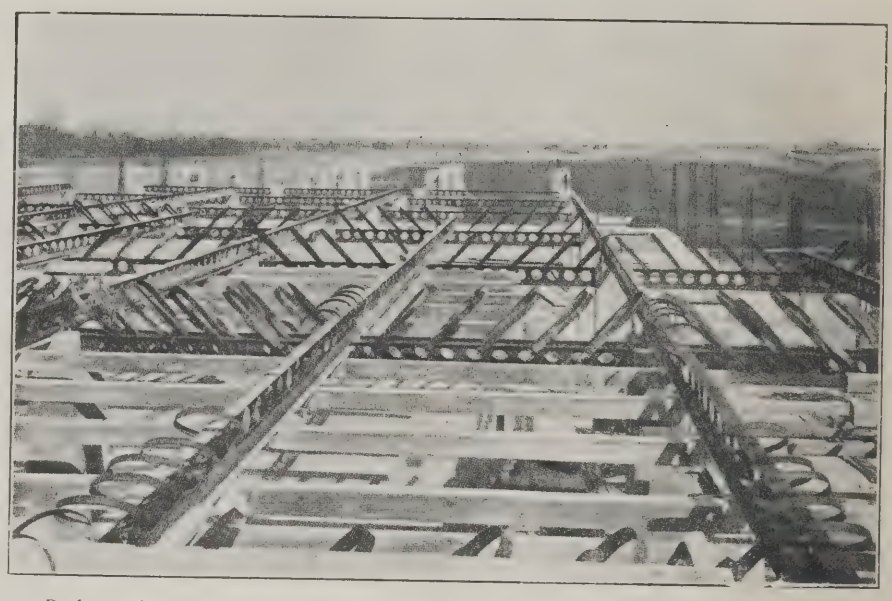
"Inspector's Handbook of Reinforced Concrete." By Walter F. Ballinger, A.Am.I.A., M.Am.Soc.C.E., and Emile G. Perrot, A.Am.I.A., A.M.Am.Soc.C.E. Price 4s. nett. London: Archibald Constable & Co., Ltd.

The superintendent or inspector of reinforced concrete is a very important person, for on him depends the strength of the structure as much as upon the engineer who designed it. The nature of reinforced concrete is such that intelligence must be used in its execution. Almost all failures that have occurred were attributable to errors in workmanship. The inspector not only has to see that the drawings are rightly being interpreted and that the workmanship is good, but he must keep an eye open for any little discrepancies in the drawings. He must be acquainted with the practical methods of carrying out such work, but must also be familiar with the theory of the subject in a general way. This book by two American authors who have had a great deal of experience in reinforced concrete construction contains much valuable information to the superintendent, and we advise him to purchase it. In an appendix calculations are dealt with and short formulæ given, together with some diagrams that will be useful in designing or checking work. The diagrams for the strength of T beams are particularly useful. The book is only a small one, and we wish that it had been larger, with more illustrations included as examples. We hope that future editions may be improved in this way.

A Pamphlet on Design.

"Reinforced Concrete Construction: A Handbook for Engineers and Architects." By W. Noble Twelvetrees, M.I.Mech.E., A.M.I.E.E., &c. London: "The Local Government Officer," 36-38, Whitefriars Street, E.C. Price 1s.

This is another of the series of short essays on reinforced concrete design and practice which Mr. Twelvetrees seems to be writing for various journals and republishing in pamphlet form to a uniform size. Mr. Twelvetrees in this pamphlet of 40 solid pages repeats what has been said a good many times now, but the subject is not hackneyed to all, and to those unfamiliar with reinforced concrete design it may serve a useful purpose. We do, however, doubt the advisability of repeating all the elaborate formulæ for the consumption of fresh readers. It would surely be better to give just a short and clear exposition of the main principles entailed in the calculations and leave those who wish to go into the matter more fully to consult the text-books. Empirical formulæ are good enough for the average building trade reader, and some diagrams might have been advantageously furnished to give accurate figures in conjunction therewith rather than this elaboration and repetition of what is bound to be confusing to the student.



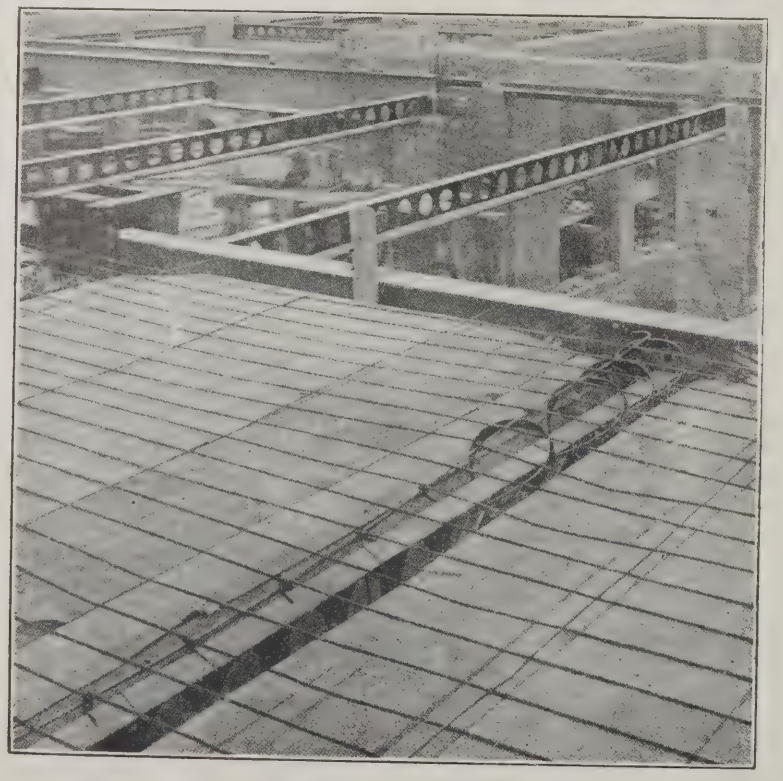
Dock warehouse on the Teltow Canal, Tempelhof, near Berlin. (To carry heavy loads.)

FIG. 9. THE MOSS SYSTEM.

An American Specialist on Reinforced Concrete.

"Concrete Steel Construction." By C. A. P. Turner, M.Am.Soc.C.E. Price $2o. Minneapolis, Minn.: Farnham Printing and Stationery Co.

We can often learn a great deal from the writings of specialists who are engaged in the business of reinforced concrete, especially when they put forward their own pet theories and their practical experience in as impersonal a way as they can, but we do like to see those views put forward in a straightforward way, without "high diplomacy" and innuendo. The writings of commercial specialists are always biased and open to suspicion, and that should make them very careful in casting slurs upon their competitors, especially by innuendo. The trade catalogue is the more proper means of vaunting their superiority over others, and of attacking in front, on flank or in rear, and we do not hold that they should confine themselves to that medium, and never write what purport to be text-books or treatises, but we think that it is their duty to the public not to issue a catalogue in the guise of a book. Now, this work by Mr. C. A. P. Turner, the inventor of the "Mushroom" system of reinforced concrete and an American specialist engaged in the trade of reinforced concrete pretends to be a treatise, but we can only view it in the light of a catalogue. It is full of the author's personal views on the theory and practice of reinforced concrete, which, expressed in a proper way, would be valuable and deserving of attention. He says much that is to the point, and expresses opinions that would be worthy of respect on our part, were it not that he has seen fit in this book to attack his rival specialists unmercifully. He criticises rival systems freely, and goes out of his way to refer to any failures he can find with a view to pointing out how much superior his own methods are, and is not at all generous in offering the explanations or excuses which are obvious.. Most of the failures he refers to are attributable to contractors' carelessness, negligence or scamping, errors in workmanship, or the unknown, and it is quite unfair to use them to belabour other systems. He himself refers to some mishaps he has had from similar causes, and explains them glibly. We ask him how he would like having them held up by his rivals? This book chiefly describes the "Mushroom" system, and though it is in the nature of a catalogue, certainly contains interesting reading.



Second stage of the construction: view of floors before concreting.

FIG. 8. THE MOSS SYSTEM. SIEMENS AND HALSKE, WERNERWERK, SPANDAU.

A Concrete Dictionary.

A technical dictionary in six languages—German, English, French, Russian, Italian, and Spanish—devoted to "Reinforced Concrete in Sub and Superstructure," has for its London publishers Messrs. Constable and Co., Ltd., 10, Orange Street, Leicester Square, by whom it is sold at 6s. net. It has been compiled by Heinrich Becher, who has had the assistance of many expert coadjutors. About 900 illustrations and numerous formulæ are included.

STANDARD BUILDING REGULATIONS FOR THE USE OF REINFORCED CONCRETE IN THE U.S.A.—PART I.

[This code was voted on at the 1909 Cleveland convention of the National Association of Cement Users in the United States, was amended at the Chicago convention at the end of February, and will now be subjected to final ballot.]

Definitions.

1. The term "Reinforced Concrete" shall be understood to mean an approved concrete which has been reinforced by metal in some form so as to develop the compressive strength of the concrete.

2. Reinforced concrete may be used for all classes of buildings if the design is in accordance with good engineering practice and stresses are figured as indicated in these regulations.

3. There shall be no limit upon the height of buildings of reinforced concrete except as limited by the requirements in these regulations.

4. Before permission is granted by the Building Department to erect any reinforced concrete building, complete plans, accompanied by specifications, signed by the engineer and architect, must be filed with the Building Department and remain on file for public inspection until the building is completed.

5. The Building Department shall have access to the computations, which shall give the loads assumed separately, such as dead and live loads, wind and impact, if any, and the resulting stresses.

6. The specifications shall state the qualities of the materials to be used for making the concrete, and the proportions in which they are to be mixed.

7. Upon the completion of the building the engineer and architect shall issue, under the approval of the Building Department, signed certificates, to be posted on each floor of the building, stating the safe carrying capacity per square foot.

8. There shall be kept an exact record of the progress of each operation where the same can be inspected by the Building Department. These records shall show the date of placing of all the concrete and date of removal of the forms, and must be turned over to the Building Department when the building is completed.

9. Reinforced concrete walls may be used in place of brick or stone walls with thickness reduced two-thirds the thickness called for for brick walls. Curtain walls shall not be less than 4ins. thick.

10. Concrete walls must be reinforced in both directions. The maximum spacing of reinforcing bars shall be 18ins. between centers, reinforcement in both faces of the wall being considered. Total reinforcement shall not be less than one-fourth of one per cent.

11. Wherever floor constructions are built with a combination of tile or other fillers between joists, the following rules regarding the dimensions and methods of calculations of construction shall be observed.

(*a*) Ratio of minimum depth to clear span of joist shall not be greater than one to eighteen.

(*b*) Wherever a portion of the slab above the tile joist shall be considered as acting as a T-beam section, the slab portion must be cast monolithic with the joist and must have a minimum thickness of at least 2ins. on all spans. Otherwise, all regulations applying to T-beams shall apply to tile and joist construction.

(*c*) Where the joists are figured as rectangular beams, in accordance with the standard regulations for this type of beams, the slab shall be considered as independent of the structural part of the building.

(*d*) Wherever porous tiles, or other materials, which by their nature will absorb water from the concrete, are used between the joists, care must be taken to thoroughly saturate the tiles, or other materials, with water immediately before the concrete is placed.

(*e*) Reinforcement for slabs over joist construction below 30in. centers need not be closer than 24ins. in each direction.

Cement.

12. Only Portland cement shall be used in reinforced concrete structures. Portland cement shall meet the requirements of the Standard Specifications for Cement of the American Society for Testing Materials. (See Standard No. 1 of the National Association of Cement Users.)

13. Tests of cement used in building operations shall be made from time to time under the supervision of the Building Department in accordance with the preceding specifications. No brand of cement which has not met these requirements shall be used.

Aggregates.

14. Extreme care shall be exercised in selecting the aggregate for mortar and concrete, and careful tests must be made, where any doubt exists, of the materials for the purpose of determining their qualities and the grading necessary to secure maximum density or a minimum percentage of voids.

15. Fine aggregates shall consist of sand, crushed stone or gravel screenings, passing when dry a screen having ¼in. diameter holes, and not more than 6 per cent. passing a sieve having 100 meshes per lineal inch. It shall be clean, silicious material, free from vegetable loam or other deleterious matter.

16. Mortars composed of one part Portland cement and three parts fine aggregate by weight when made into briquets should show a tensile strength of at least 70 per cent. of the strength of 1.3 mortar of the same consistency made with the same cement and standard Ottawa sand.

17. Coarse aggregate shall consist of inert material, such as crushed stone, or gravel, which is retained on a screen having ¼in. diameter holes; the particles shall be clean, hard, durable, and free from all deleterious material. The maximum size of the coarse aggregate shall be such that it will not separate from the mortar in laying and will not prevent the concrete fully surrounding the reinforcement or filling all parts of the forms.

18. The maximum size for reinforced concrete shall be such that all the aggregate shall pass a 1¼in. diameter ring.

Cinder Concrete.

19. Cinder concrete shall not be used for reinforced concrete structures; it may be used for fireproofing. Where cinders are used as the coarse aggregate they shall be composed of hard, clean, vitreous clinker, free from sulphides, unburned coal, or ashes.

Reinforcement.

20. Medium steel for reinforcement of concrete shall be made from new billets and shall conform to the requirements of the specifications for structural steel adopted by the American Railway Engineering and Maintenance of Way Association.

The Building Department shall at its option in lieu of this grade of steel accept medium steel meeting the requirements of the manufacturers' standard specifications, provided the Building Department shall be furnished with the results of two tests made originally by the manufacturer. Tests being taken from each melt, one for bending and one for tension, and provided further that the contractor furnishing such steel shall furnish such additional bars of all sizes for thoroughly testing by the Building Department.

21. High elastic limit steel shall have (1) an elastic limit of 50,000 to 65,000 lb. per square inch, (2) a minimum elongation in per cent. in 8in. of 1,000,000—(ultimate strength), and (3) be capable of cold bending 180 deg. around four diameters without fracture.

Mixing.

22. General.—The ingredients of concrete shall be thoroughly mixed to the desired consistency, and the mixing shall continue until the cement is uniformly distributed and the mass is uniform in colour and homogeneous.

23. Methods of measurement of the proportions of the various ingredients, including the water, shall be used, which will secure separate uniform measurements at all times.

24. Machine Mixing.—When the conditions will permit, a machine mixer of a type which insures the proper mixing of the materials throughout the mass shall be used.

25. Hand Mixing.—When it is necessary to mix by hand, the mixing shall be on a water-tight platform, and especial precautions must be taken to turn the materials until they are homogeneous in appearance and colour.

26. Consistency.—The materials must be mixed wet enough to produce a concrete of such a consistency as will flow into the forms and about the metal reinforcement, and which, on the other hand, can be conveyed from the mixer to the forms without separation of the coarse aggregate from the mortar.

27. Retempering mortar or concrete, i.e., remixing with water after it has partly set, shall not be permitted.

Placing Concrete.

28. General.—Concrete shall be placed in the work immediately after mixing and deposited and rammed or agitated by suitable tools in such a manner as to produce thoroughly compact concrete of maximum density. No concrete should be placed until the reinforcement has been placed and firmly secured by wiring or other methods to prevent displacement.

29. The faces of concrete exposed to premature drying shall be kept damp for a period of at least seven days.

30. Before placing the concrete care shall be taken to see that the forms are substantial and thoroughly wetted, and the space to be occupied by the concrete free from debris. When the placing of the concrete is suspended, all necessary grooves for joining future work shall be made before the concrete has had time to set.

31. When work is resumed, concrete previously placed shall be roughened, thoroughly cleansed of foreign material and laitance, drenched and slushed with a mortar consisting of one part Portland cement and not more than two parts fine aggregate.

32. Placing in Water.—Concrete should not be placed in water, unless unavoidable. Where concrete must be placed under water, unusual care must be taken to prevent the cement from being floated away.

33. Freezing Weather.—Concrete shall not be mixed or deposited at a freezing temperature unless special precautions are taken to avoid the use of materials containing frost or covered with ice crystals, and to provide means to prevent the concrete from freezing after being placed in position and until it has thoroughly hardened.

Placing Reinforcement.

34. The reinforcement shall be accurately located in the forms and secured against displacement.

Joints.

35. Reinforcement.—Wherever it is necessary to splice reinforcement by means of lapping, the length of the lap shall be determined upon the basis of the safe bond stress and the stress in the bar at the point of splice; or a connection shall be made between the bars of sufficient strength to carry the stress. Splices at the point of maximum stress must be avoided.

36. In columns large bars (bars with area equal to 1¼in. diameter round or larger) shall be properly butted and spliced. Smaller bars may be lapped as indicated in paragraph 35.

37. Concrete.—Reinforced concrete work shall be stopped at such points that the joints will have the least possible effect on the strength of the structure. Footings shall be cast to their full depth at one operation.

(*a*) Columns.—Work in columns shall be stopped at the underside of the lowest projection at the head of the column.

(*b*) Beams and Girders.—Construction joints in beams and girders shall be vertical and within the middle third of the span. Any concrete which may run past the bulkheads must be cleared up before the concreting of the next section is started. Where brackets are used, the bracket shall be considered as a part of the beam or girder.

(*c*) Slabs.—Construction joints in slabs shall be near the center of the span. No joint will be allowed between slab and beam or girder.

Removal of Forms.

38. Under no consideration shall forms be removed until the concrete has hardened sufficiently to permit their removal with safety.

39. Floor Slabs and Beams.—Forms shall not be removed from floor slabs in less than seven days. Sides of beams may be removed at the same time as the floor slabs provided original supports under beams and girders are left in place.

40. Columns.—Where original supports remain under beams and girders coming to the columns, the forms shall not be removed from the columns in less than four days.

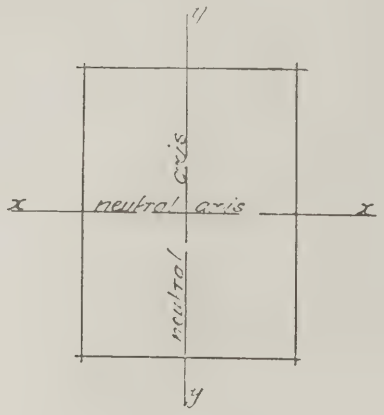
Removal of Supports.

41. Beam and Girder Supports.—The original supports for all beams and girders must remain in place at least ten days, but all beams and girders having more than 30ft. span from center to center of support shall be considered as special cases and shall be subject to inspection of the Building Department before removal of supoorts. The length of time before the removal of forms shall be increased in all cases and additional time for each and every day that the thermometer registers anytime during the day or night below 35 degrees Fahrenheit.

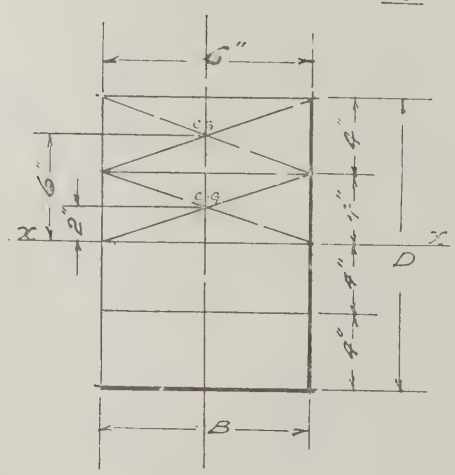
Part II.

The second part of these rules, dealing with the questions governing design and calculations for the design of structures, will be given in a subsequent issue.

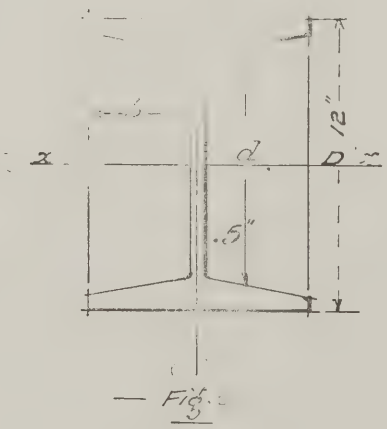
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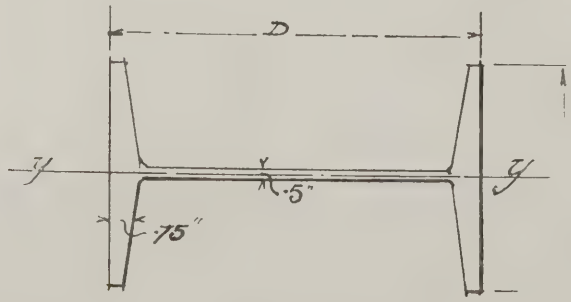
— Fig. 1. —



— Fig. 2. —



— Fig. 3 —



— Fig. 4 —

DIAGRAMS ILLUSTRATING "THE STRENGTH OF ROLLED STEEL BEAMS."

THE STRENGTH OF ROLLED STEEL BEAMS.

A ready knowledge of how to ascertain the value of the properties of any section is necessary to the designer if he desires to use the material to which he is committed with the greatest economy. An inspection of a "Beam Sheet" or "Handbook" of sections, such as is usually published by the rolling mills, will reveal two divisions, one of which deals with the "Properties of sections," and the other sets forth the safe loads uniformly distributed over spans of varying length. It is probably the latter for which the "sheet" or "hand-book" is in greater demand.

How many are there, who, if called upon to select their beams from a sheet, or table, the information on which was confined to the properties of the various sections, could do so with precision and certainty? And again, how many who use the handbooks could fill in from their own calculations and analysis the information required under the various headings of "Moment of Inertia," "Radius of Gyration," "Section Modulus," etc. Yet a knowledge of the above is necessary in making selections of rolled steel beams for use under various conditions of loading, and also in the designing of stanchions and struts. In structural work these properties consist of, "The Moment of Inertia," "The Modulus Section," and the "Radius of Gyration."

Moment of Inertia.

The first operation then is to determine the value of the "Moment of Inertia," from which the remaining two properties can be easily found.

The definition of "Moment of Inertia" will be found in all works on mechanics. It is a mathematical expression which is a constant value for any particular section, and is an indication of the capacity for strength of the section to which it refers.

The mass of a body is no indication of its strength from a structural point of view—that depends upon the shape or the disposition, or distribution, of the material about a line passing through its centre of gravity.

By reference to the section in Fig. 1, it will be seen that two lines or axes, "x—x" and "y—y," pass through the centre of gravity of the figures, these lines represent the neutral axes of the sections or figures, and although the moment of inertia may be found about any other axis, it is about these two axes that the value of inertia is of the most practical utility in the case of beams and stanchions.

The definition of the moment of inertia of a plane figure may be described as follows:—

"If a section or plane surface be imagined to be divided into an infinite number of thin laminae, and if the area of each lamina be multiplied by the square of the distance between the centre of gravity of the lamina and the axis, the sum of all these products is the moment of inertia of the plane surface with respect to that axis."

A reference to Fig. 2 will assist in simplifying the above. Let us suppose that the number of laminae consist of two on each side of the neutral axis, x—x. The moment of inertia of the rectangle on that assumption will be

$$(5\times4\times6^2)+(5\times4\times2^2)=960\times2=1920$$

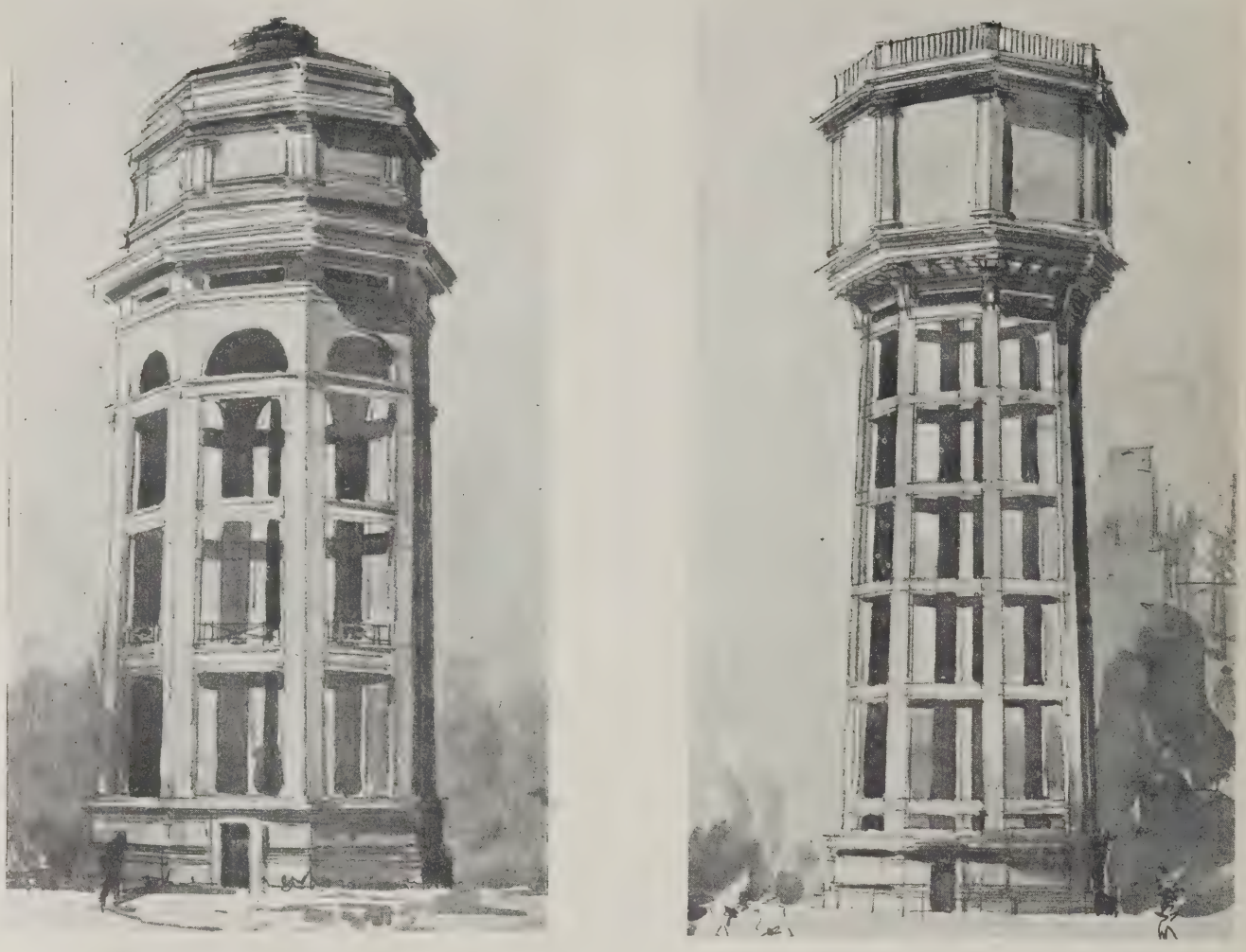
It is evident that the process of division into the laminæ could continue *ad infinitum*, and that the greater the number of divisions or laminæ the nearer the true moment of inertia would the resulting value approach. By the ordinary means of calculation it would be impossible to attain this result; but by the calculus we are enabled to deduce formula for finding the value of the inertia of most of the elementary figures.





These views show the towers in course of construction. That on the left holds 100,000 gallons and is 100 feet high. That on the right is carried on concrete piles, 40 feet long it is the same height, but holds 20,000 gallons. Both are constructed with Kahn reinforcement by the Trussed Concrete Steel Co. Views of the towers as they will appear when finished appear on page 396.

REINFORCED CONCRETE WATER TOWERS FOR THE NORTH EASTERN RAILWAY CO., YORK.



These two drawings illustrate the towers (shown during construction on page 395) as they will appear when completed.

REINFORCED CONCRETE WATER TOWERS FOR THE NORTH EASTERN RAILWAY CO., YORK.

This the formula for a rectangle is $\frac{BD^3}{12}$ and for a square $\frac{B^4}{12}$ So that the true value of the moment of inertia of the rectangle in Fig. 2 is $\frac{6 \times 16^3}{12} = 2048$.

Apply the above process to determine the inertia about the axis x—x of the section in Fig. 3

The section—a rolled beam with equal flanges—may be enclosed in a rectangle BD This rectangle BD would then be composed of the rolled beam and two small rectangles on each side of the web. And since the neutral axis x—x passes through the centre of gravity of all the figures, it is possible by deducting the inertia of the two rectangles on each side of the web from the inertia of the containing rectangle BD to arrive at the value of the moment of inertia of the remainder which is the rolled section.

The formula then for a rolled beam is

$$\frac{BD^3 - 2bd^3}{12}$$ See Fig. 3.

Substituting the dimensions in Fig. 3 for the above we have

$$\frac{6 \times 12^3 - 2 \times 2.75 \times 10.5^3}{12} = 333.421$$

Next, calculate the moment of inertia about the axis y—y. Fig. 4. The beam is now turned upon its side so that "D," the actual depth of the beam, takes the place of "B" in the formula. The simplest process of arriving at the inertia in this case is to calculate the inertia of each flange and the web independently about the axis y—y, which is common to all three: that is, it passes through the centre of gravity of each figure. The moment of inertia about y—y is

$$\frac{2 \times (.75 \times 6^3) + 10.5 \times .5^3}{12} = 27.109$$

It will be seen that the moment of inertia about x—x is greater than the inertia about y—y.

These are described as the greatest (x—x) and least (y—y) moments of inertia, and it is these two values that it is necessary to first determine before a correct estimate of the structural value of any section can be deduced.

Section Modulus.

From the moment of inertia the value of the section modulus or "strength modulus" may be obtained by dividing by half the depth of the beam; or, in other words by dividing the moment of inertia by the distance of the extreme fibres from the "neutral axis." This value will be better understood by an illustration, Fig. 5. Assume a solid rectangular beam supported at each end and loaded, and for clearness let the deflection of the beam due to the load be shown in an exaggerated manner as in Fig. 5. It will be seen that the fibres above the neutral axis are shortened, while those below the neutral axis are extended. The fibres along the neutral axis, are neither shortened nor extended but remain the same in length as they were before the application of the load.

This alteration in the length of the fibres is defined as the "strain" and the resistance of the fibres to this change is defined as the stress. There is then little or no "stress" at the neutral axis, since there is no "change" in length or strain; also the further away the fibres are placed from the neutral axis the greater will be their degree of strain or change in length, and consequently their stress.

The nature of this stress is known as "compression" or "tension" according as to whether the fibres are shortened or lengthened.

Now imagine that these varying degrees of stress in the fibres can be represented on the section of a beam by lines of varying thicknesses as in Fig. 6. Here are lines, or fibres, of uniform length, but of varying degrees of stress commencing with "zero" at the "neutral axis," and increasing in intensity of stress until the outside or extreme fibres are reached, where the stress is a maximum. This stress on the extreme fibres should not exceed one-fourth of the ultimate breaking stress (28 to 30 tons) for structural steel.

Instead, however, of having fibres of uniform length and varying degrees of stress imagine the conditions to be reversed, so that the fibres are of varying lengths, but uniform in stress. The lines on the section in Fig. 7 will now be of the same thickness from the "neutral axis" to the outside, because the stress in each fibre is assumed to be the same as the stress in the extreme or outside fibre, but to maintain, as it were, the balance, a process of "give and take" occurs. So that while the outside fibre remains the same in length, because no addition to the stress is *assumed* to take place, the next fibre to it must be shortened a little to compensate for the stress which we *assume* is added to it to make it of the same degree of stress as the extreme fibre.

Hence the lengths of the fibres must decrease uniformly from the outside to "zero" at the "neutral axis," and the section is as represented in Fig. 7. This surface, which is shown sectioned in Fig. 7, is known as the "Inertia Area," and the "Modulus section" is the moment of this area about the "neutral axis." The moment of a surface about an axis is the area of that surface multiplied by the distance from its centre of gravity to the axis.

Take the surface represented by the "Inertia Area" in Fig. 7. The centre of gravity of each triangle is at one-third of its vertical height from the base. Now if the width of the rectangular section in Fig. 7 be represented by "B" and the depth "D," its area, will be $B \times D = BD$, and since one triangle is one-fourth of the whole rectangle, its area will be $\frac{BD}{4}$. To get the modulus section of this area about the neutral axis, it must be multiplied by the distance between its centre of gravity and the axis, which is one-third of the depth D or $\frac{D}{3}$. Therefore the section modulus of one triangle is

$$\frac{BD}{4} \times \frac{D}{3} = \frac{BD^2}{12}$$

But the whole beam section is composed of two triangles of inertia area; therefore the section modulus of the whole beam will be

$$\frac{BD^2}{12} \times 2 = \frac{2BD^2}{12} = \frac{BD^2}{6}$$

This then is the formula for obtaining the section modulus of any rectangular solid beam, and it is this value by which a selection should be made of a rolled steel beam of the standard sections, published by the rolling mills.

It has been stated that the section modulus may be obtained by dividing the moment of inertia by half the depth of the beam. Therefore $\frac{BD^3}{12} \div \frac{D}{2} = \frac{BD^2}{6}$ as before.

The inertia area of a rolled section of steel beam is as represented in Fig. 8.

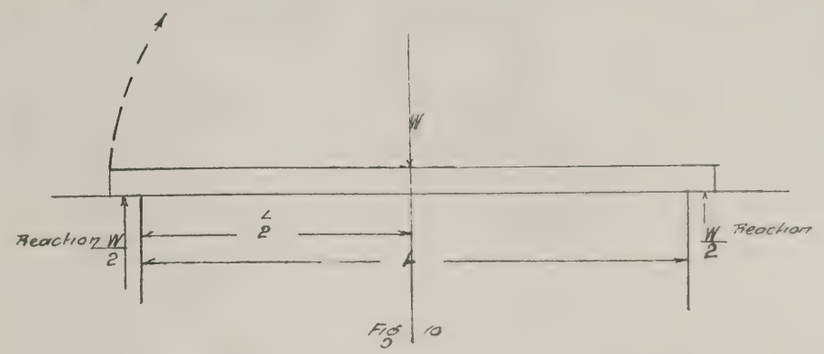


Fig 10

Strength of Material

Reference has before been made to the "stress" set up in the fibres by their resistance to the "strain" caused by the loads applied to a beam. It is evident that the degree of this resistance will depend upon the material of which the beam is built.

The strength of the material is usually expressed in "lbs." or "tons" per sq. in. of section, the former unit of "lbs. per inch" is confined as a rule to American practice in this country the stress is expressed in "tons per inch." The breaking stress of structural steel is 28 to 30 tons per square inch of section. It is unnecessary to state that in practice the working stress must never approach the ultimate breaking stress, but should be well within the "elastic limit" of the steel, that is to say, the load should be such as not to cause any "permanent set" in the steel by over-straining it. The "elastic limit" for structural steel is usually taken at 14 tons per sq. in., or about half the ultimate strength. The working stress should not be greater than one-fourth of the ultimate stress or 7.5 tons per sq. in. of section. This provides for a "factor of safety" of 4, which is usually adopted in practice for structures under quiescent loading.

Moments of Resistance.

The modulus section multiplied by the modulus of rupture of the material will give the value for the "Moment of resistance." The modulus section is a fixed quantity for any given section. The moment of resistance depends upon the strength of the material of the section.

These two values, "modulus section" and "moment of resistance," are often used indiscriminately.

Bending Moments.

To carry this further necessitates the consideration of the conditions existing in loaded beams

Beams may be either supported at each end, fixed at each end, or continuous over several supports. There are also semi-beams or cantilevers fixed into a wall or support at one end only.

In this article supported beams and cantilevers only will be considered.

In Fig. 9 is shown a cantilever carrying an end load. The neutral axis is shown in dotted lines.

It is evident that this load will tend to bend the cantilever.

Assume then that it bends or turns around point "x" at the wall or support, and takes up the position as shown by "x—x." In so doing the end of the beam at the wall line would take up a position, "a—b." The point "a" turning to the right and "b" to the left. The degree or intensity of this turning or bending action is measured by the product of the weight "w," and its distance or leverage from "x." Now "w" the load multiplied by the leverage, or distance from the fulcrum "x" is known as the "moment" of "w" about "x," and since it has a tendency to turn or bend the beam, it is known as the "Bending Moment." The measure of the bending moment will be in "Foot-tons" if the load is in tons and the leverage in feet, or "inch-tons," if the leverage is in inches.

This bending moment is the force which tends to strain the beam by altering the length of its fibres or otherwise displacing them, and the "moment of resistance of the fibres about the neutral axis tends to resist the strain. So that the conditions under which loaded beams exist is a little problem in attack (bending moment) and defence (resisting moment). It is now necessary to be able to measure or calculate the amount of the bending moment.

Beginning with a simple concentrated centre load (Fig. 10), let W = the load at the centre, and "L" the total span.

In the determination of the stresses to structures, it is necessary, after having determined the loads, to find the amount of the supporting forces, and also their directions or lines of action. These supporting forces are known as the reactions, and their sum is always equal to the sum of the applied loads.

In a simple beam with a centre load it is clear that the "reactions" will be one-half of the load "w" or $\frac{w}{2}$ and their directions will be opposite to the load W. Action (W) and reaction $\left(\frac{w}{2} + \frac{w}{2}\right)$ must be equal and opposite.

(To be concluded.)

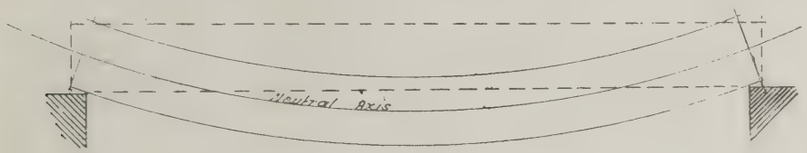


Fig 5

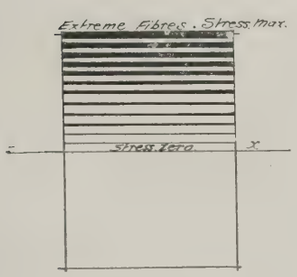


Fig 6

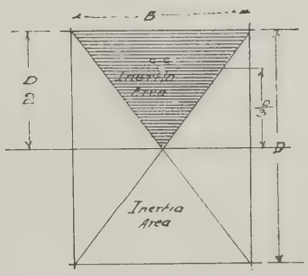


Fig 7

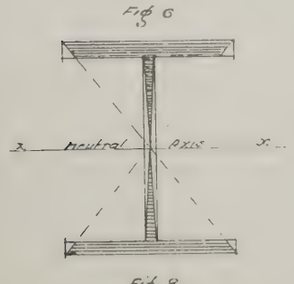


Fig 8

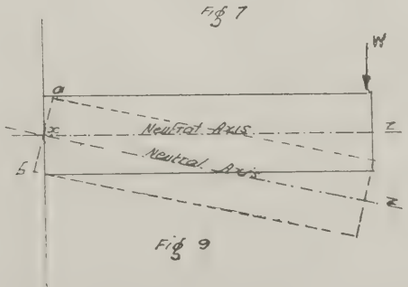


Fig 9

DIAGRAMS ILLUSTRATING "THE STRENGTH OF ROLLED STEEL BEAMS."



Fig. 2.

TWO NEW REINFORCING MATERIALS.

That old-established firm of reinforced concrete constructors, the Expanded Metal Co., Ltd., York Mansion, have recently introduced two new specialities on the market. The first is their "Rib Expanded Metal." The ordinary diamond-mesh expanded metal is extensively used for reinforced concrete floors, roofs, walls, tanks, silos, etc. Expanded metal has many advantages. It is very economical, and it does not get out of place, can be easily applied and conveniently handled—indeed, it is a practical reinforcement. There are, too, theoretical advantages in the diamond-mesh, and tests have shown the great resistance of diagonal reinforcement, superior to that obtained with straightway reinforcing. However, it is unnecessary for us to here refer in detail to the properties of diamond-mesh expanded metal, for they are well known and have already been dealt with in these columns. The Expanded Metal Co., Ltd. (of York Mansion, York Street, Westminster), have now another type of expanded metal somewhat cheaper than the diamond-mesh and equally serviceable for most purposes. The form of this is shown in Fig. 1, from which it will be seen that it consists of ribs running parallel, with smaller strands connecting them at right angles. This "Rib Expanded Metal" is intended for reinforcing in one direction only, but two sheets can be dispósed one on top of the other at right angles if it is desired to reinforce a slab in two directions. It is obviously a great convenience over ordinary rods for slab reinforcement to have them attached together as a sheet. They do not become displaced and are easy to lay. This is what "rib expanded metal" practically is. There are several standard meshes, made from one original section of steel, by cutting the transverse strands shorter or longer so as to allow the ribs to be opened out more or less widely. The following table give the properties of the standard meshes. It will be

No. of Mesh & Size.	Size of Standard Sheets. Width.	Size of Standard Sheets. Lengths.	Super. Feet per Lineal Foot of Standard Sheet	Sectional Area per Foot of Width.	Approx. Weight per Yard super.
Ins.	Ins.	Ft. Ins.		Sq. ins.	Lbs.
2	16	10′ 6″, 12′ 6″, 14′ 6″, 16′ 6″, 18′ 6″.	1·33	·54	17½
3	24		2·00	·36	11¾
4	32	10′ 4½″, 12′ 4½″, 14′ 4½″, 16′ 4½″, 18′ 4½″.	2·67	·27	8¾
6	48	10′ 3″, 12′ 3″, 14′ 3″, 16′ 3″, 18′ 3″.	4·00	·18	5⅞
8	64	10′ 0″, 12′ 0″, 14′ 0″, 16′ 0″, 18′ 0″.	5·33	·135	4⅜

seen that sheets up to 18ft. 6ins. long can be obtained, whereas the maximum length of the earlier type is 16ft. Also sheets need not be overlapped where they adjoin, as with the diamond type, they can be joined by means of wire clamps or dogs, spaced apart the same distance as the ribs in the sheets.

It may be mentioned also that the material forms a perfect mechanical bond, as does the diamond-mesh expanded metal.

The second innovation is an "expanded metal bar." Fig. 2 shows its form. It will be seen that it consists of a square bar attached to a sheet of expanded steel. It possesses the advantages that the expanded portion serves to reinforce a beam against shear stresses, and also serves to unite the layers of concrete as they are deposited in the beam box mould, while there is no doubt as to it providing a mechanical bond, it being impossible for such a bar to slip in the concrete, a beam therefore being made thoroughly homogeneous. Fig. 3 shows the standard sections in which the bar is made. It lends itself to many applications in general reinforced concrete practice, and tests have shown the extraordinarily high resistance that is developed by beams constructed with such a meshwork of steel throughout their depth, the concrete being confined so that it develops great compressive strength and ductility.

As the use of these new expanded metal products develops we shall have occasion to refer to them again.

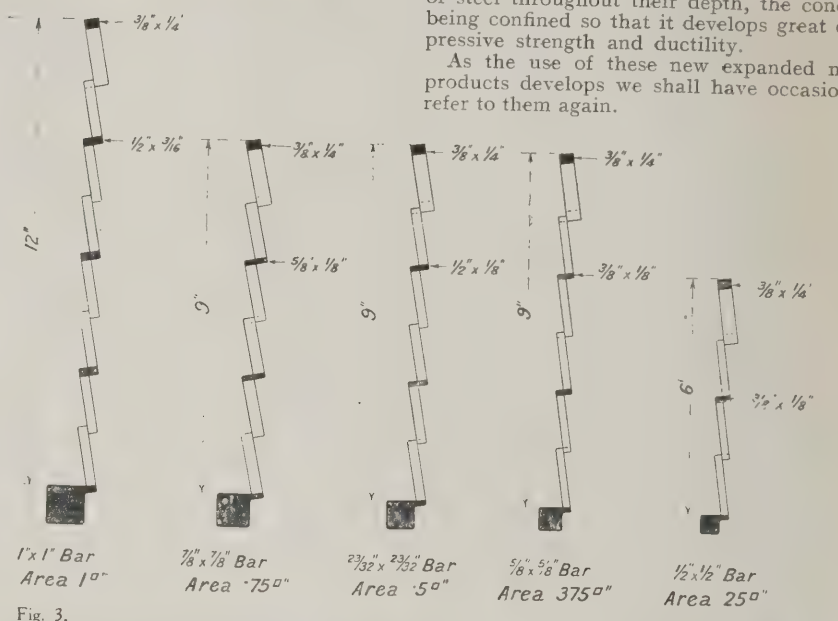


Fig. 3.

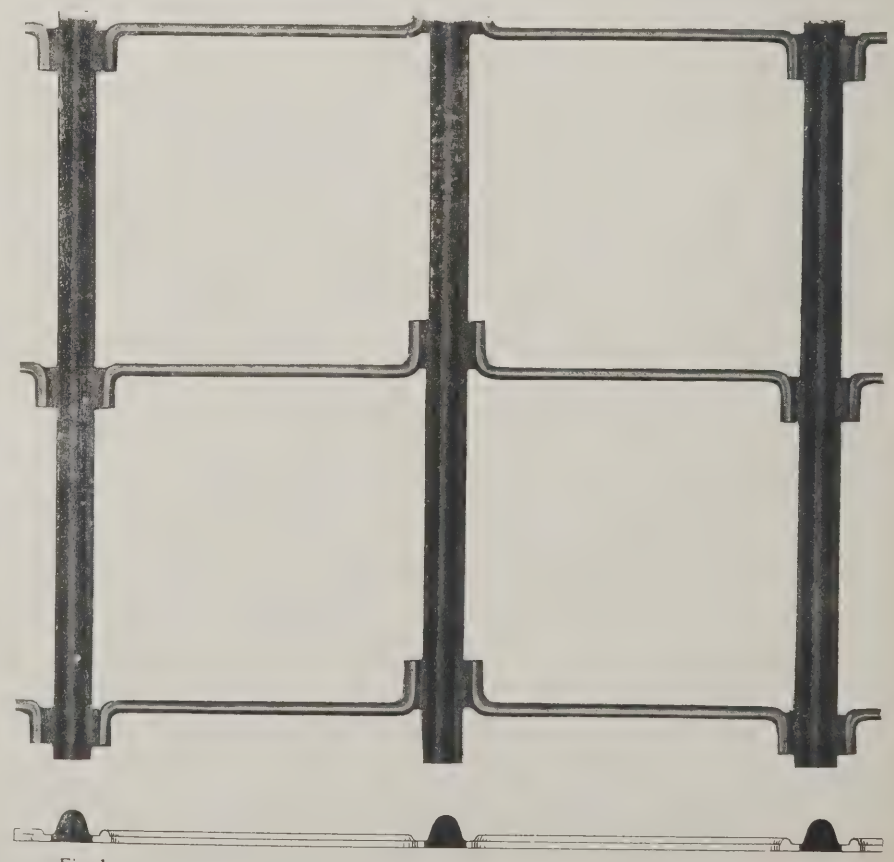


Fig. 1.

ENQUIRIES ANSWERED.

Correspondents are particularly requested to be as brief as possible. The querist's name and address must always be given not necessarily for publication

The Editor is willing to answer enquiries from readers who require information on architectural, constructional, or legal matters. Such information must be regarded as the gratuitous advice or information of a friend, and not as the professional opinion of one who holds himself out as possessing expert knowledge on the subject in question. The Editor will, however, avail himself of the assistance of a large staff of experts in the matters above mentioned, but the enquiries sent must be on the express understanding that he is not to be held responsible for any delays, mistakes, inaccuracies, or negligences which may occur.

Enquirers whose questions involve possible legal proceedings are strongly urged to consult their solicitors before taking definite steps in regard thereto.

Answers by post will be sent if the enquiry is accompanied by a postal order for 1s., made payable to Technical Journals, Ltd. and crossed, and stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

This fee of 1s. required for answers by post is in no case to be regarded as payment for the answer given, but merely as a registration fee to meet the extra clerical and other expenses incurred in dealing with these special replies.

The Editor also reserves the right of refusing to reply to any question that he may deem to be unreasonable or unsuitable, and it must be understood that both question and reply will, as a rule, be published in these columns.

R.I.B.A. Probationer Examination.

R. S. J. (AMMANFORD) writes: "Kindly inform me what drawings would be suitable for geometry, perspective and freehand, for probationer examination R.I.B.A. Provided I submit satisfactory drawings I am exempt from this examination."

—Drawings of such subjects as those suggested under divisions VI. and VIII., on page 355 of the current R.I.B.A. Kalendar, would be accepted. The geometrical sheets should exhibit knowledge of the interpenetration of solids, with relation to buildings. Such examples as a mansard roof, with chimney stack, having a shadow cast by sciography, or the projection of shadows on a curved surface might be drawn if querist has no scale drawings which will serve. If he elects to submit sheets on perspective, a few examples of simple forms put into perspective and showing all the construction lines would be sufficient. A freehand drawing in pure outline, of such a subject as an Early English capital or label stop, or any plaster cast of architectural ornament, would be accepted for subject VIII. G.

The Ecole des Beaux-Arts.

F. L. (FALKIRK) writes: "I have become very interested in the Ecole des Beaux-Arts and desire to study in Paris for a time. I have heard some say it is good to go to the Ecole, to stay the three years and take the diploma, others that it is better to go for a year or eighteen months; others, again, think it sufficient to go to Paris, enter one of the ateliers without necessarily entering the Ecole at all, and that all Paris can give can be got in that way. (1) What is necessary for entering an atelier? (2) Which would you advise me to enter (3) What is the best time to go this year, say, after June? (4) What fees are required at an atelier? Kindly give any other general information."

—I can only express a general opinion upon the leading questions regarding the Ecole des Beaux-Arts; and with regard to the secondary questions, as nearly as I know or recall, speaking of things as they were five or six years ago. If the student is already a good draughtsman and sufficiently prepared to enter the Ecole, he should, by all means, take the admission examinations and become a pupil of the school, and should take the diploma course if his age and means permit of it. If he is over 27½ years of age when he has passed the admission examination, it will be impossible to obtain the diploma because of the time required and the age limit at which pupils must withdraw from the Ecole proper. He may, however, work up to the first class and gain some of the scientific as well as artistic training. It would be only to the man whose office experience—in a very good office—has exceeded five or six years, or whose circumstances would not permit of a longer stay than one year, or whose age were nearly thirty, that I would offer the advice to enter an atelier without also entering the Ecole. It is not true that "all that Paris can give can be got in that way" by any except those exceptionally gifted men who have most of "what Paris can give" before they go there. There is a good course in architecture in the making at Liverpool University. I do not think it could be compared with Paris as yet, nor do I think any English school is likely ever to compare favourably with the Ecole, for reasons too lengthy to be given here. To come to the secondary questions:—(1) and (4). (a) A preparatory atelier such as Godefroy-Freynet's, Duquesne's, or Chiffiot's can be entered by merely making formal application and paying the fees, about £2 per month. (b) An atelier in connection with the Ecole des Beaux-Arts, such as Pascal's, Daumet-Esquié's, Laloux, Redon's, Deglane's, Moyaux, etc., can only be entered if the professor is satisfied with the applicant after an interview and an inspection of some of his drawings. The student who is not a good draughtsman or who has not mastered the "orders" is not desired at these large ateliers, and would do better to go to a preparatory atelier. On the other hand, the advanced student, especially after passing the admission examinations, would get more value out of the ateliers presided over by the leading architects. To the latter there is an initiation fee of about £4, and the monthly dues, small fines, etc., run to about £2, or a little less. (2) This is partly answered by the reply to No. 1. All of the ateliers mentioned above are approximately equal. Pascal's was chosen by the writer, and if he were again beginning, it would be the one again chosen. The patron speaks English, and Englishmen and Americans are always cordially received by him. In some of the best ateliers tradition is against English students. (3) The best time to go this year will be when the flood troubles have quite passed away. The first time one gets the opportunity is always the best time to go to Paris! This is true of the Ecole also. F. S. S.

Reinforced Concrete Chimneys.

"SUSSEX" writes:—"Please give me information regarding the erection of reinforced concrete chimneys, and also advise regarding circumstances where the foundation of same is in water when a depth of a few feet is reached, but which is supposed to be on harder ground at a depth of, say, 20ft. Please state also the name and address of contractors who erect this class of chimney, and name any books on the subject."

—A paper on "Reinforced Concrete Chimneys," by Mr. E. R. Matthews, was recently read at a meeting of the Concrete Institute.



This church is to be built on the shore of False Bay, a little to the east of Table Bay. The climate being similar to that of Italy and Spain, the design is a simple treatment of Romanesque, with small windows, large overhanging eaves, and comparatively flat roofs, to give protection from the heat. The walls will be of local stone and covered with rough lime plaster; the roofs are to be covered with green slates.

and a summary was published in our columns. That paper contained a good deai of information on the subject. It recorded as a fact that in several instances reinforced concrete chimneys had been erected at less cost than brick chimneys could have been built in the same circumstances; but there may be conditions in other jobs which would render a concrete chimney uneconomical. There are several points requiring careful designing in a reinforced concrete chimney to prevent cracking. There are several firms of specialists in the United States who confine their attention to reinforced concrete chimneys only, but we know of none in this country. You might get any of the reinforced concrete specialists to design chimneys, but the following firms advertise that they undertake such structures: The Alphons Custodis Co., 119, Victoria Street, Westminster, S.W.; The Ferbeck Chimney Construction Co.; Leslie and Co., Ltd., Kensington Square, London, W.; The Patent Indented Steel Bar Co., Ltd., Queen Anne's Chambers, Westminster. As regards foundations in the circumstances referred to, we would suggest the use of reinforced concrete piles. We know of no books on reinforced concrete chimney design. D.

Constructional Steelwork Quantities.

SURVEYOR (PECKHAM) writes: "Where can I find examples of the present-day method of taking off constructional steelwork quantities in detail, such as steel grillage, foundations, build-up stanchions, plate, girders and steel roofs?"

—We do not know of any books containing information, nor any articles on the subject, though we think it probable you would be able to find a certain amount of information bearing on the subject in American books on steel frame construction. In America, however, it is customary for contractors to take off their own quantities: so that such work would be in the hands of specialists, and their estimators would not be likely to write any special treatises where there was little or no demand. We can only suggest that the usual practice of quantity surveyors in this country should be followed, the labours all being recorded in detail; but the usual procedure seems to be to give the work to a specialist, inserting a provisional sum for the steelwork in the bill of quantities, or to provide the builder with prints of the detail drawings so that he can send to specialist firms for prices. D.

Percentages off Quantities.

E. H. D. (LONDON) writes: "A builder executes work under contract with quantities supplied. In order to secure the contract 10 per cent. has been taken off at the end of the priced bills in which are included about £2,000 net provisions.

"The builder in rendering an account of the variations takes off 10 per cent. on the omissions side, but carefully excludes the 10 per cent. on the amounts spent on provisional work.

"Thus, for an electric lift, £300 net is provided and £247 spent.

"The builder by taking off 10 per cent. in the bills reduces the provision to £270, and my clients, instead of saving £53, only get a deduction of £23.

"Am I not legally entitled to take 10 per cent. off both additions and omissions?

"It seems to me the 10 per cent. is the builder's loss, and should not come out of my client's pocket."

—If the usual practice has been followed and the builder deposited with the architect, the fully priced bills of quantities showing how the sum total of his estimate was arrived at, the question of the 10 per cent. discount taken off the bills at the end should have been raised then and settled before the priced schedule was accepted. That opportunity having apparently been allowed to pass, it may now be sought to set up the contention that the £2,000 provisional sum was in fact reduced by 10 per cent. at the outset by the consent of those who provided it. If this contention cannot be sustained, and we do not think it would be, the variations from the original bill should be ascertained, and a final amount arrived at as the total final cost of the job, and from this sum 10 per cent. discount should be deducted exactly as was done in the original tender; the net amount so ascertained would be sum due to the contractor. A. G. W.

Tiles for Mill Floors.

C. K. (BELFAST) writes: "Please furnish us with the names of the makers of tiles for mill floors. I believe they are made in Belgium and are exceedingly hard, white in colour, and the surface is slightly corrugated, so that bare-footed workers can walk comfortably without slipping. The tiles are apparently something like the white vitreous tiles which are made in Staffordshire, only that the latter are much thinner, being only ½in., whereas these Belgian tiles are about 1in., or perhaps even 1¼in. They are, I believe, less per super yard than the white vitreous tiles made for tessellated floors in this country."

—Unfortunately I cannot give you the name of any maker of mill floor tiles as described, though I believe they are of Belgian and not German manufacture. In any case it would scarcely pay to import them unless for any very special purpose. Your best plan would be to write to the Towers Admantine Tile Co., Little Bytham, Grantham, telling them of your requirements, and asking for a quotation for tiles to your design made in their buff paving material.

Unless colour is of very great importance you will find the material supplied by this firm to be fully equal in durability to that of the German article, and you will save considerably on the carriage. It will prove much cheaper per super yard if the tiles are made 9in. × 9in., unless this firm happens to have 6in. moulds in stock. For cleanness, non-slipperiness, and general convenience you will find nothing more suitable for mill floors than a really well-made concrete floor, surfaced with a coarse sand to which is added plenty of cement.

A.B.S.

Foreman's Three-quarter Time.

A. B. C. (TORQUAY) writes: "Is a builder, whilst carrying out a contract, the work being in full swing, justified in charging his foreman's time, in addition to ¾ to the workmen's, in any variation or addition that may be ordered by the architects, the building agreement stipulating that a competent foreman shall always be employed or kept upon the works?"

—If the variations or additions are to be measured and paid for at the rates given by the contractor in the priced bill of quantities which formed the basis of the original contract, or are to be charged for by the contractor at the usual day-work prices prevalent in the district, in either case the charges should be deemed to cover supervision, and the contractor would not be justified in charging the time of his foreman. If no priced quantities have been deposited the principle would still hold good that the original lump sum contract included supervision, and that variations and additions must ultimately be determined either by their proportionate relation to the original amounts provided by the contractor in his contract for the execution of the work varied; or, if a new kind of work is added, at fair measure and value; or, be determined by day-work prices usual in the district. If some other basis of payment has been imposed on the contractor by the contract, then it will depend upon the conditions whether a charge for a foreman is justifiable. For instance, where the contract only allows a ten per cent. margin over the cost of labour to cover profit and supervision, such a charge would be justifiable and demandable unless expressly barred by the contract. A. G. W.

Staffordshire Type of School Plans.

A. A. R. (BOWES PARK) writes: "Kindly inform me where particulars and plans, etc., of 'the Staffordshire' plan of a verandah on one floor, having one hall only for the two departments can be obtained? This is the recommended arrangement for the Acton school competition."

—Plans and section of a school of the Staffordshire type were published in the Journal of the Architectural Association for March, 1909, in illustration of a paper by Mr. H. T. Buckland, which also gives further particulars of the type. Copies of the Journal can probably be obtained at the Architectural Association, 18, Tufton Street, S.W., price 6d. each. G.

Domestic Hot-water Apparatus.

D. W. W. (SIDCUP) writes: "In your issue of February 2nd you give on page 91 a simple diagram illustrating the general arrangement for domestic hot-water apparatus. Will you kindly advise me whether in view of the 'expansion pipe' it is in any way desirable to fit a safety valve to the boiler?"

—Yes, it is desirable. The expansion pipe is not a substitute for the safety-valve. When water is heated, it swells, and unless space be provided for this swelling, pressure is put on all the material, and the weakest portion may give way. No hot-water supply installation of ordinary strength can work without an expansion pipe (sometimes called a "steam escape" or "air vent"), whilst it can work without a safety-valve. The duty of a safety-valve is to relieve the boiler (the greatest mass of hottest water) of any extra pressure put on it by a stoppage of the pipes, ice in a distant part of the pipes being the chief apprehension. INGENIOR.

Buildings to Measure near Sidcup.

E. E. B. (SIDCUP) writes: "Could you advise me as to good subjects for the Gothic sheets for the R.I.B.A. Intermediate Examination, near Sidcup?"

—Stone Church (1251-1274), near Greenhithe, has some of the most beautiful Early English work in the country. A portion of the wall arcade round the chancel, one of the aisle windows, or a bay of the nave arcade could not be improved upon as a subject for one of the measured sheets; and for the "Mediæval Ornament" one of the carved spandrels in the chancel, or a capital from the nave would be equally good. An example of Perpendicular work may be taken from Eltham Palace, say the doorway to the hall, which is accessible. G.

Nicholson's "Dictionary of the Science and Practice of Architecture."

G. H. (NORWICH) writes: "I have two volumes of Peter Nicholson's 'Dictionary of the Science and Practice of Architecture,' size of each about 11ins. by 9ins by 2½ins., well bound in leather covers and gilt edges. Kindly let me know the value of these two volumes, and the most likely market, should I feel disposed to part with them."

—Nicholson's work is only worth about 7s. 6d., and, as there is at present no demand for this book, it would be advisable to take any price that the ordinary bookseller might offer. B.

Braced Collar Beam Roof.

"COMPASS" (HAMMERSMITH) writes: "I shall be glad of your advice regarding the enclosed sketch (not reproduced) of roof, and to know (1) whether roof and buttress are sufficient to resist pressures and would be safe; (2) whether any dimensions could be safely reduced. It is proposed to use Oregon pine for the circular trusses. I have approximately shown the pressures on buttress following your illustration in your issue of Jan. 27, 1909."

—The truss submitted appears to be just strong enough and the buttresses sufficient. None of the scantlings can be reduced. The tee straps to collar beam should not be less than 2½ins. by ⅜in. HENRY ADAMS.

NOTES ON COMPETITIONS.

Usher Hall, Edinburgh.

Architects from all over the country have signified their intention of forwarding plans for the erection of the Usher Hall in Lothian Road, Edinburgh, the applications almost reaching 100. The arbiter is Sir Aston Webb, London, who will have associated with him in adjudicating on the designs submitted, Mr. James A. Williamson, the city architect.

LIST OF COMPETITIONS OPEN.

APRIL 23. COUNTY OFFICES, NAVAN. Particulars given in our issue of March 16th.

MAY 2. STOCKPORT NEW LIBRARY. Architects desirous of competing for the designs of the library which the corporation propose to erect are invited to send their names, with information as to their experience in and qualifications for carrying out such work, to the undersigned on or before Monday, May 2nd, 1910. From the names sent in the corporation propose to select a number to compete for the work. Canvassing will be regarded as a disqualification. Robert Hyde, Town Clerk, Town Hall, Stockport.

MAY 31. MUNICIPAL OFFICES, KARACHI. Particulars given in our issue March 16th.

JUNE 11. COVENTRY. ENLARGEMENT OF SCHOOL at STOKE. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

JUNE 15. ELEMENTARY SCHOOLS, ACTON. Particulars given in our issue of March 16th. The Royal Institute of British Architects has requested architects not to compete.

AUGUST 31. COVENTRY. NEW ELEMENTARY SCHOOL in Centaur Road. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

NO DATE. PROPOSED USHER HALL, EDINBURGH. Particulars given in our issue of April 20th. Inquiries to be addressed to Thomas Hunter, Town Clerk, City Chambers, Edinburgh.

NEW BUILDINGS.

PROPOSED.

Darnall (Sheffield).—At the school in Whitby Road, which was erected last year to accommodate 810 pupils, and cost (inclusive of site) £1,200, the Sheffield Education Committee has given notice that they intend to erect a third department as planned in the original scheme. The addition will accommodate 400 pupils, and is estimated to cost about £5,000.

East Grinstead.—The Urban District Council has decided to make an application to the Local Government Board for permission to borrow the sum of £1,800 for the purpose of purchasing a site on which to build Council offices, fire brigade station, Collector's Offices, stable and depot.

Elgin.—The Burgh school board have decided upon an expenditure of £2,500 in providing additions and making alterations at the Academy.

Girvan.—The Town Council has agreed to borrow the sum of £3,040 on permanent loan, to pay the cost of the site of the new Town Hall, and £1,000 for street improvements.

Hammersmith.—At the Hammersmith Town Hall, Mr. H. R. Hooper, M.Inst.C.E., has held a Local Government Board enquiry into an application made by the Hammersmith Borough Council for sanction to the borrowing of a further sum of £11,462 in respect of the public baths and washhouses in Lime Grove, Shepherd's Bush.

Hanley (Staffs.).—A scheme is now taking definite shape to erect a new church in the parish of All Saints, at a cost of about £6,000.

Hendon.—It has been decided to proceed with a scheme for the enlargement of the parish church of Hendon, at a cost of £6,000.

Inverkeithing.—Plans for the extension of Inverkeithing Gasworks, which is estimated to cost at least £1,500, have been passed by the Dean of Guild Court. It is proposed to erect a new gasholder capable of holding 25,000 cubic feet of gas, and buildings and appliances.

Kilmarnock.—It is proposed to build a new church at Kilmarnock at a probable cost of between £1,500 and £1,600.

Liverpool.—At a recent meeting of Liverpool Masonic brethren, in the Masonic Hall, Hope Street, it was unanimously decided to adopt plans for the extension of the existing hall, at an estimated expenditure of £9,000.

London.—The London and South-Western Railway Company has submitted to the Lambeth Borough Council plans of four blocks of working-class dwellings, to be erected in the vicinity of Waterloo, to house persons displaced by the station extension scheme, and which necessitated the demolition of several streets and courts.

Nidd.—At a recent Consistory Court, held at Ripon Cathedral, a faculty was granted to the vicar and churchwardens of Nidd, authorising the building of a new north aisle, the enlarging of the vestry and organ chamber, and making other alterations in the parish church, which, it is estimated, will cost between £1,300 and £1,400.

Paisley.—At a recent meeting of Paisley Town Council, it was stated that it was intended to construct a new reservoir at Rowbank, near Howwood, at a cost of between £40,000 and £50,000.

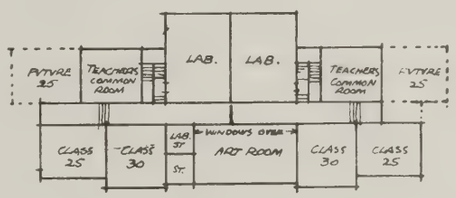
Salford.—Mr. M. K. North, Local Government Board inspector, has held an inquiry at Salford Town Hall into the application of the Corporation for permission to borrow £16,690 for the purpose of providing an annexe to the Town Hall and the making of other alterations.

Southend-on-Sea.—A syndicate has purchased the Kursaal, and will spend £50,000 on the building and grounds.

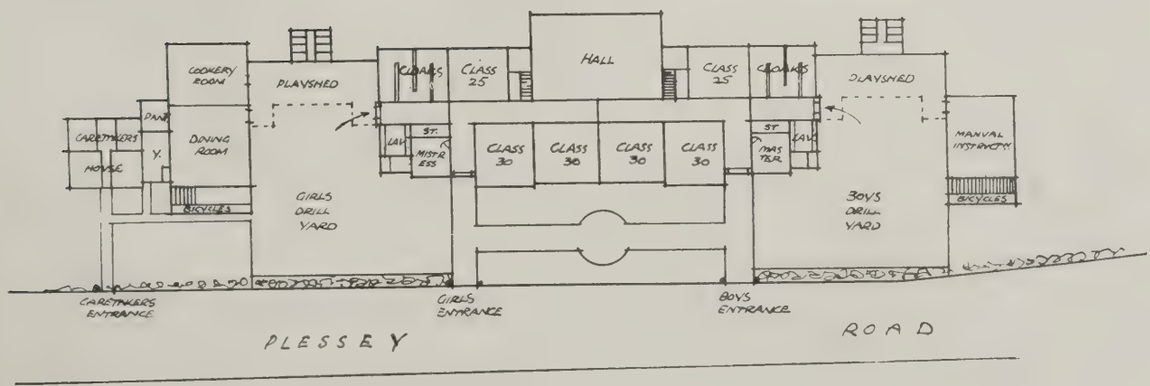
IN PROGRESS AND COMPLETED.

Ayr.—The Ayr Dean of Guild Court has passed the plans for alterations at St. Leonard's parish church and the erection of a hall at a cost of £2,100, and for the erection of a church hall and vestry by Wallacetown United Free Church at a cost of £1,000.

Banff.—The foundation stone of the new Higher Grade School, which is in course of



FIRST FLOOR PLAN



GROUND PLAN

The chief difficulty was to provide the whole of the accommodation for the stipulated sum of £7,000. It was suggested in the conditions that one laboratory and the art room could be omitted to bring the estimate down to the figure mentioned. Both however are included in this design, the estimated cost of which is £7,027.

BLYTH SECONDARY SCHOOL COMPETITION: OUTLINE PLAN OF SELECTED DESIGN. EDWARD CRATNEY, ARCHITECT

erection at an estimated cost of £6,500, has been laid, Mr. Arthur Clyne, F.R.I.B.A., Aberdeen, being the architect.

Birmingham.—The foundation stone has been laid of a new edifice to take the place of St. Stephen's Church, Newton Row, which was demolished by order of the Municipal authorities. The new church, designed by Mr. W. H. Bidlake, M.A., will cost £6,500 to complete, but a commencement is being made with the chancel, two bays of the nave, vestries, organ chamber, etc., at a cost of about £4,800.

Cardiff.—The extension to the Cardiff Y.M.C.A. buildings in North Edward Street, is in course of erection, and the foundation stones were recently laid. The architects are Messrs. Speir and Beavan, and the cost of the extension will be £4,200.

Gateshead.—The enlargements to St. Chad's parochial buildings, in Westminster Street, are in progress at a cost of £2,000, and the foundation stone was recently laid. The architects are Messrs. Hicks and Charlewood, and the contractor Mr. W. Hall, Gateshead.

Guildford.—The new Holy Trinity parish hall, which has been opened by the Princess Christian, has cost over £3,000, Mr. E. L. Lunn being the hon. architect. The building is of red brick, with dressings of Bath stone, and the large hall, which is 70ft. long, by 26ft. 6ins. wide, will accommodate 260 persons.

Leeds.—The new Congregational Church at the junction of Sheepscar and Barrack Streets, has been completed from the designs of Mr. G. F. Darby, architect, at a total cost of about £3,070. The building is of brick, with stone dressings. On the ground floor is a school-room that will seat 400, and above is a mission hall and gallery to seat 500.

Long Eaton.—The Urban District Council has accepted Messrs. Johnson and Langley's tender of £3,629 5s. 10d. for the erection of Sawley Road bridge, and also Mr. J. Tomlinson's tender of £1,269 0s. 8d., for the Derby Road bridge improvement.

Newcastle.—The vicar and churchwardens of St. John's Church are about to erect a new school at a cost of £3,500, on the site of the present infant school in Bath Lane.

Paisley.—The Town Council has resolved to accept the plans submitted by Sir William Arrol and Co. for the new bridge to be erected at Carlile Quay, at an estimated cost of £2,240. The bridge will connect the northern districts of the town meantime, separated by the river Cart. The work of widening the Sneddon Bridge, one of the main thoroughfares of the town, is now practically completed, and the bridge will shortly be opened for vehicular traffic.

St. Albans.—The new church dedicated to St. Paul, has been erected at a cost of £7,400, and provides seating accommodation for 700 persons.

South Shields.—The new hall and Sunday school in connection with St. Michael's Church, Westoe, which has been erected at a total cost of £3,603, has been opened on completion, the architect being Mr. H. Grieves, A.R.I.B.A., and the contractor Mr. J. Christie.

PRACTICAL NOTES.

On Tarring Roofing Tiles.

The tarring of roofing tiles has been much to the fore amongst builders lately, because the sharp winter weather has caused many tiles to shed some of the tarry coating and has, in consequence, caused the very trouble the tarring was intended to avoid.

If tiles used for roofing are sufficiently well burned to be but slightly porous, there is no need for tar, but the difficulties of producing tight tiles are many, and there are large numbers of tiles on the market which are soaked by a few minutes' rain. Such tiles, when subjected to a heavy downpour, rapidly become very wet on the underside and may even allow the water to drop from their undersurface. It is then necessary to coat them with some impervious material, and tar is frequently used on account of its cheapness and the ease with which it may be applied.

The durability of the tar-coat depends greatly on the nature of the tar itself. Gas-tar is generally too deficient in light oils to be satisfactory, and asphalt-tar or bitumen, when it can be obtained, is far more adhesive, as it penetrates more completely into the pores of the tiles.

It is also important that the tiles should be hot when tarred, as otherwise they chill the tar so that it does not penetrate properly and easily shells off when exposed to changeable weather or rain. For the most effective penetration the tiles should be taken hot out of the oven or kiln and dipped at once. If they have been allowed to cool they should be reheated until almost of the temperature of boiling water before dipping. Many manufacturers object to dipping the hot tiles as they are so difficult to handle, but there is no comparison between their durability and that of tiles dipped when almost cold.

Needless to say, the tar itself should be at least as hot as the tiles, and it is, usually, better to have it rather hotter, so that it does not become unduly cooled when the tiles are being dipped.

The present writer was recently consulted as to the cause of a number of tiles peeling badly, and on investigation it was found that they had not been cleaned previous to tarring, with the result that the tar had adhered to dust and sand on the tile, but not to the true surface of the tile itself. Before tarring all tiles should be brushed with a stiff or wire brush, so as to remove any loosely adhering particles.

From what has just been stated it will be clear that to tar tiles when the latter are on the roof is never likely to be satisfactory, and as the cost of taking them off and replacing them is considerably more than most people care to contemplate, great care should be taken to purchase the hardest burned and least porous tiles in preference to more porous ones, the difference in price being comparatively unimportant. Most tile-makers will gladly produce harder tiles if desired, but they are rather more expensive as more fuel is needed in burning.

TRADE AND CRAFT.

Gas Lighting for the West End.

The Westminster City Council have decided to place a contract with the Gas Light and Coke Co. for the lighting of Regent Street, Piccadilly Circus, St. James's Street and Pall Mall by the latest form of high-pressure gas-lamp, in place of the existing electric arc lamps. Especial interest attaches to this decision from the fact that Pall Mall was the first thoroughfare in the world to be lighted by gas—the original lamps being installed more than over one hundred years ago. The inverted mantle has evidently given the centenarian light a new lease of life. It will be remembered that the screen in front of Buckingham Palace is now lighted by high-pressure gas lamps, which also throw their searching light upon the pressman's labours in Fleet Street. The decision of the Westminster Council (which also provides for the improved gas lighting of Victoria Street and many other thoroughfares in the City by inverted burners) was based upon the fact that the tenders received from the gas and electricity companies revealed a difference of from 30 to 80 per cent. in favour of gas, light for light.

A White Distemper for Ceilings and Friezes.

The paste form of distemper offers many advantages. From it the wash is easily and satisfactorily prepared, and the application is without fuss or mess, the distemper assuming more of the consistency of paint, and flowing from the brush with almost the same degree of agreeable smoothness, rather than in the spatterdash manner of whitewash. "Ceelinkoto," which is a white distemper in paste form, renders the old wasteful and troublesome method of preparation entirely obsolete. All that is necessary in order to obtain an excellent whitewash for ceilings and friezes is to add to the paste a little clean cold water. We understand that it is free from animal size, and there is therefore no disagreeable smell, and obviously the absence of an element of decay makes for health as well as for cleanliness and sweetness, and thus yet another of the causes of the ordinary householder's strong reluctance to enter upon the disagreeable business of whitewashing is entirely overcome. "Ceelinkoto," which is manufactured by Messrs. Thomas Jenkins and Co., St. George's Wharf, Grand Surrey Canal, Camberwell, S.E., is not an untried product, but has already acquired a high reputation among builders and decorators, who find that it saves time, labour, and waste, and gives satisfaction to the client.

The business of the "Zeta" Wood Flooring Company, Ltd., has been purchased outright from the Receiver and Manager, but the change is only proprietary as Mr. William J. Bennett retains the general management of the new company, and will have the same executive staff associated with him as since the foundation of the old company in 1907.

COMING EVENTS.

Friday, April 29.

ARCHITECTURAL ASSOCIATION.—Mr. Mowbray A. Green on "The Architecture of Bath." Election of officers. 7.30 p.m.

ROYAL SANITARY INSTITUTE.—Provincial sessional meeting, at the Guildhall, Worcester. Dr. G. N. Woollatt, on "The Teaching of Sanitary and Domestic Science in Schools." Mr. W. Ransom on "Building By-laws Reform," 7.30 p.m.

Saturday, April 30.

ROYAL SANITARY INSTITUTE.—Provincial sessional meeting at Worcester. Visits to local factories and public works.

R.I.B.A.—Last day for receiving applications for preliminary examination (June), also applications and testimonies of study for Intermediate Examination (June).

Monday, May 2.

R.I.B.A.—Annual general meeting.

ROYAL SOCIETY OF ARTS (Cantor Lecture).—Mr. A. B. Searle on 4th and concluding lecture on "Modern Methods of Brick-making," 8 p.m.

THE SOCIETY OF ENGINEERS.—Mr. R. O. Wynne-Roberts, on "Up-to-date Roads," 7.30 p.m.

Wednesday, May 4.

R.I.B.A.—Art Committee meets.

Thursday, May 5.

ARCHITECTURAL ASSOCIATION.—Members' dinner.

Friday, May 6.

ARCHITECTURAL ASSOCIATION DEBATING SOCIETY, 7 p.m.

Saturday, May 7.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Newliston.

R.I.B.A.—Issue of voting papers; election of Council and Standing Committees; publication candidates for membership, June 6th election.

MUNICIPAL AND HEALTH EXHIBITION.—Royal Agricultural Hall, London; opens and continues to May 14th.

Tuesday, May 10.

R.I.B.A.—Practice Committee meets.

Thursday, May 12.

R.I.B.A.—Science Committee meets.

Friday, May 13.

R.I.B.A.—Last day for receiving applications and testimonies of study for June final examination and probationary work for special examination.

Saturday, May 14.

MUNICIPAL AND HEALTH EXHIBITION.—Royal Agricultural Hall, London, closes.

Monday, May 16.

Whit-Monday.—Bank Holiday.

Thursday, May 19.

R.I.B.A.—Literature Committee meets.

Saturday, May 21.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Broomhall, Fife.

R.I.B.A.—Last day for receiving notices of questions for discussion at meeting on June 6th.

COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about **five days** or longer after the date of this issue.
Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders.
The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING

April 9—May 3. **DEPTFORD.**—Erection of a branch library on the site in New Cross Road, S.E., for the Corporation, according to the drawings and specification prepared by Castle and Warren, Architects, and to be seen at their offices at Talbot House, Arundel Street, Strand, W.C. Persons intending to tender were to send in their names to the Town Clerk so as to be received by him on or before Saturday, April 9, 1910, accompanied by a deposit of £2 2s. Bills of quantities, prepared by Dow, White, and Gee, of 12, Craven Street, Strand, W.C., together with the conditions of contract, would then be forwarded. Tenders must be delivered to the Town Clerk at the Town Hall, New Cross Road, S.E. The contractor will be required to subscribe to the wages clause embodied in the conditions of contract.

May 1. **ST. GERMANS (King's Lynn).**—New Wood Top to St. Germans Bridge crossing the River Ouse. For further particulars apply The Bridge Reeves, St. Germans, King's Lynn.

May 2. **BIRKENHEAD.**—Repairs, alterations and painting for the Hospital Committee. Quantities may be obtained from Edmund Kirby and Sons, architects, 5, Cook Street, Liverpool.

May 2. **MILNSBRIDGE.**—Erection of additions to the premises of the Milnsbridge Perseverance Co-operative Society, Ltd. Plans may be seen, and quantities obtained, at office of P. Taylor and Co., architects, Milnsbridge.

May 2. **BLACK PARK, Near Chirk.**—Re-roofing, renovating, etc., of the church. For particulars apply to J. Roberts, 2 or 11, Halton Terrace, near Chapel. Tenders to be sent to Thos. E. Parrish, Halton Cottages, near Chirk.

May 2. **SALFORD.**—Erection of a covered way to connect the Municipal secondary school for girls and the Educatien Office, for the Education Committee. Specification and drawings may be obtained from the Director of Education, Education Office, Chapel Street, Salford.

May 2. **YSTRAD (Rhondda).**—Alteration and extension of premises at Ystrad, Rhondda, for the Pentre Conservative Club. Plans and specification can be seen at the offices of J. Rees, architect, Pentre. Tenders to be addressed to "Chairman of Committee," Conservative Club, Pentre.

May 2. **PONTYPRIDD.**—Alterations and additions to Trallwn Bakery, Trallwn, Pontypridd, for Hopkin Morgan. Plans and specification can be seen and bills of quantities obtained on deposit of £2 2s. Tenders to be sent to A. O. Evans, Williams, and Evans, Architects, Pontypridd.

May 2. **BISHOP AUCKLAND.**—Erection and completion of detached villa, stable, etc., at Evenwood, near Bishop Auckland, for Dr. R. A. Milne. Drawings, specifications, and conditions of contract may be seen and quantities may be obtained, at the architect's office, 22, Durham Road, Blackhill, Co. Durham, to which address tenders must be sent.—G. Thos. Wilson, architect.

May 2. **LONDON.**—Erection of stables in Scotland Yard, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to Sir Henry Tanner, I.S.O., at H.M. Office of Works, Storey's Gate, London, S.W. Bills of quantities and forms of tender may be obtained at the same address on deposit of £1 1s. Tenders must be delivered, addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

May 2. **HUNTLY.**—Mason, carpenter, glazier, smith, plumber, plasterer, asphalter, and slater works of proposed addition to the Higher Grade School, Gordon Schools, Huntly, for the School Board. The plans and conditions of contract may be seen with John Dickson, Solicitor, Clerk to the School Board, Huntly, and Kelly and Nicol, architects, 367, Union Street, Aberdeen. Schedules of quantities may be obtained from the architects. Tenders are to be lodged with Mr. Dickson.

May 2. **HANDSWORTH (Stafford).**—Erecting a mess room, cottage, etc., at the Cemetery, Camp Lane, for the U.D.C. Conditions of contract, drawings, and specification may be seen and bills of quantities and forms of tender obtained on application to H. Richardson, A.M.Inst.C.E., Engineer and Surveyor to the Council, Council House, Handsworth, Staffs., to whom tenders must be sent. The Contractor will be required to pay not less than the recognised standard rate of wages current in the district.

May 2. **ABERDEEN** (Haddo House Estates).—Mason, carpenter, and slater works of the following buildings:—Parish of Tarves: (1) Netherwoodhill (Wm. Hill), new steading; (2) Milton of Fochel (John Milne), double byre; (3) North Quilquox (John Will), new steading; (4) Little Meldrum (Alex. Davidson), double byre and shed; (5) Couchercairn (George Rennie), double byre; (6) South Quilquox (Mrs. Simmers), barn, stable, etc.; (7) Craigdam (Rev. D. Mackenzie), new steading.—Parish of Methlick: (8) Wardford (D. Davidson), new steading; (9) Flinthills (Wm. Massie), new steading; (10) Belnagoak (James Taylor), dwelling-house; (11) Middlemuir (James Gordon), double byre and sheds; (12) North Newmill (R. Ironside), new stable; (13) Newton (R. Sangster), new steading.—Parish of New Deer: (14) South Mains of Auchreddie (Wm. Bain), double byre and sheds. Plans, etc., may be seen with the tenants, and at the Estate Office.

May 2. **LUTON.**—Erection of school buildings to accommodate 350 children on Beech Hill, Dunstable Road,, for the B.C., in accordance with plans, specifications, and conditions of contract, which have been prepared by J. R. Brown and Sons, Architects, Castle Street, Luton, and which may be inspected at their offices. Bills of quantities and forms of tender may be obtained from the Secretary to the Committee, Town Hall, Luton, on deposit of £1 1s. Deposits must be made by cheque payable to the Corporation of Luton (Education Account) and crossed "Messrs. Barclay and Company, Limited, Luton Bank," or particulars will not be sent. The person whose tender is accepted will (subject to the consent of the Local Government Board to the necessary loan being obtained) be required to enter into a bond with approved sureties to an amount of £2,000, for the due performance of the contract. Tenders are to be delivered to Bruce Penny, Town Clerk, Town Hall, Luton.

May 3. **ABBEYLEIX.**—Erection of 30 labourers' cottages and fencing plots under the 10th improvement scheme, for the R.D.C. Forms of tender, plans, specifications, and other particulars can be had on application at the office of James Finnegan, Clerk to Council, Clerk's Office, Workhouse, to whom tenders must be sent.

May 3. **WORLINGTON.**—Erection of a new two-arch bridge over the Little Dart River, for the Southmolton R.D.C. The plan, etc., may be seen, and form of tender obtained, on application to Ware, Stuckley Arms, Worlington, or at the office of Fred Day, Clerk to the Council, and any further particulars obtained of W. S. Gardner, surveyor, Chittlehampton.

May 3. **NEWCASTLE-ON-TYNE.**—Erection of 10 cottages, Woodthorne Road, for the directors of the North-Eastern Railway. Plans and specification may be seen, and quantities and further information obtained upon application to William Bell, the company's architect, Central Station, Newcastle-on-Tyne. Quantities supplied on personal application to parties tendering for the whole of the works. Tenders to be sent to R. F. Dunnell, Secretary, York.

May 3. **BRENTFORD.**—Erection of a cottage in Clifden Road, Brentford, adjoining the Public Baths, for the U.D.C. Forms of tender and bills of quantities may be obtained, and the plans, specification, and conditions inspected, at the office of J. W. Croxford, the Engineer and Surveyor to the Council, Clifden House, Boston Road, Brentford, on deposit of £1. Tenders to be delivered at the Clerk's Office, Clifden House, above mentioned. The person whose tender is accepted will be required to pay not less than the trade union rate of wages current in the district.

May 3. **GLASGOW.**—Work in connection with the reconstruction of Glasgow Justiciary Courts, for the Glasgow Court-Houses Commissioners, viz (1) excavator, mason, brick, etc., works; (2) carpenter, joiner, and glazier works; (3) slater work; (4) plumber work; (5) plaster work. Drawings and general conditions of contract may be seen at the Glasgow Justiciary Buildings, entering from No. 1, East Clyde Street. Schedules of quantities may be obtained from Robert Scott and Son, measurers, 115, Wellington Street, on deposit of £4 4s. for each of the schedules for mason and joiner works and £2 2s. for each of the schedules for other works. Tenders must be addressed to W. Boyd Anderson, Clerk to the Glasgow Court-Houses Commissioners, 137, St. Vincent Street, Glasgow.

May 4. **SNAILBEACH.**—Stripping and re-slating the roof and other repairs to the Primitive Methodist Church. Specifications and all particulars to be obtained from Rev. Gervase Hall, Minsterley, to whom tenders are to be sent.

May 4. **MOORTHORPE.**—Erection of shop, warehouse, and house at Moorthorpe for the Pontefract Industrial Society (Limited). Forward names to Garside and Pennington, Architects and Surveyors, Pontefract and Castleford, when bills of quantities will be sent.

May 4. **MANCHESTER.**—Alterations to the boiler-house at the Swinton schools, for the Guardians. Bills of quantities may be had from the office of A. J. Murgatroyd, Architect, 23, Strutt Street, Manchester, upon deposit of 10s. 6d. Tenders to be delivered to James Macdonald, Clerk to the Guardians, Poor Law Offices, New Bridge Street, Manchester.

May 4. **CAMBRIDGE.**—Erection of two cottages in Albion Row. Plans and specification may be seen at the office of the Surveyor, Guildhall, where further particulars, together with form of tender, may be obtained. Tenders to be sent to J. E. L. Whitehead, Town Clerk, Guildhall. The contractor will be required to enter into an agreement for the due performance of his contract.

May 4. **WANSTEAD.**—Erection of a foreman's cottage at the Wansted Sewage Farm, Empress Avenue, Manor Park, for the U.D.C. Copies of plans and specification can be obtained on application to the Surveyor, C. H. Bressey, Council Offices, Wanstead, N.E., on deposit of £1. Tenders to be delivered at the Council Offices, Wanstead, N.E. For terms of payment and other conditions, see draft contract, which can be inspected at the Council Offices during office hours.

May 4. **ANGLETON AND PARC GWYLLT** (Glamorgan).—The following works, for the Committee of Visitors of the Glamorgan County Asylum:—(1) Alterations and additions to slaughter-house at Angleton Asylum; (2) Alterations to and re-slating cowhouse at Parc Gwyllt Asylum; (3) alterations to stables for isolation boxes at Parc Gwyllt Asylum; (4) conversion of cart shed into stables and fodder store. Specifications, bills of quantities, and forms of tender may be obtained from W. E. R. Allen, Clerk to the Committee of Visitors, Glamorgan County Council Offices, Westgate Street, Cardiff, and drawings may be seen at the office of the architect, P. J. Thomas, Bridgend, or at the Glamorgan County Offices, Westgate Street, Cardiff. Tenders must be addressed to the Clerk to the Visitors.

May 5. **SOUTHPORT.**—Alterations and additions required at their offices, Portland Street, Southport, for the Southport, Birkdale, and West Lancashire Water Board. Drawings may be seen and a copy of the specification and form of tender obtained at the offices on deposit of £1 1s. Tenders to be sent to Alleyne Brown, clerk, 11, St. George's Place, Lord Street, Southport.

May 5. **GRANGE-OVER-SANDS, etc.**—Erection of three houses (whole or separate trades) in Fernleigh Road, Grange-over-Sands, for W. J. Graham; fourteen houses, of Fernleigh Road, for Mrs. Entwisle, forming front street and two back streets and sewers, for Mrs. Entwisle; erection of a bungalow in Kentsford Road, Kents Bank, for L. P. Chapman. Plans for the whole of the above may be seen, and quantities obtained, at the offices of Settle and Brundit, A.R.I.B.A., architect, Ulverston and Barrow-in-Furness. Tenders to be delivered to the architects.

May 6. **HENSALL, etc. (Yorks).**—Whole or separate tenders for the following works, viz.:—Hensall Council School: Alterations and additions; Denby and Cumberworth Birdsedge proposed Council School: builder, jointer, slater, plumber, plasterer, painter for the West Riding Education Committee. Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders must be addressed to the Clerk of the County Council.

May 6. **LONDON FOR SKATERAW (Haddingtonshire).**—Construction of a lifeboat timber slip, about 87ft. in length, upon a site on the foreshore adjacent to the life-boat station thereat for the National Lifeboat Institution. Plans and specification may be inspected on application to the local Hon Secretary, W. Bertram, Kilmaide, Dunbar, or at the office of the engineer and architect to the Royal National Lifeboat Institution, W. T. Douglass, M.Inst.C.E., 15, Victoria Street, Westminster, S.W., from whom copies of the bills of quantities and form of tender may be obtained on application, accompanied by a deposit of £1. Copies of certain of the plans will be supplied by the engineer and architect at a cost of 2s., which sum is non-returnable. Tenders are to be delivered to the Secretary of the Royal National Lifeboat Institution, 22, Charing Cross Road, London, W.C.

May 6. **PENSHAW.**—Building of ten houses, situate behind Burn Terrace, Shiney Row, Penshaw Station, for Messrs. Chesney. Plans and specifications can be seen at Mr. Palliser, Architect's Office, Philadelphia, Lime Depot. Tenders to be sent to T. J. Jeffery, Store House, Newbottle, Fence Houses.

May 6. **DENBY, etc.**—Whole or separate tenders for Denby and Cumberworth Birdsedge proposed Council School (builder, joiner, slater, plumber, plasterer, painter), for the West Riding Education Committee. Plans may be seen, and specifications, etc., obtained, on application to the Education Architect, County Hall, Wakefield. A sum of £1 must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield.

May 6. **LLANELLY.**—Erection of a new Post Office for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster, Llanelly. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

May 7. **PENPONDS.**—Erection of proposed Council School for the Cornwall Education Committee. Plans, etc., may be seen by appointment at the office of Sampson Hill, Architect to the Committee, Green Lane, Redruth.

May 7. **MILFORD (Ireland).**—Building and fencing twelve single labourers' cottages, for the Milford R.D.C.; cost of building and fencing each cottage not to exceed £117. Detailed list and full particulars may be had on application to S. Watt[illegible], clerk, Milford, County Donegal.

May 7. **ST. MEWAN (Cornwall).**—Erection of a new church room, at Sticker, for the Rector and Churchwardens of St. Mewan. Plans and specifications may be seen at the office of B. C. Andrews, M.S.A., architect, Biddick's Court, St. Austell, by whom sealed tenders will be received.

May 7. **GLASGOW.**—Construction of a goods shed, 1,640ft. long by 100ft. wide, on Meadowside Quay, Partick, for the Trustees of the Clyde Navigation. Drawings may be seen, and specification, schedule of quantities, and form of tender obtained on application to the trustees' engineer, 16, Robertson Street, Glasgow. Tenders to be lodged with T. R. Mackenzie, general manager and secretary, 16, Robertson Street, Glasgow.

May 7. **FOXHOLE (Truro).**—Erection of a new Council School at Foxhole, for the Cornwall Education Committee, according to plans and specifications, which may be seen at the office of B. C. Andrews, architect to the Committee, Biddick's Court, St. Austell. Forms upon which all tenders must be made may be obtained from the architects. Tenders to be sent to F. R. Pascoe, Secretary, Education Office, Truro.

May 7. **HAYLE (Cornwall).**—Erection and completion of Hayle Council School for the Cornwall Education Committee, according to the plans and specification which may be seen by appointment at the office of Sampson Hill, architect to the Committee, Green Lane, Redruth, from whom all particulars relating to the work may be obtained. Forms, upon which all tenders must be made, may be obtained from the architect. Tenders to be sent to F. R. Pascoe, Secretary, Education Office, Truro.

May 7. **PRESTOLEE (Bolton).**—Erection of an elementary school for 510 children, with accommodation for the teaching of domestic subjects and manual instruction, for the Lancashire Education Committee. The plans may be seen and bills of quantities obtained at the office of the County Architect, Henry Littler, 16, Ribblesdale Place, Preston, on deposit of £2. Tenders must be delivered to E. Fielding Mills, Education Office, Prestwich.

May 7. **WRINGTON AND PERRY (Somerset).**—Works, for the Somerset C.C.:—(1) Wrington bridge, within half mile of Wrington Station, G.W. Rly. Taking down and rebuilding arch, 25ft. span and abutments in reinforced concrete, masonry walls, formation of roadway and fencing, etc. (2) Perry Bridge, on the Bridgwater and Bristol main road, about a mile from Wrington Station, G.W. Rly. Strengthening the bridge by means of a reinforced concrete lining, span 18ft., length 22ft. Drawings, specifications, and forms of contract may be seen by appointment at the County Surveyor's Office, Bath, where copies of bills of quantities and forms of tender may be obtained on deposit of £1 1s. in each case. Tenders to be delivered to H. T. Chapman, county surveyor, Queen's Square, Bath.

May 8. **EBCHESTER.**—Erection and completion of alterations and additions to St. Ebba's Church for the Rector and Churchwardens. Drawings, specification, and conditions of contract may be seen and forms of tender may be obtained at the architect's office, 22, Durham Road, Blackhill. Tenders to be sent to the Rev. J. G. Gibson, Rector, the Rectory, Ebchester, R.S.O. Geo. Thos. Wilson, architect.

May 9. **GLASGOW.**—Erection of industrial hall and offices, for the Executive of the Scottish Exhibition of National History, Art and Industry. Plans may be seen at the offices of the architects, Walker and Ramsay, 123, Wellington Street, Glasgow.

May 9. **PONTYPRIDD.**—Alterations, additions, and renovations to Tabernacle Chapel, Pontypridd, for the Trustees. Plans and specification can be seen at the offices of A. O. Evans, Williams, and Evans, architects, Pontypridd, and bills of quantities obtained on deposit of £2 2s. Tenders to be sent to the Rev. W. A. Williams, 12, Mackintosh Place, Pontypridd.

May 9. **NOTTINGHAM.**—Erection and completion of sliding shutters at the Female Sanatorium, Bagthorpe Workhouse, for the Guardians. Specifications and all particulars may be obtained on application to Arthur Marshall, A.R.I.B.A., architect, King Street, Nottingham. Tenders must be delivered at the Poor Law Offices, Shakespeare Street. Persons whose tenders are accepted must regularly pay the standard rate of wages to all workmen in their employment, and conform to the working rules of the district applicable to this trade.

May 9. **KILLADREENAN (Ireland).**—Erection of a doctor's residence and dispensary for Newcastle Dispensary District at Killadreenan, near Newtownmountkennedy, for the Guardians, in accordance with plan and specification prepared by the architect and engineer, G. T. Moore, C.E., etc., 1 and 2, Foster Place, College Green, Dublin, who will show same and explain all particulars to intending contractors. Tenders, giving the names of two sureties for the performance of the contract, will be received by B. Manning, clerk, Board Room, Workhouse.

May 9. **HEANOR (Derby).**—Erection of proposed secondary school to accommodate 250 students for the Derbyshire Education Committee. Drawings, specification, agreement, etc., may be seen at the office of the architect, St. Mary's Gate, Derby. A copy of bill of quantities, specification, conditions of contract, and forms of tender can be obtained at the architect's office, upon deposit of £1 1s. Tenders must be delivered to George H. Widdows, A.R.I.B.A., architect to the Committee, County Education Office, St. Mary's Gate, Derby. Two approved sureties as security for the performance of contract will be required.

May 10. **EBBW VALE.**—Erection of 11 pairs of semi-detached villas and 34 houses near Intermediate Schools, Ebbw Vale, for the Blaen Ebbw Building Club. Plans and specifications may be seen at the office of Wm. Harris, architect and surveyor, Bank Chambers, Bargoed. Tenders to be sent to the Secretary, G. W. Stephens, solicitor, St. Bride's, Ebbw Vale.

May 10. **EPSOM.**—Erection of a Nurses' Home, and for alterations to the Girls' Home at Woodcote, Epsom, for the Guardians. Drawings and specification may be seen at the office of A. C. Williams, 53, Doughty Street, W.C., where also bills of quantities and form of tender can be obtained on deposit of 10s. 6d. A contract and bond with two approved sureties in the sum of £200 will be required. Tenders are also invited for the carrying out of certain alterations in the kitchen and adjoining offices. Copies of the drawings and specification and form of tender may be obtained on application to the architect as above upon deposit of £1 1s. A contract and bond with two approved sureties in the sum of £100 will be required. Tenders, addressed to Alick G. Ebbutt, clerk, are to be delivered at the Guardians' Offices, Waterloo Road, Epsom.

May 11. **TOTTENHAM, N.**—(See "Painting.")

May 17. **BRIDGEND.**—Erection of a new boardroom and offices at the workhouse, for the Guardians. Plans, etc., may be seen, and all particulars obtained at the office of P. J. Thomas, architect, Bridgend. Tenders to be sent to R. Harmar Cox, Clerk, Union Offices, Bridgend.

May 17. **HARTLEBURY.**—Provision of all materials for, and the erection of new schools, in accordance with the drawings and specification prepared by the Architect to the Governors, S. S. Reay, F.R.I.B.A., 4, Unity Street, College Green, Bristol. Drawings and specification may be seen at the offices of the Architect. Quantities may be obtained on deposit of £2 2s. Tenders to be delivered at the office of C. Hugh Watson, Solicitor, Stourport, Clerk to the Governors.

May 18. **LEEDS.**—Demolition of the existing bridge and the construction and erection of a temporary timber bridge, together with other accommodation works, and the masons', bricklayers', excavators' and ironfounders' works in connection with the construction and erection of a new 50ft. wide bridge, in three spans, across the River Aire at Kirkstall, Leeds, for the Corporation. Drawings may be seen, and a copy of specification, conditions of contract, and bill of quantities obtained at the office of W. T. Lancashire, city engineer, Municipal Buildings, Leeds, on deposit of £5 5s. Tenders must be received at the Town Clerk's Office.

May 30. **CHELMSFORD.**—Alterations and additions to King Edward VI. Grammar School. The drawings and specifications may be seen on application to the architects, Charles and W. H. Pertwee, Chelmsford. A deposit of £5 is required. Quantities will not be supplied. Tenders to be delivered to William Stunt, solicitor, Clerk to the Governors, 71, Duke Street, Chelmsford.

No Date. **EGREMONT.**—Erection of a wall or other structure, and reinstating land, at Low Mill, Egremont, adjoining the River Ehen. For particulars apply to John Sherwin, Grange, Egremont, or S. S. Moore, Holly House, Beckermet.

No Date. **KIDSGROVE.**—Erection of a timber roof.—Apply Henry Pooley and Son, Ltd., Kidsgrove, Staffordshire.

No Date. **HANLEY.**—Erection of biscuit and glost ovens (labour only). Apply by letter to E. L. Maddock and Sons, architects, Hanley.

No Date. **HANLEY.**—Erection of biscuit placing houses, dipping houses, warehouses, etc. Apply by letter to E. L. Maddock and Sons, architects, Hanley.

No Date. **PORTSMOUTH.**—New shop and front at 176, Aundel Street. Plans and specifications can be seen on application to S. Eveland Isted, F.S.I., architect, 6, Merton Road, Southsea.

No Date. **COLWYN BAY (N. Wales).**—Building a new tower to St. Paul's Church. Quantities may be obtained on deposit of £2 2s., and plans may be seen at the office of the architect, John Douglas, 6, Abbey Square, Chester.

No Date. **SHIELDFIELD.**—Building of a retaining and boundary wall at Shieldfield Council School. Plans may be seen at the Education Offices. For specification send stamped addressed foolscap envelope to the Secretary, Education Offices, Northumberland Road, Newcastle-upon-Tyne.

No Date. **PONTYPRIDD.**—Erection of three large shops and offices in Mill Street, for Duncan MacGregor. Send names to Arthur LL. Thomas and Gomer S. Morgan, architects and surveyors, Church Street, Chambers, Pontypridd, where plans and specifications may be seen. Quantities provided on receipt of a deposit of £2 2s.

ENGINEERING.

May 2. **MANCHESTER.**—Construction of reinforced concrete floors, etc., at the proposed baths at Burton Road, Withington, for the Corporation. Specifications and particulars can be obtained at the office of the City Architect, Town Hall, upon deposit of £1 1s. All cheques o rpostal orders are to be made payable to the order of "The Corporation of Manchester." Tenders to be delivered at the office of the Architect.

May 2. **PETERSFIELD.**—Heating apparatus and alterations to the ventilation of Petersfield Petty Sessional Court. Persons desirous of tendering may see plans and specification (no quantities) and obtain any further information at the office of W. J. Taylor, County Surveyor, The Castle, Winchester. Copies of the plans and specification will also be deposited at Petersfield police-station. Tenders on forms to be obtained from the County Surveyor, must be delivered to H. Barber, Clerk to the County Council, The Castle, Winchester.

May 2. **HENDON.**—67yds. 1in1. 9in. pipe surface water drain, 550yds. 1in1. 12in. by 6in. Norway granite kerb and channelling, the construction of inspection chambers, gullies, and other works in Park Road, for the U.D.C. Plans and specifications may be seen and forms of tender obtained of S. Slater Grimley, engineer and surveyor to the Council, Council Offices, The Burroughs, Hendon, N.W., on deposit of £10 with the Clerk to the Council. Tenders, addressed to the Chairman of the Council, to be sent to Henry Humphris, Clerk to the Council.

May 3. **GLANFORD BRIGG.**—Laying sewers in Ashby, from Alexandra Road to the High Street, and also down Bottesford Lane, for the R.D.C. Plans, etc., may be seen at the office of W. H. Buttrick, Home Street, Scunthorpe, from whom forms of tender may be obtained.

May 3. **PADSTOW.**—Construction of a reservoir, trenching, and laying the pipes and fittings, etc., in connection with the Trevone water supply, for the St. Columb Major R.D.C. General and detail drawings and specifications may be seen and form of tender obtained at the office of the Engineer, G. A. Evanson, Market Hill, St. Austell, or at the office of Chas. E. Whitford, Clerk, Council Office, St. Columb. A deposit of £2 2s. will be required. Tenders must be delivered at the Council Office, Fore Street, St. Columb, and sureties will be required.

May 3. **ST. COLUMB MAJOR (Cornwall).**—Construction of a reservoir, trenching, and laying the pipes and fittings, etc., in connection with the Trevone Water Supply, for the R.D.C. General and detail drawings and specifications may be seen and form of tender obtained at the office of the engineer, G. A. Evenson, Market Hill, St. Austell, or at the office of Chas. E. Whitford, clerk, Council Office, St. Columb. A deposit of £2 2s. will be required. Tenders must be delivered at the Council Office, Fore Street, St. Columb. The contractor will be required to find sureties for the performance of the works.

May 4. **LANCHESTER.**—Construction of about 950 yards of earthenware and cast-iron pipe sewer, together with manholes, lampholes, etc., for the Joint Hospital Board. Plans, specification and quantities may be seen by arrangement with J. R. Lupton, surveyor, Lanchester. Tenders should be forwarded to W. H. Ritson, clerk, Lanchester, Durham.

May 4. **COWES.**—Construction of a breakwater, 900ft. in length, on the Shrape in Cowes Harbour, in ferro-concrete (Hennebique system), for the Harbour Commissioners. Plans and specification may be seen, and form of tender, together with other particulars obtained from John W. Webster, engineer, Cowes, I.W. Tenders to be sent to H. C. Damant, Clerk to the Commissioners, High Street, Cowes, I.W.

(*Continued on page xviii.*)



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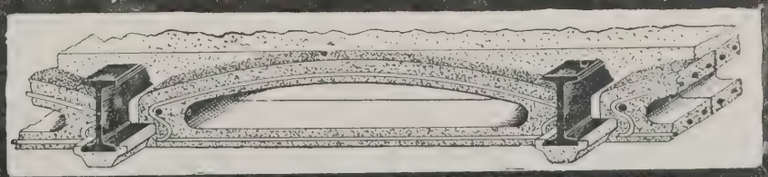
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CARDIFF UNIV. SETTLEMENT.
FLATS AT BERNER STREET, ST. JAMES STREET AND KENSINGTON HIGH ST., KINGSWAY, ETC.
WAREHOUSES AT HACKNEY, SOUTHFIELDS, SMITHFIELD ETC., ETC.

May 4. **NAAS.**—Construction of pipe sewers, manholes, flush tanks, storm overflows, lamp holes, fences, filters, septic tanks, and concrete effluent carriers, the preparation including under drainage of about half a statute acre of land for irrigation ground, and other works, in strict accordance with plans and specification prepared by the Council's Engineer, F. Bergin, B.E., for the R.D.C. Plans, etc., can be seen at the office of D. J. Pursell, Clerk of Council, Council Offices, Naas, on any day (except Wednesdays and Saturdays), or at the office of the Council's Engineer, 36, Westmorland Street, Dublin. Tenders must be accompanied by a schedule of prices, and contain the names and addresses of two solvent sureties, willing to join in a bond of £500 for the performance of the contract within the specified period. The contractor will be expected to give preference to local labour.

May 6. **MANCHESTER.**—Laying and jointing of the southern section of the third line of pipes from Thirlmere to Manchester for the Waterworks Committee. The works will extend from about three-quarters of a mile north-west of Lostock Junction Station of the Lancashire and Yorkshire Railway to the Audenshaw Reservoirs of the Manchester Corporation, and consist of nearly twenty-three miles of cast-iron and steel pipes, 44in. and 40in. diameter, the construction of a tunnel 550 yards long, nine subways under railways and canals, nine bridges under and over railways, valve houses, discharge wells, and outlet works, the fixing of valves and ironwork, and other work connected with the third line of pipes. Plans and drawings may be seen, and printed specification, schedule of quantities, and form of tender obtained at the offices of G. H. Hill and Sons, civil engineers, Albert Chambers, Albert Square, Manchester, and 3, Victoria Street, Westminster, on deposit of cheque for £5 5s.. A limited number of copies of the drawings (uncoloured), excluding ordnance maps, are available, and will be lent to persons tendering in priority of application on receipt of the sum of £5 5s., which will not be returned. Tenders, addressed to the Chairman of the Waterworks Committee, must be forwarded to the Secretary, Waterworks Offices, Town Hall, Manchester.

May 7. **WRINGTON AND PERRY (Somerset).**—(See "Buildings.")

May 7. **BELFORD (Northumberland).**—Mains, etc.—Supplying and laying of mains, etc., in connection with Beadnell and Swinhoe water supply, for the Belford R.D.C. Specifications and forms of tender can be had on application to C. A. Lake, district surveyor, Warenford, Chathill. Tenders to be sent to Adam Douglas, Clerk, Alnwick.

May 7. **SALE.**—Designs, estimates, etc., for a portion of the widening of sale bridge, Sale, in the County of Chester, in reinforced concrete, for the U.D.C. Full particulars, together with plans, may be obtained on application to the Engineer, Henry Mattinson, A.M.Inst.C.E., 55, Piccadilly, Manchester, on deposit of £2 2s. Designs and estimates to be addressed to D. Hallewell, Clerk, Council Offices, Sale.

May 9.—**WOLVERHAMPTON.**—Supplying and fixing heating apparatus at Red Cross Street Girls' School (accommodation 359) for the Education Committee. Firms desirous of tendering must send in their names to "The Secretary, Education Committee, Town Hall, Wolverhampton."

May 9. **CHELMSFORD.**—Subsidiary works in connection with the Trinity Road Council school, which is now in course of erection:—Supplying and fixing floors of steel and coke breeze concrete, in conformity with the architect's specification, for the Borough Education Committee. Plans of the school building may be inspected at the office of the architect, W. H. Pertwee, the Institute, London Road, Chelmsford, from whom all particulars may be obtained. The contract for the erection of the school building has been let to Henry Potter and Son, of Chelmsford, and the person whose tender is accepted for the before-mentioned works will be, and act as sub-contractor to, and will be paid by, that firm. Tenders must be addressed to W. Smith, Town Clerk, Municipal Offices, 16, London Road, Chelmsford.

May 9. **MARGAM (Port Talbot).**—Completion of the following works for the U.D.C.:—(1) Main intercepting sewer; (2) flushing pond and penstock chamber. (The main intercepting sewer above high-water mark, and the flushing pond, are nearly completed). (3) Main outfall, 42in. cast-iron pipes, to 550 yards beyond low-water mark. (Of the main outfall to low-water mark 1095 yards have been laid out of a total of 2,034 yards, and no part of the work beyond low-water mark has been done). (4) Subsidiary works. The drawings may be seen and copies of the specification, form of tender, and schedule of quantities may be obtained on application to William Fox and La Trobe Bateman, 5, Victoria Street, Westminster, S.W., on deposit of £10. The drawings may also be seen at the office of the Council's Surveyor, Taibach, Port Talbot. Tenders must be addressed to D. E. Jones, Solicitor, Clerk to the Margam U.D.C., Port Talbot.

May 10. **MINSTER.**—Provision and laying of about 4,540yds. of stoneware pipe sewers, etc., for the Sheppey R.D.C. Plans may be seen, and specifications, etc., obtained, at the office of the engineer, F. W. S. Stanton, A.M.Inst.C.E., 3, Victoria Street, Westminster, S.W., on deposit of £4 4s (cheques only).

May 10. **SHEERNESS.**—Provision and laying of about 4,540yds. of 12in., 9in., 8in., and 7in. stoneware pipe sewers, together with manholes and flushing tanks, and about 1,560 yds. of 12in., 9in., 7in., and 6in. cast-iron pipes, comprising a sea outfall syphon, and two rising mains; also for the construction of two pumping stations, storage, liquefying and storm tanks, percolation beds, humus tanks, and sundry other works in connection therewith, for the Sheppey R.D.C. Plans may be seen, and specifications, bills of quantities, and forms of tender obtained at the London office of the engineer, F. W. S. Stanton, A.M.I.C.E., 3, Victoria Street, Westminster, S.W., till April 30, on deposit of £4 4s. (cheques only). Uncoloured prints of the drawings may be purchased from the printers on production of a signed permit, which prints must be delivered with the tender before the deposit fee of £4 4s. is refunded. Tenders to be forwarded to the office of John Copland, clerk, Sheerness.

May 11. **BELFAST.**—Supply and erection of apparatus for the aeration, purification, filtration, and heating of the water used in plunge baths at Templemore Avenue and Falls Road Baths, for the Baths and Lodging-House Committee. Plans of buildings, specifications, and other particulars may be obtained at the City Surveyor's office. Tenders to be delivered at the office of R. Meyer, town clerk.

May 11. **WOOD GREEN.**—Schemes and tenders for a reinforced concrete swimming tank, heating of the bath, private baths, etc., and steel roof trusses and sliding lantern over same, from firms who are respectively specialists in such work for the U.D.C. Forms of tender, preliminary specifications, and copies of plans may be obtained at the office of Wm. P. Harding, Clerk of the Council, Town Hall, Wood Green, on payment of a cash deposit of £3 for each set. The general conditions, and all further information may (on the production of receipt for deposit) be inspected and obtained from the architect, Harold Burgess, Capel House, 62, New Broad Street, E.C., between the hours of 3 and 5 p.m. Tenders must be delivered to the Clerk of the Council. The contractor will be required to pay the wages and observe the hours of labour in accordance with the scheme, a copy of which will be annexed to the contract.

May 13. **HANFORD.**—Hanford sewerage and sewage-disposal works—contract No. 1, for the Stone (Staffs.) R.D.C. Drawings, etc., may be seen, and bills of quantities obtained, at the office of the engineers, Willcox and Raikes, M.M.Inst.C.E., of 63, Temple Row, Birmingham, on a deposit of £3 3s.

May 13. **STONE (Staffs).**—Provision, laying and jointing of about 2,820 yards of stoneware pipe sewers, together with manholes and lampholes; the construction of about 920 yards of 5in. and 6in. cast-iron rising and hydraulic main; also the construction of pump-well, engine-house, liquefying tanks, bacteria beds, laying-out of irrigation area, and other incidental works in accordance with the drawing and specification prepared by the engineers, for the R.D.C. Drawings and specification may be seen and bills of quantities obtained at the office of the engineers, Willcox and Raikes, MM.I.C.E., 63, Temple Row, Birmingham, on deposit of £3 3s. Tenders to be delivered at the office of J. Buckley Norris, clerk, Union Offices, High Street, Stone, Staffs.

May 18. **BIGGLESWADE.**—Construction of about 7½ miles of stoneware pipe sewers, varying in size from 15in. to 6in., together with manholes, lampholes, ejector chambers, and other works; also for the laying of about 1½ miles of cast-iron and steel rising and compressed air mains, from 10in. to 2½in. diameter, for the U.D.C. Plans and specifications may be seen, and bills of quantities and schedule of prices obtained, at the offices of the Engineer, J. T. Eayrs, M.Inst.C.E., 30, Corporation Street, Birmingham, April 25 to April 30, and also at the office of the Surveyor to the Council, Market Place, Biggleswade, from May 2 to May 7, on deposit of £3 3s. Tenders to be delivered at the office of Henry Chaundler, Clerk to the Council, Council Offices, Biggleswade, Beds. It is hoped that only substantial contractors with extensive experience in similar works will apply.

No Date. **EGREMONT.**—(See "Buildings.")

IRON AND STEEL.

April 25—May 2. **BRISTOL.**—Steel.—Supply of wrought iron and mild steel, during year ending December 31, 1910, for the Sanitary and Improvement Committee. Specifications and forms of tender may be obtained at the offices of the City Engineer, 63, Queen Square, Bristol, on deposit of 10s. Sample bars as named in the specification must be delivered at the offices by 10 a.m. on April 25. Tenders must be delivered to the offices of the city engineer.

May 3. **SHIPLEY (Yorks).**—Supply and delivery at Shipley Midland Railway Station of steel girder tram rails and fishplates, for the U.D.C. Conditions of contract, specification and form of tender may be obtained at the office of W. H. Dawson, surveyor to the Council, Manor House, Shipley. Tenders to be sent to Isaac Lindow, clerk of the Council, Manor House. The contract will be let subject to the fair contract clauses of the Council.

May 11. **WOOD GREEN.**—(See "Engineering.")

PAINTING.

May 2. **BIRKENHEAD.** (See "Buildings.")

May 2. **STEPNEY, E.**—Re-decorating the exterior of their Mile End Public Library at Bancroft Road, E., for the Stepney B.C. Contractors will be required at all times during the existence of the contract to pay the trade union rates of wages as agreed to by the employers' association and the trades unions and as in practice obtain. Copies of the conditions, specification, schedule, and form of tender may be obtained by applying to the Borough Engineer, M. W. Jameson, A.M.I.C.E., at the Municipal Offices, 15, Great Alie Street, Whitechapel, E., between 10 a.m. and 12 noon, upon deposit of £1. Tenders must be sent to Geo. W. Clarke, Town Clerk, 15, Great Alie Street, Whitechapel, E.

May 4.—**FALMOUTH.**—Whitewashing and colouring at the workhouse, for the Guardians, in accordance with specifications, which can be inspected at the workhouse or at the offices of Reginald N. Rogers, clerk, Falmouth. Tenders to be addressed to the Clerk.

May 6. **MANCHESTER.**—Painting the iron bridges on the line of aqueduct, from near Ambleside to Agecroft, near Manchester, for the Waterworks Committee of the Corporation. Specification, form of tender, and all other information may be obtained on application to the Secretary, Waterworks Offices, Town Hall, Manchester.

May 7. **STANWIX (Carlisle).**—Outside painting, etc., of Stanwix Cemetery, for the Burial Board. Specifications may be seen, and the work pointed out, on application to the Curator. Tenders to be delivered to Wm. Dobinson, Clerk, 10, Bank Street, Carlisle.

May 11. **TOTTENHAM, N.**—Cleaning and painting and repairing work at the North-Eastern Fever Hospital, St. Ann's Road, Tottenham, N., for the Metropolitan Asylums Board, in accordance with conditions of contract and specification prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., engineer-in-chief. The conditions of contract, bills of quantities, specification, and form of tender may be inspected at the office of the Board, Embankment, E.C., and can be obtained upon deposit of £1. Tenders, addressed as noted on the form, must be delivered at the office of the Board.

June 12. **KIRKBY-IN-FURNESS.**—Re-painting the cottages at Herschell Terrace, for the Kirkby-in-Furness Co-operative Society. Specifications can be seen at the stores on application to the manager.

No Date. **BAILDON.**—Painting new golf pavilion, Baildon. Applications, in writing, must be sent to the Secretary.

No Date. **SEASCALE.**—Painting and colouring, at The Croft, Seascale. Particulars, apply, J. E. Werry, Duke Street, Barrow.

No Date. **WEST AUCKLAND.**—Painting and cleaning the Workmen's Club and Institute for the Committee. For particulars, apply T. Halfpenny, Secretary.

ROADS AND CARTAGE.

May 2. **MALDON.**—Supply of broken granite and flints for the T.C. Particulars and form of tender can be obtained at the office of Thos. R. Swales, Borough Surveyor, Municipal Offices, Maldon, to whom tenders must be sent.

May 2. **COVENTRY.**—Widening and sewering of Humber Road, situate in the parish of St. Michael's without the city boundary, for the R.D.C. Particulars may be obtained upon application to T. F. Tickner, F.R.I.B.A., surveyor, High Street Chambers, Coventry. Tenders are to be delivered at the office of James Arch, clerk, 13, Little Park Street, Coventry.

May 2. **RUNCORN.**—Making in tarmacadam of certain streets an passages in the parish of Stockton Heath. Plans and specifications may be seen, and quantities obtained (on deposit of 10s. 6d.), at Robert Garnett's, Sankey Street, Warrington. Tenders must be sent to the office of Geo. F. Ashton, clerk, 71, High Street, Runcorn.

May 2. **WEST ASHFORD.**—Supply of about 1,640 yards of either of the following: Best blue Guernsey, Clee Hill, Aberdeen, Penlee, Basalt, St. Keverne, or Cherbourg quartzite, to be delivered to the railway stations at Charing, Hothfield, Ashford, Pluckley, and Great Chart Siding, in such quantities as the surveyor shall from time to time order, for the year ending March 31, 1911, for the R.D.C. Further information and forms of tender can be obtained on application to Alfred Sims, Surveyor to the Council, Surveyor's Office, Charing, Kent, to whose office tenders must be sent addressed to the Chairman of the West Ashford R.D.C. Samples of material must be sent and delivered free by parcel post only (not by rail), addressed—Chairman, District Council, Union House, Westwell, Ashford, Kent.

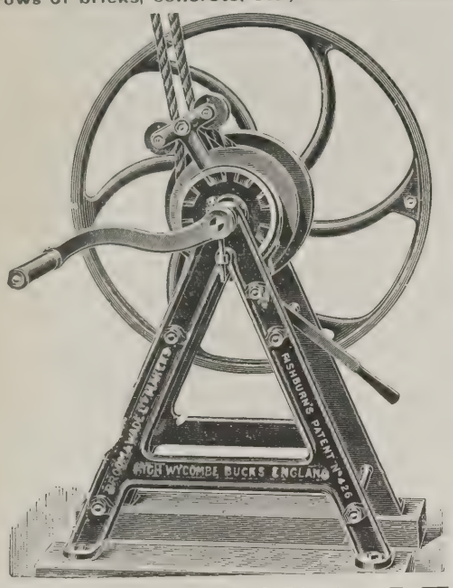
May 3. **WEST DEAN (Glos.)**—Construction of proposed new roads at Bream, Yorkley, Joyford, and Lydbrook, for the R.D.C. Tenders are to be sent to T. Scoble, Coleford, Glos., Clerk to the Council, Coleford, Glos., to whom application must be made for inspection of plans and specifications, for forms of tender, or for other particulars.

(*Continued on page xx.*)

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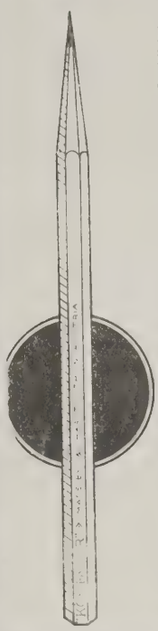
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If you are one of those who still think that 4d. is a stiff price to pay for a pencil, an experiment will only cost you 4d. It won't be a costly experiment either, seeing that one 'Koh-I-Noor' outlasts SIX ordinary pencils. And then—the luxury of writing with such a magnificently-made pencil! You cannot know what it means until you try 'Koh-I-Noor' Quality. And you will never go back when you do know.

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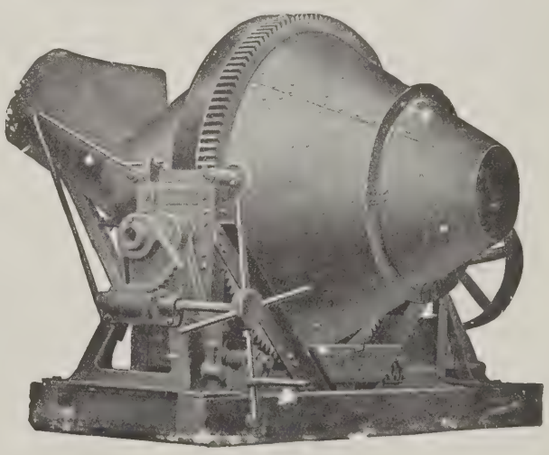


Fig. 982.

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May 3. **HETTON-LE-HOLE (Durham).**—Supplying the following road materials, for the U.B.C. —1,000 tons of 2½in. ironstone slag, 700 tons 2½in. machine broken whinstone, 150 tons of ½in. machine broken whinstone, 200 tons of ½in. machine broken slag, and 50 tons of 1in. machine broken slag. Further particulars, together with forms of tender, may be obtained from the surveyor, John Harding, Township Offices, Hetton-le-Hole, to whom samples of the materials proposed to be supplied must be sent. Tenders must be addressed to Gordon Young, clerk, William Street, Houghton-le-Spring.

May 4. **ROMNEY MARSH.**—Supply and delivery of 220 yards of quartzite, to the following parishes and roads:—100 yards 2nd inch, Straight Road, Brookland; 200 yards 1in., Straight Road, Brookland; 20 yards 1in., Guldeford Road, Brookland; 20 yards 1in., Alliance Road, Brookland; 20 yards 1 in., Ivychurch Road, Brenzett; 20 yards 1in., Brenzett Road, Snave; for the R.D.C. To be delivered before September 1, 1910, and yarded at the expense of the constructor, in such manner and in such quantities as the Surveyor may direct, and subject to his measurement. Tenders to be delivered to William B. Smith, District Surveyor, New Romney.

May 4. **HAWARDEN.**—Supply of road stones for the maintenance of roads within the district, for the year ending March 31, 1911, for the R.D.C. The stones to be broken so as to pass through 1½ and 2in. gauges, of equal quality, free from dirt, and delivered, as required, at the following stations: Hope Village, Buckley Junction, Buckley (old station), Hawarden, Knowle Lane, and Watkinson's Sidings (Wrexham, Mold, and Connah's Quay Railway), Kinnerton, Broughton Hall, Sandycroft, Queen's Ferry (L. and N. W. Railway), and Rossett (G. W. Railway). Tenders are also invited for the carting of stones from the various stations, quarries andj gravel pits. Forms of tender and all particulars may be had on application to the District Surveyor, Wm. Newton, Drury, Buckley, Chester. Tenders to be delivered to Hugh G. Roberts, Clerk of the Council, Council Offices, Broughton, near Chester.

May 5. **STOCKPORT.**—Excavating, sewering, forming, paving, kerbing and flagging the following streets within the borough:—Bolton Street, Dover Street, Hurst Street, Rupert Street (part of), Stanhope Street, Springfield Avenue, Westminster Avenue passages Nos. 1 to 5 and 14 to 18 inclusive, and No. 1 off Rupert Street, for the Highways and Sewers Committee. Plans, sections, specifications and conditions may be seen, and forms of tender obtained on application to John Atkinson, A.M.I.C.E., borough surveyor, Town Hall, Stockport. Tenders, addressed the Borough Surveyor, Stockport, to be left at his office. Rate of wages and hours of labour clause to be observed.

May 7. **HARROW-ON-THE-HILL.**—Street improvement in Station Road, for the U.D.C. The work consists of widening the present carriageway and footway and other works incidental thereto. Plans may be seen and specifications and quantities obtained from J. Percy Bennetts, engineer and surveyor. Tenders to be sent to John Strachan, clerk.

May 9. **TENDRING (Essex).**—Supply of about 2,500 tons of granite, broken to go through a 1½in. ring, and delivered as required on to the wharves or into trucks, free of all dues, at the following places, viz.:—Harwich, Wivenhoe, and Mistley; also for the supply of the following quantities of red Kent flints, broken to a 2in. gauge, and delivered alongside the wharf, hard or beach, at the following places, as and when required by the surveyor, for the R.D.C.:—Beaumont 500 cubic yards, Harwich 400, Clacton 200, Kirby 200, St. Osyth 200, Great Oakley 200, Mistley 300, Landermere 300, The Flag, St. Osyth 200. A quantity of above will be loaded on rail to different stations, and will be paid for according to railway weight, i.e., 1 yard—21 cwt. Tenders must be sent to A. J. H. Ward, clerk, 42, Church Street, Harwich and samples should be sent addressed to the Clerk, Workhouse, Tendring Weeley. R.S.O.

May 10. **SALCOMBE.**—Supply of 1½in. broken forder stone, 2in. broken limestone, forder shippings, and limestone chippings, for the U.D.C. Particulars may be obtained on application to Frank Swinburne, surveyor, Fore Street, Salcombe. Tenders to be forwarded to C. E. Turner, clerk, Salcombe.

May 12. **CARLOWAY (Stornaway).**—Completion of the new road between Stornoway and Carloway with the branch to Breaselete, measuring 13 miles or thereby, parts of which are firmed and stone-bottomed. Specifications and plans can be seen in the office of Hugh Miller, Lewis District Committee Chambers, Stornoway, to whom tenders must be sent.

May 12. **OGMORE AND GARW.**—Supply of broken limestone and limestone chippings, equal in quality to the "Ewenny Blue Mountain Limestone" and also broken granite and chippings for road metalling within the Urban District of the Ogmore and Garw, for the period of twelve months, commencing May 16, 1910, and to be delivered in such quantities and at such times as the surveyor may direct from time to time at the following stations: Brynmenyn, Pontyrhyl, Pontycymmer, Blaengarw, Blackmill, Gilfach, Goch, Ogmore Vale, and Nantymoel. All limestone and granite shall be broken cubically and sufficiently small to pass through a 2½in. gauge by its largest dimensions. All chippings shall be broken to pass through a ¾in. screen, and must be free from dust when loaded into the trucks at the quarries. The approximate quantities of limestone and granite will be about 10,000 tons. The council will undertake to pay the railway freight. Specifications and forms of tenders and all other particulars may be obtained from the Surveyor, Council Offices, Brynmenyn. Tenders to be sent to the Clerk of the Council, S. H. Stockwood, solicitor, Bridgend.

May 30. **CAMBERWELL.**—Kerbing and York paving the footways in Peckham Rye West Side (from Barry Road to Nigel Road); also for roadway paving (patent or otherwise) to specification as submitted by contractors, for the B.C. Full particulars and form of tender can be obtained from Wm. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E. Contractors are invited to state the roadway paving they are prepared to lay and their conditions as to maintenance for a term of years. Tenders to be delivered to the Town Hall, Camberwell, S.E., addressed to the Works Committee.

MISCELLANEOUS.

May 2. **BRADFORD.**—Supply of timber for use in woodwork centres, and must be of the best qualities in the respective sizes required, for the Education Committee. Form of tender may be obtained on application to Tho. Garbutt, secretary, Education Office, Town Hall, Bradford. Tenders should be forwarded to the Secretary's Office, accompanied by samples of the woods quoted for. The successful contractor will be required to sign the Corporation fair wages resolution.

May 3. **LONDON.**—Providing and laying wood block flooring at school buildings, etc., for the L.C.C. Persons desiring to submit tenders may obtain the specification, form of tender, etc., at the Architect's Department, 8 and 10, Charing Cross Road, W.C. The contractors will be bound to pay to all workmen employed by them in and about the execution of the contracts or any part thereof, wages at rates not less, and to observe hours of labour not greater, than the rates and hours set out in the Council' list, and such rates of wages and hours of labour will be inserted in and form part of the contracts by way of schedule.

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Petrol Air Gas (O'Connor)	1/9
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Roof Carpentry (Collings)	2/0
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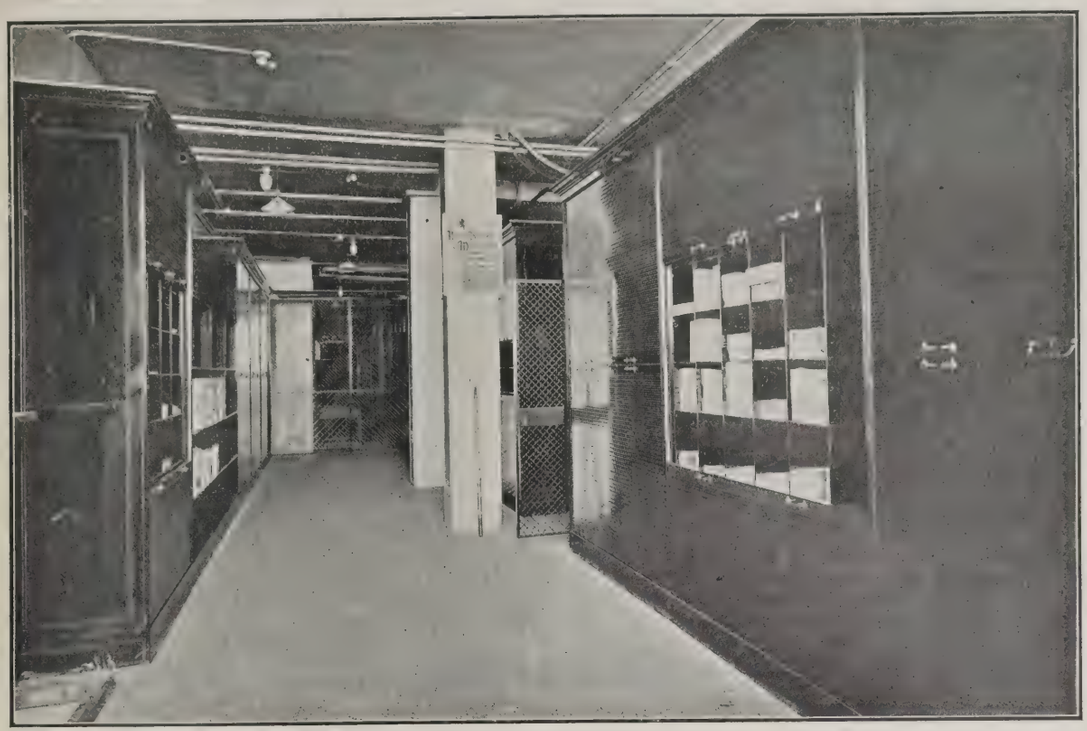
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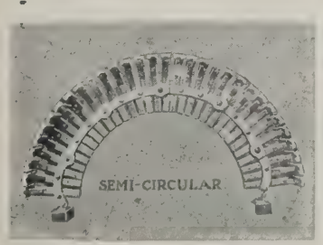
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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, ARCHITECTS' AND BUILDERS' JOURNAL, *Caxton House Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Friday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Abertridwr (Wales).—For erection of a proposed workmen's library and institute at Abertridwr. Illtyd Thomas, F.S.I., 17, Quay Street, Cardiff, architect.

J. Howells, Glannant, Caerphilly	£7,100 0 0
W. Williams, Pearl Street ...	6,999 0 0
Blundell and Bevan, Mont Claire, Blackwood	6,958 0 0
C. Jenkins and Son, Porth ...	6,850 0 0
Hamilton and Millard, Caerphilly	6,845 0 0
R. Jones, Brynawel, Abertridwr	6,836 5 1
T. F. Howells, Cardiff and Caerphilly	6,830 0 0
W. T. Morgan, Tydraw Road ...	6,800 0 0
F. Bristow, Bathurst, Abertridwr	6,780 0 0
E. R. Evans Bros., Cathays ...	6,749 0 0
W. Thomas and Co., Tresillian Terrace	6,719 4 4
A. J. Colborne, County Building Works, Swindon	6,679 0 0
D. Davies and Sons, Trade Street	6,654 0 0
D. W. Davies and Howell, Morgan Chambers	6,496 0 0
Knox and Wells	6,485 0 0
F. Bond, 49, Beda Road ...	6,298 0 0
Davies and Lloyd, Senghenydd	6,199 0 0
J. Lewis, Caerphilly	6,100 0 0
J. Williams,* Brynteifi, Abertridwr	6,080 0 0
W. Williams and Sons, New Tredegar	5,989 0 0

Rest of Cardiff.
*Accepted.

Berkhamsted.—For erection of new residence, for W. S. Rogers. Moscrop-Young and Glanfield, 20, Brook Street, Bond Street, W., architects.

Collwell and Edgar	...£1,325
H. and J. Matthews	... 1,209
E. Smith and Son	... 1,296
Miskin and Sons	... 1,295
G. B. Tutt and Son	... 1,287
Honour and Son	... 1,236
Brightman and Son*	... 1,147

*Accepted.

Bere Alston (Devon).—For new elementary school for 124 boys, for the Devon County Education Authority. Percy Morris, 1, Richmond Road, Exeter, county education architect. Quantities by Bruce Dawson, 6, Old Queen Street, Westminster, S.W.

Pearn Bros.	...£2,184 0 0
F. J. Stanbury	... 1,560 16 6
A. Andrews	... 1,560 0 0
Lapthorn and Co. ...	... 1,540 0 0
C. Bryer, jun.	... 1,533 13 2
R. F. Yeo and Sons ...	... 1,428 1 9
Wakeham Bros.	... 1,405 12 0
C. B. James	... 1,372 1 6
J. L. Richards	... 1,302 11 2
J. Paynter	... 1,312 5 2
W. E. Bennett,* Bodmin	... 1,312 1 7

Architect's estimate, £1,550.
*Accepted

Crumlin (Mon.).—Accepted for erection of a new Council school to accommodate 600 children, for the Monmouthshire Education Committee.
Bailey Bros., Pontnewynydd, £9,568.

Darlington.—Recommended for acceptance for alterations and additions to the workhouse.
T. Rogers, £2,183 10s.

Derby.—For erection of additional wards to the Nightingale Nursing Home, for the Royal Derby and Derbyshire Nursing and Sanitary Association. Thorpe and Fryer, 23, St. James' Street, Derby, architects.

J. H. Fryer	...£4,847 10 0
R. Kershaw and Son, Burton-on Trent	... 4,800 0 0
G. W. Walker, Wirksworth	... 4,487 0 0
J. and J. Warner, Mickleover	... 4,300 0 0
Pegg and Bailey	... 4,208 0 0
A. Smith	... 4,201 0 0
W. Walkerdine	... 4,200 0 0
Radford and Greaves ...	... 4,250 0 0
J. Dickinson	... 4,188 0 0
E. Morley and Son ...	... 4,165 0 0
Walker and Slater ...	... 4,095 0 0
W. Ford and Sons* ...	... 4,067 10 0

Rest of Derby.
*Accepted.

Inverurie.—Accepted for works in connection with the Carnegie Public Library.

J. Smith, Kintore, mason	...£591 17 10
Edwards and Rae, Dyce, carpenter	272 4 0
F. Morrison, jun., slater	20 8 0
J. Laing and Sons, Inverurie, plumber	107 14 0
Grant and Robertson, Inverurie, plasterer	96 3 3
Bradshaw and Co., Glasgow, asphalte	24 0 0
J. W. Forrest, painter	55 10 0
J. Abernethy and Co., iron and steel work	41 10 0
Leslie and Hay, fittings	17 15 0

Rest of Aberdeen.

London.—For the widening and reconstruction of the bridge carrying the railway over Brockley Road, for the L.C.C.

A. Fasey and Son, Leytonstone	£7,205 9 1
A. Thorne and Sons, Westminster	6,394 7 6
W. Pattison and Sons, Ltd., Westminster	6,180 5 7
W. Rigby, 20, Bucklesbury ...	6,105 1 0
Kirk and Randall, Woolwich ...	5,080 0 0
J. Mowlem and Co., Ltd., Westminster	5,078 0 0
J. Aird and Sons,* Lambeth ...	5,093 3 7

*Accepted.

Lower Sandhurst (Berks.).—For the enlargement of the Council school at Lower Sandhurst, Berks., by three classrooms, for the Berkshire Education Committee

C. Aldridge, Spencer's Wood	...£1,779 10 10
Drowley and Co., Woking ...	1,679 0 0
Martin, Wells and Co., Ltd., Aldershot	1,620 0 0
W. Watson, Ascot	1,582 0 0
Tydeman Bros., Swindon ...	1,571 17 11
J. B. Seward, Wokingham ...	1,537 0 0
R. Love, Sunningdale	1,514 0 0
McC. E. Fitt,* Reading ...	1,487 0 0

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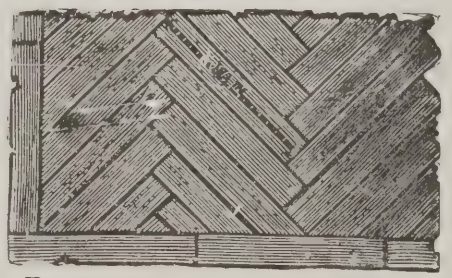
C. Aldridge	...£372 1 6
Drowley and Co.	350 0 0
Martin, Wells and Co.	340 0 0
W. Watson	348 0 0
Tydeman Bros.	320 5 0
J. B. Seward	336 0 0
R. Love	345 0 0
McC. E. Fitt	365 0 0

*Recommended for acceptance.

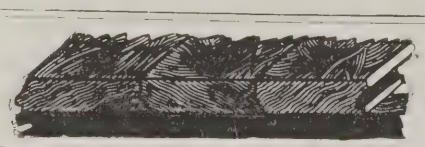


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THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
MAY 4th, 1910.

Volume XXXI. No. 796



FROM THE DRAWING BY HAROLD FALKNER.

(See "The Eighteenth Century Architecture of Bath," p. 408.)



DOORWAY OF ALFRED HOUSE, ALFRED STREET BATH. J. WOOD (SENR.), ARCHITECT. 17 8.

(See "*The Eighteenth Century Architecture of Bath*," *page 408.*

THE ARCHITECTS' & BUILDERS' JOURNAL.

MAY 4, 1910. *CAXTON HOUSE, WESTMINSTER.* VOLUME 31. No. 796

Note : The List of Contents will be found on Page V of the front advertisments in this and subsequent issues.

Architecture at the Royal Academy.

THE Architectural Room is embellished by two models, a class of exhibit we are always glad to see there, and wish there were more of them. The one of "A Church at Rio Janeiro," by Mr. Edward Larkins, is a beautifully executed model of a church in Byzantine style, brick and stone, on a cross plan (a small plan is affixed to the stand), with a central dome, rising pretty high above the crossing, and two subsidiary domes to east and west of it, which, from an ordinary standpoint, would hardly be visible as external features. The angle turrets, with small cupolas, are gracefully treated, and perhaps in their design owe something to the suggestions of Westminster Cathedral. Altogether this is a very meritorious specimen of revived Byzantine. The other model, a national opera-house for a foreign Government, by Mr. E. O. Sachs, assisted by Mr. A. H. Lister, is large and elaborate, but of rather commonplace architectural character, and no plan is appended.

After the models, it seems suitable to notice first the works of members of the Academy, and we may give the first place to Professor Blomfield, whose pencil drawing, "New Water Tower, Lincoln" (1634), is the best and most original thing in the room. The plan is compounded of a square and a circle, the latter inscribed in the square, and not showing externally. The object evidently is to obtain strength without an exaggerated thickness of walls. The simple and massive treatment of the tower, with some suitable architectural emphasis in plan and in the upper portion, makes it a grand and impressive object; a small sketch shows how it combines in the landscape with the cathedral. Professor Blomfield also exhibits "New Buildings, Sherborne School" (1641), on an irregularly shaped site; the side shown in the perspective view has a pavilion somewhat Georgian in character at each end; in the recessed portion between, windows of Classic character are divided by Gothic buttresses, but the whole hangs together very well, and has the true school character. His other exhibit, a mansion in Jersey (1629), is not so interesting architecturally, but has an effective and convenient plan; it would have been better if a north point had been added; but Professor Blomfield at least gives plans, which many exhibitors do not, and hence treat us only to pictures of buildings without any indication of the basis on which they are founded. This is an old complaint in regard to Academy exhibits, and it will probably continue until the Academy Council wake up to the fact that plans are an important element in architectural design, a fact which seems to be completely ignored now; indeed, we have actually heard the omission of a plan defended by the author of a drawing on the ground that it was less likely to be hung if disfigured by a plan! In one case three or four years ago we know that an architect sent a plan, absolutely necessary to explain his perspective drawing, in a separate frame, and it was declined and the perspective hung without it. All of which shows how far the Academy at present is from realising how architecture ought to be illustrated.

We may take the remainder of the Academicians' designs in alphabetical order. Mr. Belcher sends a large elevation of his "Ashton Memorial, Lancaster" (1556: no plan), which has been illustrated before in this room; the present drawing is his diploma work, and a very worthy one. It is a rare chance for an architect in these days to have the opportunity of carrying out on a large scale a work purely for architectural effect, and he has made the most of it. His "Holy Trinity Church, Kingsway" (1545: no plan) is a free Classic design, with a graceful tower in several stages, somewhat spoiled by the same kind of panel and sausage ornament which adorns (?) his building at the top of St. James's Street; a mere fashion in architectural detail, which will be laughed at when it has ceased to be the fashion. The lower part of the front takes the form of a concave half-circle towards the street, reminding one of M. Guibert's memorial church in Rue Jean Goujon at Paris (which perhaps suggested it). The "New Building for the Zoological Society, Regent's Park (1567: no plan), which we presume is a house for the scientific staff, or something of that kind, is a very pleasing and sensible-looking building of a quiet type, with none of the eccentricities of detail which spoil the church.

Messrs. Ernest George and Yeates scarcely ever show a plan to the charming water-colour drawings they exhibit. "Crathorne Hall, Yorkshire" (1425), is a water-colour drawing of a large square stone house, with a projecting bay on the entrance front, carrying four columns and a pediment in the upper portion; a balustraded wall and gate-piers, carrying heraldic figures, form a foreground incident. The "Royal Academy of Music, Marylebone Road" (1495), is a building in somewhat the same style, with a large hip-roofed centre block, and two smaller wings, which do not seem sufficiently connected, architecturally, with the centre block. The plan and arrangement of a building for an Academy of Music would have been a matter of some interest; but here we are merely shown the outside picture of the building, and whether it is suitable for its purpose or not there is nothing to show.

"New Museum of Archæology and Ethnology, Cambridge" (1447: no plan), by Mr. T. G. Jackson, is a fine pen drawing showing an effective treatment of the end of the main block nearest the spectator, divided up by buttresses which in the upper stage develop gracefully into small columns; and there is a good deal of picturesque effect in the treatment of the flank of the building. But the planning of a museum is a very important matter, in the way of facilities of lighting and arrangement, and on this we get no information. It is to be hoped, at all events, that the museum floor space is not cut into by iron columns, as at the Sedgwick Museum at Cambridge by the same architect, in a case where girders could perfectly well have been made to carry a floor without any interruption from columns. The same architect exhibits a drawing of part of Winchester Cathedral (1496), "A suggestion for restoring the cloister in connection with the necessary buttressing of the south side of the nave"; this is, of course, purely Gothic revived work. The cloister is shown with richly

traceried windows (or openings), looking of a date a trifle later than the adjoining work; but that is no objection, even on archæological principles; the cloister might have been built later. It will be the best method to mask the buttressing and give coherence to the whole; and however we dislike restoration on principle, this is a case in which whatever is erected must be in keeping with the remainder of the building.

Sir Aston Webb exhibits a large drawing of "The Entrance to the Mall from Charing Cross" (1472), with a small plan attached. The real importance and effect of this erection will, of course, not be properly realised till Drummond's Bank and some other buildings are got out of the way; at present the building seems crowded, and there is not space to see it properly. The water-colour drawing is rather heavy and loaded in effect, and does not show the building under the most favourable effect of light. The "Students' Union" (1465), in connection with the College of Science at South Kensington, is a very pleasing quadrangle design, in what might be called a classic version of Collegiate Gothic; it has the traditional English college character about it, with some modification in detail. A small illustration of this is given on another page—much smaller than was intended, owing to a misunderstanding through the telephone with the photographer; and there was no opportunity of taking another photograph. We like also very much the still simpler building, "New Buildings, Magdalene College, Cambridge" (1470), with their quiet homelike character; plain as it is, it makes a very pleasing group.

Among the designs for public buildings, other than those by Academicians, the most important is the large perspective view of Mr. Ralph Knott's "New London County Hall" (1420: no plan). This shows the building as seen from the river. Though this design is not all that might have been hoped for from such a great and exceptional architectural opportunity, it has the great merit of being broad, simple, and massive in design, and free from any eccentricities of detail. The mistake, to our thinking, lies in the abnormally high roof, which is out of keeping with the classic and level lines of the general design, and appears more especially so at the centre, where the line of the building takes a concave sweep inwards in the rear of the columned screen in front. This kind of treatment is essentially Classic, and the curve of the great mass of high roof takes away from the dignity of the design at this point, and looks comparatively crude and shapeless. The fact is that, whatever may be said about the architectural truth of showing the roof of a building, the style adopted for this building is one which by habit and association goes much better with a balustraded finish and a concealed, or, at any rate, a subordinated roof, than with this lofty mass of roof, which is much more in keeping with a building of more mediæval type of architecture. The incongruity would be less felt if all the masses of the building were in straight lines; but the shapeless-looking curved mass of roof in the centre is bad and unarchitectural in effect, and we hope it will be altered. The most important exhibit of public architecture next to this is perhaps Professor Pite's large and powerful pen-drawing, "Design for Approach from St. Paul's Bridge" up to the Cathedral (1610). The author gives the plan of his street; the perspective is a bird's-eye view up the street, above the tops of the houses, the south side of St. Paul's filling up the background. The drawing is one of those fine pieces of effect which Professor Pite has always known so well how to produce with the pen, but in consideration of the subject of the drawing it does not really show sufficiently what his proposed design of the street is; we look down from above on a number of pediments and porticoes on either side of a street which, from this point of view, looks too narrow for its position and importance, and the drawing somehow does not produce the effect of the street being axial with St. Paul's south portico, which (as the plan shows) is of course the intention. In short, this drawing must be called an effect rather than a design; as an effect it is very interesting.

Mr. A. Koch exhibits a view of his design for the "Peace Palace at the Hague" (1419: no plan); by no means the worst of the designs exhibited in that remarkable competition. It shows a kind of columned temple running across the site at a high elevation, with three lower blocks or wings projecting from it at right angles, on a lower level. A plan would have explained the use and *motif* of these, which require this explanation; otherwise it is a fine pile of building, rather spoiled by the heavy square erection which forms the crowning feature.

Mr. Paul Waterhouse's "Refuge Assurance Co., Manchester" (1421: (no plan), is a charmingly executed wash drawing of a courtyard of a building in Classic style; its interest is perhaps pictorial rather than architectural. There is not even pictorial interest in the "Design for Training College for Teachers, Leeds" (1424: no plan). What is the object or the point, in a room which is supposed to exhibit contributions to the are of architecture, of a large bird's-eye view of a group of utilitarian buildings, so small that no detail can be shown? All that such a drawing shows is that the author has carried out, or is going to carry out, a large group of buildings for a training college; no architecture is shown, and no plan to give a clue to its arrangement. We have no doubt it is a good building for its purpose; but bird's-eye views of this type are little above the level of advertisements; they have no architectural interest.

Mr. A. Harrison's "Public Baths, Nechells, Birmingham" (1434: no plan), is a picturesque building, but the towers, of pleasing design, are out of place in a building of this kind; they are useless, and have no relation to the purpose of the building. Mr. Stokes's "Proposed New Quadrangle, Emmanuel College, Cambridge" (1457: no plan), is a water-colour view, showing a quadrangle of brick and stone buildings of a suitable collegiate type; the drawing is rather roughly executed, and gives no clue to the real nature of the details, only to the general effect. Messrs. Russell and Cooper's "Design for Berkshire County Offices" (1487) has the merit of being properly illustrated in an architectural sense, by plans, elevation, and detail elevation; it is to be regretted there are not more drawings in which this method of illustrating a design is adopted. The building is a simple one of classic character, brick with stone dressings; it perhaps might have been made a little more municipal in expression; it has rather too much the effect of being a large private house, as far as the elevations are concerned.

After this we come to a large collection of church architecture designs, which are grouped in one part of the room, and which we will return to on another occasion. Passing them for the present, we come on a large drawing of Mr. Murray's, "Woods and Forests Offices," in Whitehall (1552: no plan), which we illustrated some little time back. This is a dignified building, but the main height (excluding the attic) is divided too nearly into two equal heights, which never has the best effect; and the result is that the cornice, well proportioned to the general height of the structure, looks too heavy for the upper storey with which it is more directly connected. A lower basement storey, and a proportionally higher upper storey (using the word "storey" in relation to the architectural divisions only) would have had a better effect. As drawn here, the angle volutes of the Ionic capitals seem to spread too much for good effect; this is perhaps the fault of the drawing.

Mr. Kitsell's two small drawings of "Oak Bridge and approach, St. Petroe Minor, Cornwall" (1565), are rather interesting as a treatment of an unusual subject; it is a pity that he spoiled the simple and suitable treatment of the oak bridge by the piece of wrought iron filigree over the centre, apparently to carry a lamp; it should have been more simple in line; it is quite out of keeping with the oak-work. The approach, with its cylindrical angle piers topped with stone balls, flanking the steps, is a good bit of masonry design. The last drawing we can mention at present is Mr. Warren's "Dining Hall, Caius College, Cambridge" (1609); a per-

spective view of a dining hall, wainscoted with wood panelling and pilasters in the Jacobean manner, and roofed with an open timber hammerbeam roof—a Gothic form with Classic detail; the whole looks very well.

As already intimated, we shall have more to say about other exhibits.

The R.I.B.A. Annual Report.

The Report of the Council of the Institute of Architects for the official year 1909-1910 records that some of the most important work of the year has been done by the Housing and Town Planning Committee. Under the guidance of the Committee a number of Town Planning Committees have been formed by the allied societies, and are engaged in co-operation in the study of the problems of town planning, and in bringing architectural influence upon municipal authorities who may be carrying out town-planning schemes. By this extended and combined action of the profession it is to be hoped that a good deal will be accomplished in the right direction. The most important event of the year, in the opinion of the Council, has been the approval of the new by-laws by the Privy Council. It is important, no doubt, in the sense that it gives the Institute a platform from which to initiate a movement in favour of getting the profession more generally represented in the ranks of the Institute, which will increase its power of action for defence of the profession when necessary. But this after all is only architectural politics; and we should say that the promotion of the general study of town planning was really the more important success of the two. It is satisfactory to learn that the arrangement for taking over additional premises in connection with the present Institute rooms is concluded, and the Conduit Street Galleries, with their entrance from Maddox Street, will be taken possession of by the Institute on June 24th. More space has been much wanted; but much will have to be done in the way of internal rearrangement and decoration. We hope the importance will be recognised of keeping the library together on its present floor, and not dividing it up among different floors, which would much impair its usefulness. The Report of the Art Standing Committee touches on some important points. They have the concurrence of the First Commissioner of Works in claiming that the design of the Piccadilly Hotel (Mr. Norman Shaw's design) should be carried on to the corner of Air Street; it appears that there has been an effort to secure the carrying out of a reproduction of an existing façade at that point. It is astonishing what trouble people will take to spoil a great building scheme. Referring to the matter of St. Paul's Bridge, the Art Committee's Report suggests that further action by the Institute may be desirable with a view to safeguarding the architectural character of the work. As the Report says, after referring to the deputation of the Institute, "the subsequent action of the Corporation is somewhat obscure." It certainly is, and our conviction is that mischief is brewing to the bridge, and that the Corporation, unless strong pressure is brought to bear on them, will pay no attention to the representations that have been made to them.

Some Opinions and a Moral.

Mr. J. W. Simpson's paper, under the title, "With Share and Mattock," read before the Northern Architectural Association in December last, has been circulated as a separate pamphlet, and contains some opinions worth consideration and comment. Touching the question of competitions, Mr. Simpson is less pessimistic than a good many recent critics; he does not sympathise with the cry about wasted labour, and contends that the labour is not wasted if it induces architects, young ones especially, to study an architectural problem and learn how to handle it. That it is a good argument in regard to young architects, of whom it may often be said that if they were not working on a competition they would not be doing anything equally profitable to themselves with the time; but it does not apply in the case of older men. There is too much competition for works of average size and importance, and it is rather heartbreaking to architects who have passed out of the rank of beginners to find that they have no chance of getting a commission of any importance without competing for it. And with the best of assessors, competition, though (as Mr. Simpson says) it ought not in that case to be called a "lottery," is liable to be influenced by the "personal equation" of the assessor, who, after all, is mortal, and therefore fallible. The progress of the examination system, and the remarkable results it has achieved, is another point touched on by Mr. Simpson, who refers to its small beginnings less than twenty years ago, when, as he says, the examiners were as nervous as the examinees. The rapid development of schools of architecture, which has been one result, renders it highly desirable that steps should be taken by the new Board of Education, as soon as it is in working order, to bring about a general agreement throughout the country as to the lines of architectural education. This leads up to the subject of the formation of a British school of architecture at Rome, and the example of the French school at the Villa Medici. There are complaints in France that the influence of the school is to produce academical architecture. So it does to a certain extent, but academical training is not a bad basis to start from; whereas originality will overleap the academic lines in time, and there is no doubt that the training of the French architects at the Ecole, and the Villa Medici, is far beyond anything yet attained or possible in England. Their wonderful sets of drawings and studies of ancient work are a practical proof of this, visible and comprehensible to all; and in their competition designs for problems in modern architecture, plan is studied with a thoroughness which we never see here. The competition designs, both for the Institute and for the Royal Academy prizes, are very feeble affairs compared with a Villa Medici student's *envoi*. We ought to make it an aim to rival the French in this respect. The "moral" of Mr. Simpson's remarks, at the end of the paper, is short and much to the point, that the question for architects to ask is not "What has the Institute done for me?" but "What have I done for the Institute?" It would be better, both for architecture and for the profession, if more architects would adopt that way of looking at things.

Quaint Contract Conditions.

The contractual referee, it seems, has his several degrees of autocracy. The superlative degree seems to have been reached at Shrewsbury, where, with reference to proposed stables, etc., for the Town Council, a so-called "arbitration clause" has been drawn up in the following curious terms:—"In order that there shall be no dispute or difference, and that none can arise between the architect and the contractor at any time during the progress of the works, or after the completion of the same, the architect shall be sole judge of, and shall determine all matters and questions arising on the construction of the contract, or in reference to, or arising out of, or in any way connected with the contract, and as to the determination, abandonment, breach or forfeiture of the contract by either of the parties; and as to the rights of the parties under the contract; and the architect's decision or valuation thereunder made in writing shall be conclusive, final, and binding upon both parties. The architect shall not, in making any such decision or valuation, be required in any case to hear either or both of the parties upon nor to inquire into any of the aforesaid matters or questions; nor shall the architect act judicially or in any way as an arbitrator between the parties, but he shall act in every case solely upon his own judgment." This is surely the kind of thing about which one feels that there is no need to say anything but "There it is, gentlemen: look at it!" As a "short method" of smothering "dispute or difference" it could hardly be improved. Nothing could well be more grandly simple. But alas! there are signs that we are

emerging from the primitive trustfulness of the patriarchal age, and the idea of benevolent despotism is rapidly losing its old-time fascination. "Here am I; do unto me as thou wilt." is, for instance, no longer regarded as the orthodox attitude of devotion among such builders as have sealed themselves of the tribe of the Federationists. These people have imbibed the more modern views on equity, and have acquired a very pretty knack of asserting and maintaining them. In particular, they are in revolt against the contractual referee. This may be news to the Corporation of Shrewsbury; and the wisdom of the Corporation of Leicester is also, for the moment, seen but dimly through the dust of its archives, whence, presumably, it has dragged forth this quaint specimen: "The contractor shall take all risks and liabilities of whatever kind, arising out of or incidental to the construction, completion, and maintenance of the works, and shall be responsible for, and shall at his own expense make good, all accidents, loss, or damage which may happen to the works, material, or plant, from any cause whatever, including (without thereby limiting the foregoing general words) accidents from fire, flood, weather, tempest, failure of soil or foundations, act of God or the King's enemies, during the construction, completion, and maintenance of the same." When the Master Builders' Association objected to the conditions of which that is a sample, an alderman of the corporation said, in phraseology faintly suggestive of the more recent archives, that these builders were "holding a pistol at the heads of the committee." Again, we feel that any kind of comment would be entirely superfluous. Such conditions, when brought out into the light and air, have a habit of promptly crumbling into nothingness. Surely that should be the natural fate of the condition making the unfortunate builder responsible for every accident that could possibly be remembered or imagined, including "the act of God or the King's enemies"—a villainous inkhorn phrase that surely shall not survive our mocking laughter.

THE EIGHTEENTH CENTURY ARCHITECTURE OF BATH.

By MOWBRAY A. GREEN, F.R.I.B.A.

[*The most complete and convincing history of the Architecture of Bath is that written by Mr. Mowbray Green, published some years ago. His lecture to the Architectural Association, of which the following is an abstract, will be found full of interesting facts and information.*]

The end of the seventeenth and the early days of the eighteenth centuries, saw great changes both in the life and pursuits of the people of Bath. The value of the healing waters had again impressed itself upon the minds of physicians, and several of them had written treatises upon the waters, with the result that visitors, including Royalty, came to stay in the old city. But it was cramped, dirty, and ill-fitted to receive the gentle and noble ones who came so willingly to submit themselves to the drastic treatment which the doctors prescribed. The city was scarcely larger than it had been in mediæval days, and was full of interesting houses of the Elizabethan and Jacobean periods, many of which are portrayed on Gilmore's map of 1694. It was surrounded by walls and gates, and had an area of about 37 acres. Within fifty years of this period almost the whole of this charming early work had disappeared, and the later Renaissance had taken possession of the city. At the present time there remains merely a small piece of the city wall on the upper Borough Walls and the East gate, together with some four or five relics of the sixteenth and seventeenth centuries hidden away in different parts of the city.

Early Builders.

Of the builders of the early years of the eighteenth century little is known, with the exception of a mason called Greenway, who, with his sons, in later years carried on quite an extensive business in the making of ornamental stone vases



THE STUDENTS' UNION, PRINCE CONSORT ROAD, SOUTH KENSINGTON, IN CONNECTION WITH THE IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY, SOUTH KENSINGTON. SIR ASTON WEBB, C.B., R.A., ARCHITECT.
(Royal Academy Exhibition, 1910.)



DOORWAY, 5, TRIM STREET, BATH (GENERAL WOLFE'S HOUSE).

("*The Eighteenth Century Architecture of Bath.*")

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and the like, and who in this capacity is favourably mentioned by John Wood.

One of the earliest buildings, which stood until a few years ago on the east side of Orange Grove, was Nassau House, with a façade in the Corinthian manner. The porch was preserved when the house was demolished, and may now be seen rebuilt into the wall that divides the Institution gardens from the basement of the Empire Hotel.

Of about the same date is Marshal Wade's house in the Abbey Yard, a composition of the Ionic order. The openings on the ground floor were originally arched, but the upper storey forms a poor feature, and may have been rebuilt at some time. There is nothing of interest inside the house.

In 1707 George Trim began to build just outside the north wall of the city, and there still remain in this street several interesting houses. In one of these General Wolfe was staying when he received orders in 1759 to proceed to Quebec. The chief characteristic of the houses of this period



Block Plan of the City of Bath.

is their individual treatment by a marked central feature which contrasts with the later Palladian manner when all the parts are made subservient to the general design, and where the grouping of the window openings frequently does not indicate the internal arrangements.

In 1716 Green Street was begun, and here is perhaps one of the best examples left in Bath of this period. The sashes are divided by heavy glazing bars; and though the rooms are not large, they are panelled throughout, and the ceiling is kept on a line with the underside of the window head, producing a far more cheerful and comfortable interior than was possible under the exigencies of Classic architecture.

Greenway and Killigrew.

About 1720 the south side of Westgate Street was taken down and rebuilt, and at this same period Thomas Greenway had in hand a group of houses called St. John's Court, on a piece of ground known as the Town Mixen or Rubbish Heap, and facing on the old Timber Green, known now as the Sawclose. The large house now absorbed into the theatre was at one time occupied by Beau Nash. It had projecting rusticated quoins, with a main cornice above the first floor and a high attic storey over. The lower portion of the entablature is broken above each window, but the mouldings are on the whole poor and ineffective. Adjoining it is the house where Nash died. This has a fine doorway of the Corinthian order nearly 14ft. high from the ground to the top of the cornice, and surmounted by two dies with crouching eagles above them, all the work of Greenway, and full of interest.

Another work which may probably be attributed to Greenway is Widcombe House, which was built in 1727 for Philip Bennet the younger, who afterwards represented Bath in Parliament; it is referred to as a "new mansion" in an indenture made between Bennet and Ralph Allen in 1730. The coupled Ionic pilasters have foliated caps and stand on a plinth, the capping of which also forms the top moulding of the balustrade in the garden. On the whole the elevation appears too large in the scale of its details and is set down too closely to the ground to be quite satisfactory. The interior of this house has a good staircase, and that is all.

In the kitchen-garden on the other side of the road is a little garden house with a frontage of 18ft. 6in., much altered, but in good preservation. The original house had three openings on the front with three corresponding alcove seats at the back, and with one opening at each end. These openings are flanked by three-quarter Doric columns, and on the first floor over the two outer ones is an Ionic column. The broken entablature is a feature scarcely known in Bath. The interior of the lower room is entirely of stone, even to the cornice, and the whole of the mouldings in this little building are executed with great refinement. It is probably an earlier building than Widcombe House. Near the stables is the old dovecote, rapidly going to decay.

Among the builders of this time should be mentioned William Killigrew, who built the chapel at St. John's Hospital and a group of houses at the back of St. James's Church, two of which still remain.

John Wood.

We are now at the period when John Wood began his work in Bath. He was born in 1704. But little is known of his early life and training; he was a Yorkshireman, but the influence which attracted him to Bath, unless it was the chance meeting of Ralph Allen in his own county, is not apparent. Certain it is that at the early age of twenty-one he had large ideas as to the rebuilding of Bath, but he was not successful in bringing it about in the way he then intended. One of his first definite works in the city was the building of the upper part of St. John's Hospital for the Duke of Chandos in 1727, a hospital founded for the reception of six poor men and six poor women. The two sides facing the courtyard are treated without ornament, and are finished with a crowning cornice of the usual modillion type. Quite close to this is another group of houses known as Chandos Buildings, erected by Wood in 1727 for the Duke of Chandos.

In the early part of this same year Wood was also engaged upon the rebuilding and enlargement of a house in Lilliput Alley, or North Parade Passage. The house was probably a seventeenth century one, and was owned by Ralph Allen, the pioneer of the cross post system of letter carrying. The well-proportioned front, with its rusticated basement, Corinthian order, and pedimented roof, was an addition to the old portion of the house, which latter he refronted. There are features and details here very unlike Wood's later work, but it may be that he had not entirely settled in Bath, for he had been living on and off in London for two or three years between the time of his leaving Yorkshire and his finally coming to Bath, and it was evidently the custom of the period to allow the builders a fairly free hand in the execution of their work.

In spite of many disappointments he at last succeeded in starting, in the year 1729, a square just outside the north-west boundary of the city, and this he called Queen Square in honour of Queen Caroline, wife of George II.

The scheme as originally planned shows Wood Street, named after himself, as 90ft. wide, but this was afterwards reduced by one-half, and the square, as completed, measured 316ft. from north to south, and 306ft. from east to west, reckoning from house to house. The gardens in the centre of the square, as well as the areas of the houses, were surrounded by a stone balustrading, with either openings or gates in the centre of each side of the gardens, but by 1790 the balustrading seems to have disappeared and iron railings have taken its place. Some of it may, however, still be seen on a wall in Lyncombe Vale, where it was put up at the beginning of the nineteenth century. Part of that round the houses existed, however, as late as 1819.

The principal side of the square is that on the north, where a rusticated ground-floor storey supports a Corinthian order, which runs through the first and second storeys, the centre and two ends being slightly projected and having three-quarter columns, while the intervening parts have pilasters. The sills of the first-floor windows have all been cut down and their proportion thereby marred. The level of the original sills is shown by the flat course on either side of the windows. The centre and end blocks had quite a superabundance of rich detail even up to the attic course, but this could only have been seen when it was newly carved. It certainly points to the fact that the builders had at their command a large amount of skilled artisan labour. The façade was very ably designed to accord with the internal planning, though there have been many alterations in later days, either by turning doors into windows or windows into doors. The plans of the centre house give us some idea of the manner of life at that time, for we see that it was customary not only to have bedrooms on the ground floor, but to plan the houses with rooms so entirely *en suite* as to make them quite unsuitable for the customs of a later generation. In this case the interesting doorways which have been cut through into the back bedrooms on the first floor will show that that storey was evidently designed largely with a view to providing reception rather than bedroom accommodation. The attendants' rooms at the further end of the garden were probably used as waiting-rooms by the chairmen, who brought their fares to call at the house, and the under-part of the room on the right side of the house seems to have been constructed to take the Sedan-chairs, while the staircase itself was specially contrived with a circular end so that patients who came from the baths might be carried straight up to their rooms before getting out of the chairs.



VIEW OF THE CROSS BATH, BATH STREET, BATH, FROM A PRINT OF 1834.

(*To be concluded.*)



DOORWAY OF 3, QUEEN SQUARE, BATH. J. WOOD (SENR)., ARCHITECT, 1729.

(*"The Eighteenth Century Architecture of Bath."*)

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NOTES AND NEWS.

The Late Lewis F. Day.

Last week we referred briefly to the death of Mr. Lewis F. Day, and gave a short appreciation of his character and his work. He will be sorely missed, and the comparatively humble yet exceedingly useful sphere of art which he influenced and adorned will be distinctly the poorer for the cessation of his activities. His manuals, such as those from which the accompanying illustrations are taken, are unique of their kind. They are at once artistic, scientific, and practical, remarkably clear in exposition, and not less remarkably free from the fads, mannerisms, and preciosities by which the writers upon such subjects are usually betrayed into futility. Mr. Day, while undoubtedly endowed with a large measure of the artistic temperament, always remained sane, salutary, and eminently practical.

We give some illustrations from "The Anatomy of Pattern," showing Mr. Day's method of working out and illustrating his subject. Figs. 1 and 2 are diagrams showing the evolution of pattern, in the one case from hexagons, in the other case from circles. Fig. 3 is a charming piece of diaper ornament, which shows how the geometric skeleton on which the pattern is planned may be entirely obliterated from view after it has done its work in furnishing the groundwork of the pattern. In reference to this design, Mr. Day says:—

> You have not done away with construction when you have succeeded in keeping the scaffolding out of sight. Again, the use of the broken line instead of the straight, or of the curved (which we shall have to consider more particularly further on), makes no difference except in effect. The skeleton is the same, though you show no lines at all, as in the "all-over" pattern on Plate 5 [our Fig. 3], which is planned on the parallelogram given by lattice lines.

Fig. 4 is from "Alphabets, Old and New," and is one out of a series of very interesting designs for alphabets suited to the nature of different materials. Fig. 4 is one for execution in beaten metal. It will be seen how cleverly the design of the lettering is suited to the character of the material.

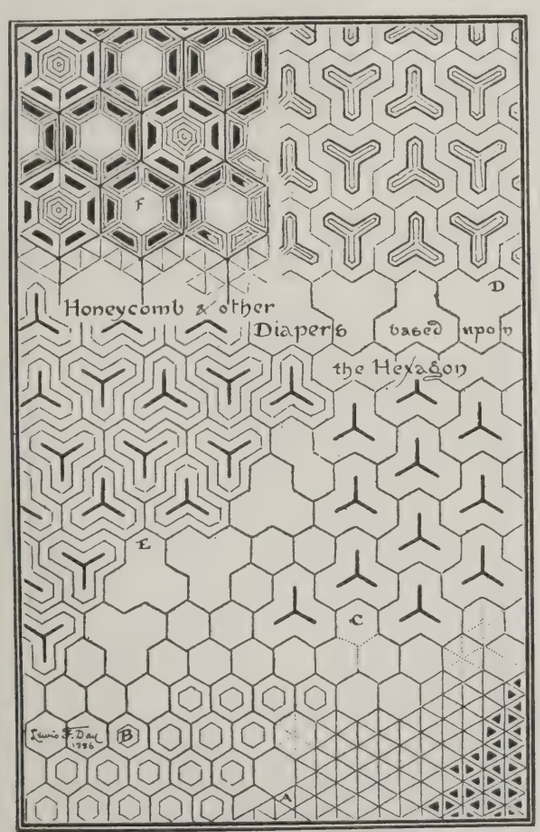


FIG. 1. THE EVOLUTION OF PATTERN FROM HEXAGONS.

(From "The Anatomy of Pattern," by Lewis F. Day. By permission of Mr. B. T. Batsford.)

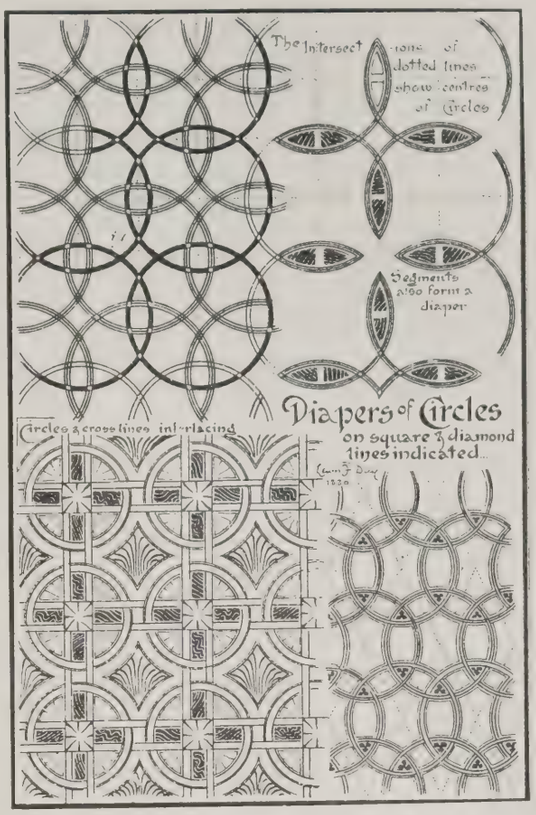


FIG. 2. THE EVOLUTION OF PATTERN FROM CIRCLES.

(From "The Anatomy of Pattern," by Lewis F. Day. By permission of Mr. B. T. Batsford.)

Tips for Town-Planners.

In discussing the question of finding a suitable site for Manchester's proposed art gallery and library, Mr. Frank L. Emanuel suggests the advisability of erecting the buildings in the form of a hollow square, planned in such a manner as to leave as large a central space as possible, where a beautiful formal garden should surround a central fountain. Such a garden, he urges, would provide a fine opportunity for the display of sculptural adornment, "gradually to be acquired by the city or on temporary exhibition." The gradual acquisition that has been seen elsewhere does not strongly support this plea. A fortuitous and heterogeneous collection of more or less ill-carved or ill-cast images in stone or in bronze, at war with each other and with the elements, does not excite the most pleasurable emotions. The statues in such a garden should form an obviously integral part of a well-ordered scheme, and should not be comparable to the incongruous elements of the crowds that, we trust, will find enjoyment in the projected pleasaunce, if ever it materialises. Another correspondent is for the inclusion of a theatre in the scheme—"a bijou playhouse, holding some 600 to 800," which "might well become the model for the future municipal theatre." We applaud the idea; it is a further concession to the growing demand for art in three dimensions. There are on all hands unmistakable indications—and this suggestion is one of them—that we are emerging from the old puritanical view of the drama, and that the new spirit will have to be taken into account by the town-planner. The chief glory of English literature is its dramatic section; and everywhere we see a desire to enact such plays as can no longer hold the stage

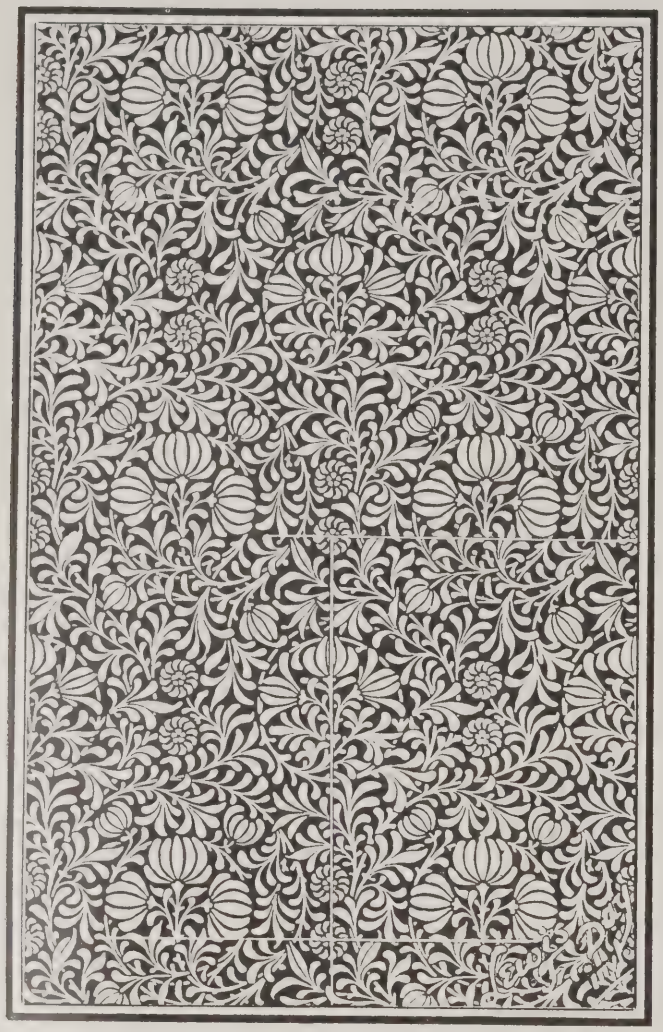


FIG. 3. A CHARMING PIECE OF DIAPER PATTERN BY LEWIS F. DAY.

(From "The Anatomy of Pattern." By permission of Mr. B. T. Batsford.

commercially. The municipal theatre is becoming distinctly necessary. So also is the place of public assembly in which political and social meetings could be held.

International Housing Congress.

The International Housing Congress opens at the Imperial Museum of Arts and Industries, Vienna, on Monday, May 30, and concludes on Thursday, June 2. Arrangements have been made by the National Housing and Town Planning Council for the delegates from this country to visit Paris, on their way to Vienna, where, on Thursday, May 26, the new Paris town planning scheme will be the subject of consideration. (The scheme was described in a delightful article by M. Benoit Lévy in the "Architectural Review" for February last.) On Saturday, May 28, a visit will be paid to Ulm, and the delegates will afterwards proceed to Vienna. At the conclusion of the Congress the party, which will include members of a large number of municipal councils, will travel to Dresden, and on Monday, June 6, study the town planning there. The two following days will be spent in Berlin, and through the kindness of Professor Dr. Eberstadt, Dr. Werner Hegemann, and their colleagues of the Town Planning Exhibition, an interesting programme of town planning study has been arranged. The exhibition is to include the best town plans in Europe.

More Spadework at Verulamium.

Arrangements are being made for an early commencement of the systematic excavation of the Roman city of Verulamium, which lies to the south-west of St. Albans, and comprises an area of about 200 acres. Except for the church of St. Michael and part of the village of St. Michael, it is but slightly built upon, so that the greater part of its area will be available for excavation. It is proposed that the explorations committee of the Society of Antiquaries, acting jointly with a local committee, with Lord Verulam as chairman and Canon Glossop and Mr. W. J. Hardy, F.S.A., as secretaries, shall undertake this work, of which Professor F. J. Haverfield, Camden Professor of Ancient History at Oxford, will have supervision. It is hoped that the excavation will lead to the discovery of one or more early Christian churches, and thus throw fresh light upon that obscure period, and that it will also yield additions to the history and archæology of the Romano-British period, and to those of the late Celtic age.

St. Paul's Bridge and Southwark Bridge.

Mr. James Wann, C.C., in the course of an address upon "Bridges under the control of the Corporation," gave the details of the scheme for the proposed St. Paul's Bridge, and the alteration of Southwark Bridge. With respect to Southwark Bridge, it was proposed, he stated, that the three spans and piers should be demolished, and a new bridge constructed with crown about 6ft. lower than was the case at present. The gradients would be improved from 1 in 18 to 1 in 32, and the width between the parapets would be increased from 42ft. 6in. to the width of Queen Street Place. With regard to St. Paul's Bridge, it was proposed that the southern approach to the bridge should commence at the junction of Southwark Street and Great Guildford Street. The approach was to rise by a gradual slope along Great Guildford Street, crossing over Sumner and Park Streets and Bank Side, and skirting en route the property of the City of London Electric Lighting Company. The bridge was to cross the river in three or five arched spans, with at least as much clear head room as obtained in the case of the bridges immediately up and down stream. The northern abutment was to be to the east of Trig Lane steps. The northern approach would cover Castle Yard and cross over Upper Thames Street at about 34ft. above street level. The viaduct over Queen Victoria Street was to be the highest point attained, and the structure would be at least as high above the street level as that of Ludgate Hill Bridge. From that point a gradual decline was to bring the northern approach down to the level of Cannon Street, finally emerging into Cannon Street by the warehouse of Stafford Northcote and Co., Limited. The bridge would accommodate two lines of trams, and between the parapets would be about 80ft., of which 50ft. would be carriage-way. Between Queen Victoria Street and Cannon Street, however, the roadway was to be widened by 20ft. or 30ft. to allow the trams to descend below the street level in a similar manner to that in Southampton Row.

The Saxon Cathedral at Hexham.

It was known that the ancient Abbey of Hexham stood on the site of Bishop Wilfrid's old cathedral; but as to the dimensions of that cathedral and its relation to the present structure information was scanty. Mr. C. C. Hodges, however, announces in a letter to Canon Savage that he has now discovered the complete plan of the original Saxon Cathedral. Contemporary descriptions speak of Hexham Cathedral as the largest church in England in its day. These have hitherto been regarded as exaggerated; but Mr. Hodges shows that they were not so. The extreme length of Bishop Wilfrid's building was 158ft., and its extreme breadth 80ft., and it had transepts and four towers. The plan is sufficiently similar to that of the Saxon church at Brixworth to suggest that they were designed by the same hand, though Brixworth is only 148ft. by 63ft., and possessed no transepts and only one tower. Brixworth Church, it is noted, stood on one of Bishop Wilfrid's estates in Mercia, and was certainly built some years before the Cathedral at Hexham. This last discovery regarding Bishop Wilfrid's Cathedral was made in the course of the recent work in underpinning the north transept of Hexham Church, which had proved to be unsafe in spite of the recent restoration of the building.

The Gardner Collection.

General satisfaction will be felt that the Gardner Collection, the largest and most valuable collection of prints and drawings of London, has been privately purchased by Major E. F. Coates, M.P. for Lewisham. The new owner states that the reason for his purchase was to prevent the acquisition of the collection by an American multi-millionaire. Now that the drawings are safe from the prospects of immediate dispersal, efforts should be made to raise the sum necessary to acquire them for the nation, by arrangement with Major Coates. Various suggestions have been made from time to time; one being that each of the Borough Councils should purchase those relating to their respective districts.

The R.I.B.A. New Royal Patron.

The Secretary of the Royal Institute of British Architects announces that the Prince of Wales has just signified his appreciation of the work done by the R.I.B.A. by extending his patronage to the Institute. His Royal Highness, who is leaving for South Africa for the inauguration of the Commonwealth, will perform various public functions, amongst others the opening of the new Durban Town Hall.

The Architectural Association.

The result of the election of Officers and Council for the Session 1910-1911 has been declared as follows:—

President: Mr. Arthur Keen. *Vice-Presidents*: Mr. Gerald C. Horsley and Sir A. Brumwell Thomas. *Ordinary members of the Council*: Messrs. C. C. Brewer, F. Dare Clapham, Horace Field, W. Curtis Green, Herbert A. Hall, Percy W. Lovell, Percy May, F. Winton Newman, C. Wontner Smith, and W. J. Tapper. *Hon. Treasurer*: Mr. Henry Tanner. *Editor of the Architectural Association Journal*: Mr. Allen Foxley. *Hon. Librarian*: Mr. G. G. Wornum. *Hon. Secretaries*: Mr. Edwin Gunn and Mr. G. Leonard Elkington.

Space in Elementary Schools.

The recent debate on the subject of what is called "the ten-foot space" for each pupil in elementary schools shows clearly that the Board of Education is determined to oblige all school managers to give this space of square feet to each school. This determination is to be retrospective, and will necessitate enlargements of many schools in rural and urban districts, especially of those known as non-provided schools. That this rule is desirable no one can doubt, for it was recommended by a Royal Commission so long ago as 1888, and that it will tend not only to better education but to better health among the pupils is also obvious. It is said that the managers of non-provided schools will have a serious additional burden cast upon them, but if they choose to stand outside the general system, they cannot well complain. It is to be hoped, however, that the Departmental Committee recently appointed to consider the cost of school buildings will report as soon as possible, for if any rules can be made which will tend to economy in building without diminishing the efficiency of school structures, they will be desirable at the present juncture. It was obvious from the debate that all parties are at one on the desirability of sufficient space for scholars in elementary schools, and we expect in the next year or so to see considerable enlargement of school buildings.

A Johnson Statue in the Strand.

On May 7th next the Princess Louise will unveil a bronze statue of Dr. Johnson, six feet in height, standing on an ornate black Belgian granite pedestal of a similar height, which is now being raised on the little plot of green behind the apse of the island church of St. Clement Danes. The sculptor is Mr. Percy Fitzgerald, who has edited Boswell's "Life," and who executed the statue of Boswell at Lichfield. Dr. Johnson will look straight down Fleet Street, and will be shown in the traditional costume. His right arm will be raised, while his left hand will support an open volume. There will be other books about him, together with an inkstand; while the pedestal will show a medallion of Boswell on the front and scenes from Dr. Johnson's life on either side. It will be remembered that Johnson had his pew in St. Clement Danes, and that last year a window portraying him, surrounded by his friends, was unveiled there.

A Church for Hampstead Garden Suburb.

On April 25th Lord Crewe and the Hon. W. F. D. Smith laid the foundation-stones of the church of St. Jude-on-the-Hill, which is to be built on a site on the highest part of the Hampstead Garden Suburb, given by the Hampstead Garden Suburb Trust (Limited). It is to be built of red brick in the Renaissance style, from the designs of Mr. E. L. Lutyens, and will cost £12,300. Towards this, including grants made by the Bishops of London and Islington from diocesan funds, £6,000 has already been raised. The seating accommodation will be about 1,100, and it is hoped that the first part, the Lady Chapel, will be ready for use in a few weeks' time, and that the whole will be completed in October. The Bishop of London consented to the church's being named St. Jude because of the long connection with St. Jude, Whitechapel, of Canon S. A. and Mrs. Barnett, to the latter of whom the garden suburb owes its inception. The stone of the Lady Chapel was laid by Lord Crewe with a trowel presented by Lady Byron, and one of the stones of the base of the tower was laid by Mr. Smith with a trowel presented by Lady Trafalgar. The church is to be consecrated on October 28th.

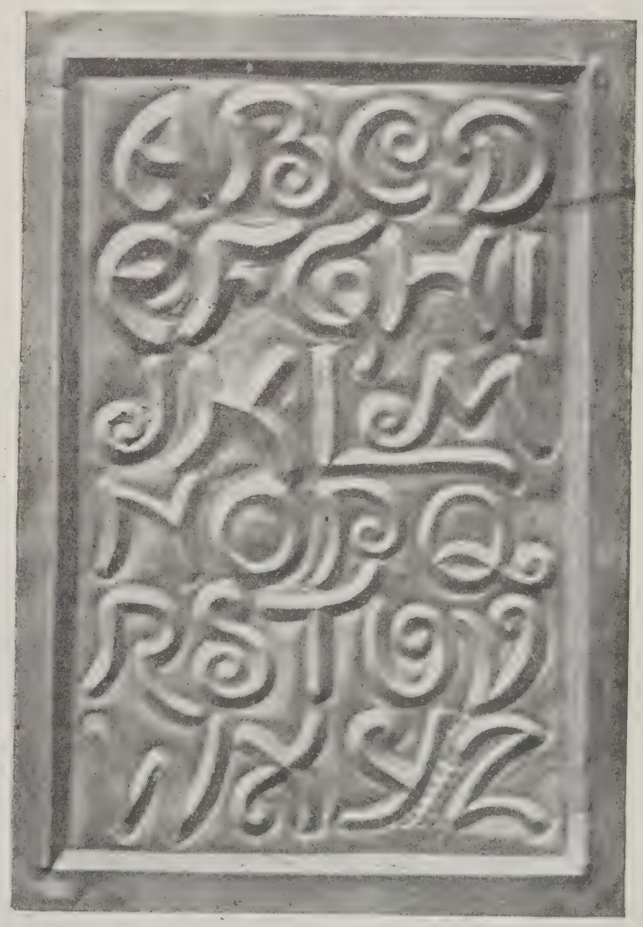


FIG. 4. ALPHABET FOR BEATEN METAL. BY LEWIS F. DAY.
(From "Alphabets, Old and New." By permission of Mr. B. T. Batsford.)

New Turner Wing at the Tate Gallery.

The new wing of the Tate Gallery is now rapidly nearing completion, and the opening ceremony will take place during the summer. The public will then have an opportunity of viewing a more comprehensive exhibition of Turner's work than it has hitherto been possible to display. In this achievement the trustees will have carried out the wishes of the late Mr. Joseph Duveen, who left the sum of £20,000 for the special purpose. The bequest has been considerably augmented through the generosity of Mr. Duveen's son, Mr. J. Duveen. The Turner section will consist of two large galleries, in which oil paintings will be exhibited. Three smaller galleries will accommodate water-colours, and below these smaller rooms there will be five others in which drawings and water-colours will be displayed. The National Gallery, which is the present repository of the Turner collection, will retain some of the representative works in oil, but the remainder will be housed in the new wing—or at least so many of them as room can be found for. There are between nineteen and twenty thousand Turner drawings and paintings in the possession of the National Gallery at the present time, and the process of final selection, preparatory to the official opening of the new wing, will therefore be a considerable task. Even at its present dimensions the Tate Gallery is only about half the size which it is hoped it may ultimately attain, and consequently the new wing has been made to follow the architectural features of the original buildings, so that when the structure is complete it will represent uniformity of design. The Turner wing has taken nearly two years to build.

St. Boniface, Antwerp.

The Gothic Church of St. Boniface, Antwerp, which was recently consecrated by the Right Rev. Dr. Wilkinson, Anglican Bishop for North and Central Europe, is described as one of the finest English churches on the Continent. It is in the Early English style, and cost about £10,000. It is in red brick, with white stone facings, and has a lofty square tower at the north-west corner. It comprises a wide centre aisle, separated from the north and south side aisles by rough red granite columns. It possesses a large well-raised chancel, with carved oak choir stalls, and the high altar is seven steps above the level of the nave. On the north side of the chancel, separated from it by a handsomely worked iron screen, is the Lady Chapel, with a second altar, which will be used for week-day services. On the south side of the chancel, separated by a similar screen, is the organ chamber. A triforium and a clerestory give the church a very lofty effect. A large stone statue of St. Boniface (presented by Sir Cecil Hertslet, the British Consul-General), with a brass giving details of his life and martyrdom, is placed at the north side of the sanctuary. The church is lighted by electricity, and has accommodation for 450 persons.

Proposed National Memorial to Alfred Stevens.

Some short time ago a letter appeared in the "Times" from Mr. Maurice W. Brockwell calling attention to the bad state of repair of Alfred Stevens's tomb in Highgate Cemetery. Alderman C. H. Curtis, of Blandford Forum, now writes to the same journal to the effect that the Blandford Town Council, on having it brought to their notice, realised at once that it was their duty and privilege to take the matter in hand, with the consent of the owners, the Misses Pegler, of Southampton, whose father was the lifelong and generous friend of Stevens. Under the superintendence of Mr. James Gamble, who designed the tomb, and who was a co-worker with Stevens, it has been thoroughly restored and improved, the whole structure being raised and another stone landing added, thus bringing it more prominently into view. The bronze tablet, which was torn away by thieves, has been replaced and gilded. Alderman Curtis pertinently asks, "Is it not time that some national memorial should be erected to the memory of this great genius, who has been justly described by those competent to judge as England's greatest sculptor and the author of the finest modern sepulchral monument in Europe?" The Alderman thinks that surely if an appeal is made to the English public funds would be forthcoming to do honour to this "painter, architect, designer, and sculptor," and provide a memorial in London and in the little Dorset town where he commenced to work at the age of ten with his father as a decorator, sign and coach panel painter. He was sent to Italy by the generosity of a few friends at the age of sixteen, where he studied for nine years, and returned to Blandford penniless, but fully imbued with the spirit of the great masters in painting and sculpture of the Renaissance period. Alderman Curtis further reminds us that at South Kensington there is now on view a collection of Stevens's works, including many models, and at the Tate Gallery may be seen some of his sketches; while Stevens's last and greatest work—the Wellington cenotaph in St. Paul's Cathedral—it is hoped will soon be completed, after many years' delay, by the addition of an equestrian figure of the Duke on his favourite charger.

More Memorial Tablets.

A memorial brass to Thomas Fuller, author of "Church History," and "Worthies of England," is to be erected in the church at Broadwindsor, West Dorset, of which Fuller was for twenty-six years the vicar. This brass is the joint tribute of British and American admirers. The funds have been collected by Mr. Telamon Cuyler, of New York and Georgia, U.S.A., and Mrs. Cuyler has arranged to unveil it later in the year. The brass, which has been executed by Messrs. Singer, of Frome, Somerset, will be erected close to the beautiful Jacobean pulpit from which Fuller preached before the Civil War. The following is the inscription:—"In memory of Thomas Fuller, B.D. Born 1608; died 1661. Author of 'Worthies of England.' Prebendary of Sarum 1631-1661; Vicar of Broadwindsor 1634-1660, whose learning, wisdom, and wit are deservedly held in high esteem on both sides of the Atlantic. Erected by a few British and American admirers, September 23, 1910—the 259th anniversary of the sojourn of King Charles II. at Broadwindsor during his flight from Worcester." The London County Council have caused a tablet to be affixed to St. Philip's Vicarage, Stepney, where at one time John Richard Green, the historian, lived. A tablet has also been affixed to No. 16, Serjeants' Inn, Temple, to commemorate the residence there of John Thaddeus Delane, formerly editor of the "Times." The tablets are of encaustic ware, and are chocolate and blue in colour respectively.

Hampshire Archæologists.

Sir William Portal, in his valedictory address as president of the Hampshire Field Club and Archæological Society, said he could not look with entire satisfaction on the recent erection of a gallery at the west end of Wykeham's Chapel at Winchester College, which cut through two of the western-most windows. It was a most unfortunate evolution of modern days and possibly modern requirements. It was inconceivable to him that the citizens of Winchester could with equanimity and composure watch the gradual demolition, for it was nothing else, of the ancient and interesting feature of the High Street, the Piazza or Pent-house, which stands on the site of the Conqueror's Palace, and he deprecated the modernising which it was undergoing. He was thankful that the ancient Bargate of Southampton still remained, and he described Mr. Lucas's proposal to take roads round it on either side as clever and ingenious. He condemned the recent erection of a porch on the north side of Romsey Abbey as being open to a great deal of criticism, commended the proposal to erect a memorial to the Pilgrim Fathers at Southampton, and suggested that a stone should be placed on the old Vicarage at Steventon to commemorate the fact that Jane Austen wrote several of her novels there.

Garden City for Woolwich Workers at Greenock.

A site of thirty acres has been marked off for the erection of a series of houses for the Woolwich artisans who have been sent to Greenock. Each house will be self-contained, and

will be modelled on English lines, with the addition that a central square plot will be left unbuilt upon to be used for ornamentation or for recreation, or what may ultimately be used as the site of a church. The plans provide for houses of five apartments — a living room or kitchen 12ft. 6in. by 10ft. 6in., a parlour 13ft. by 12ft., three sleeping rooms of varying size, and a bathroom fitted with hot and cold water. In addition there will be a combined scullery and wash-house, and a coal-house, whilst the internal fittings of each house will include kitchen ranges, room grates, and tile hearths. In front of each house will be 30ft. of ground for the growing of flowers, and behind will be 100 square yards for kitchen garden and bleaching green. It is hoped that the houses might be offered for sale at £300 to £500, and as the scheme provides for the buyer taking a bond, for two-thirds value, on the house, the burden of the buyer is reduced to a small amount.

French Architects Visit Government Buildings in London.

A party of French architects who came on a visit to London a few days ago paid special attention to the new Government offices in Charles Street, and, through the courtesy of the First Commissioner of Works, every facility was afforded them. They expressed strong admiration of the architectural features of the newer buildings, and more particularly those which are now the headquarters of the President of the Local Government Board and of the Board of Education. What particularly attracted their attention was the circular courtyard at the rear of the offices of the Minister for Education, which when completed will form a notable addition to the courtyards and quadrangles of which there are many to be seen in this part of the metropolis. The building scheme is not, of course, completed. Nearly the whole of the premises on the eastern side of Great George Street, as well as the whole of Delahay Street, has been razed to the ground, and upon the site there will be erected in due course an extension of the existing offices on what is known as the Charles Street site, which will then be taken down to the Park front. Between this and the India Office, on the stairs giving access to St. James's Park, and the Horse Guards Parade, there is to be erected the statue of Lord Clive, which is now in the hands of the sculptor.

St. Asaph Cathedral.

This cathedral seems to have furnished another instance of the careless faith with which foundations were laid in the middle ages. Serious cracks and disintegration have appeared in the building, and it is discovered that the footings of the walls are nothing more than rough stones laid in mud and with no projection. Mr. Thompson, of Peterborough—we presume a member of the building firm which has had so much experience with bad foundations at Peterborough—has been consulted, and has recommended the insertion of a concrete footing under the walls, with as wide a spread as possible, to distribute the weight, and underpinning up to the walls with hard brickwork or cement. The ground itself is said to be sinking, and reinforced concrete is proposed as the material for a continuous foundation. As far as can be judged from the reports, this seems to be the best course to pursue.

The Ironmongers' Almshouses.

In the Parliamentary Papers for Tuesday Dr. Addison asked the President of the Local Government Board whether his attention has been called to the proposal for the erection of fifteen blocks of dwellings upon the site of the Ironmongers' Almshouses in Kingsland Road, nearly an acre of which is planted with fine old trees, and has been laid out as a garden for 200 years; and, if so, what steps he proposes to take to prevent this last remaining garden city feature of Shoreditch being sacrificed to the builder in a district which has density of 540 persons per acre.

Mr. Burns says that his attention has been called to the matter, and he will communicate with the hon. member.

Mr. Chancellor further asked the Attorney-General whether, in view of the fact that in 1908 the Charity Commissioners declined in the public interest to sanction the proposed sale of the Ironmongers' Almshouses, Kingsland Road, and the erection of fifteen blocks of lofty buildings on the site thereof, after hearing the local authority, the National Trust, the Metropolitan Public Gardens Association thereon, he could see his way to lodge an appeal against the recent decision in the Court of Chancery in an action commenced before 1852, wherein the local authority and the above societies were refused a *locus standi*, so as to prevent the destruction of the last remaining garden city feature in an area where the density is 540 persons per acre.

The Attorney-General replies that he is afraid the prospects of success are not sufficient to justify him in advising the appeal suggested.

A STRINGENT FORM OF CONTRACT.

By OUR LEGAL EDITOR.

There seems to be a tendency on the part of those who employ contractors so to stiffen up their forms of contract that liability for every conceivable kind of accident or contingency is thrown on those who are to carry out the work. Indeed, it would seem that nowadays employers and building owners want to make the contractor an insurer. A correspondent draws our attention to the fact that the Leicester Corporation desires to insist on the following clause being inserted in the form of contract under which builders and contractors are invited to tender:—

"1. The contractor shall take all risks and liabilities of whatever kind, arising out of or incidental to the construction, completion, and maintenance of the works, and shall be responsible for, and shall at his own expense make good, all accidents, loss, or damage which may happen to the works, material, or plant, from any cause whatever, including (without thereby limiting the foregoing general words) accidents from fire, flood, weather, tempest, failure of soil or foundations, act of God or the King's enemies, during the construction, completion, and maintenance of the same."

Can such a clause be enforced? It is drafted with particular cunning; because it is clear that where the "act of God or the King's enemies" is not mentioned in a contract, performance is excused if it is prevented by either of these causes.

The law is thus stated in "Emden's Building Contracts" (4th edition) p. 196: "It is a rule of law that when the law creates a duty, and the party is disabled from performing it, without any default of his own, by the act of God, the law will excuse him; but when a party by his own contract creates a duty, he is bound to make it good, notwithstanding any accident, by inevitable necessity (*Nicols* v. *Marsland*, 2 Ex. D. 4). The act of God is in some cases said to excuse the breach of contract. This is, in fact, an inaccurate expression; what is meant is that it is not within the contract" (*per cur.* in *Baily* v. *De Crespigny* L.R. 4 Q.B. 180). Now in the present instance the contractor agrees to make good damage which comes about through the act of God; in other words, if he signs the contract he agrees to become an insurer. If an earthquake were to occur during the progress of the works, the liability to make good the damage would clearly be on the contractor. It is needless to say, however, that the clause is entirely without precedent. Thus we have searched among the clauses which are set out in the second volume of "Hudson on Building Contracts" without finding any clause which is anything like so stringent as this. Yet there is nothing illegal in it. The only method which contractors can adopt to secure its deletion is to band together and absolutely refuse to undertake the work on terms which include these onerous conditions.

OBITER DICTA.

The Art Rev.val. Not only in Paris and in Munich, but also in Italy, one could not help feeling that there was a great revival in modern art taking place at the present time. So far as water-colour painting was concerned the foreigner was not in it at all with the British artist.—*Sir Felix Schuster, at dinner of the Royal Society of Painters in Water Colours.*

Art and the Time Spirit. We should not allow ourselves to undervalue the men who provide for each age the kind of art which it is fitted to receive. Successive changes in critical standards are not invariably changes for the better; and to assume that a man is an indifferent artist because he is popular in his lifetime is to allow our opinion to be dictated by the vote of the crowd just as much as if we blindly followed it. Obviously, in any healthy state of society, close sympathy between artist and public should be the normal state of things, and there is something to be said for the Academy's ambition to produce a popular exhibition, even if we may think they pursue it too exclusively by providing pictures to suit their public—not enough by trying to find a public capable of appreciating the best pictures.—"*Athenæum.*"

Art in Action. We often hear now the phrase, "An artist in life," and it is a useful one if rightly used. For we must remember that the artist is always a maker of things. If he makes nothing he is only an amateur. When he dreams of the wonderful things he might have made if only he had lived in the age of Phidias, then we may be sure that in that age also he would have dreamed of the wonderful things he might have made if he had lived in the time of Homer. In any age he would have been an amateur waiting for inspiration, instead of going out to find it in action. The great artists, like the great heroes, have always done whatever came to hand. Michelangelo grumbled and said he was a sculptor when Julius II. set him to paint, but he painted the roof of the Sistine Chapel. . . Ideals are really purposes—man's purposes, as opposed to the purpose, or want of purpose, of Nature. And purpose without action is always incomplete. — "*Times*" *Leading Article.*

A Danger to Municipal Life. One of the features of legislation, not only in 1909, but for several years past, has been the increasing desire on the part of the Government Departments to obtain more or less absolute control over local authorities. That is one of the greatest dangers threatening municipal life at the present time, and unless it is faced it will go far towards depriving municipalities of that reasonable degree of independence which they had enjoyed in the past. While we do not object to reasonable control in such matters as the making of new by-laws and the borrowing of money, the action of the Government Departments is, according to the modern practice, going much too far in that they seek to interfere in matters of administration frequently of a comparatively trivial character, which ought to be left to the persons elected for the purpose, and in that they seek to take the initiative and to force local authorities into action against their wishes. Examples of those tendencies are to be found in the Housing and Town Planning Act and in the Milk and Dairies Bill. If that policy of centralization is continued, one of the results will inevitably be that sooner or later the men most able and suitable to adminster local affairs will cease to become members of town councils.—*Mr. Harmood-Banner, M.P., at the annual meeting of the Association of Municipal Corporations.*

BUILDING BY-LAWS.

[*Mr. R. M. Lucas, F.R.I.B.A., delivered a lecture on Building By-Laws before The British Constitution Association, on April 25. Sir William Chance, Bart., presided.*]

The diversity of the by-laws was the first point dealt with by the lecturer. He showed that the building rights of one landowner under Statutory Law were often entirely different from those of a neighbour within the boundary of another district. The parent type of all the modern codes he considered was to be found in the "Rules and Direction for re-edifying the City," embodied in an Act of Parliament passed immediately after the Great Fire of 1666. Not only were they found to give the form to English By-laws of to-day, but to some extent they anticipated a recent Town Planning Bill. London had been suddenly reduced to the most "ripe" and "eligible" of building estates, and without a regulating code of by-laws the rush of builders would have resulted in utter confusion. The present system of by-laws is bound up with the congestion caused by the great townward movement of the last century.

Their Unsuitability.

The present by-laws were shown to be unnecessary and even unsuited to bring about good building. After examples of their absurd inconsistencies had been given, the broad distinction between constructive and sanitary by-laws was pointed out, the former concerning the individual and the latter the community as well, a distinction which had been overlooked by those who framed them. As an instance of how building is improved by public opinion and the builders' enterprise, the lecturer instanced the use of the hollow external wall, now almost universal wherever bricks are of the porous kind, even in the cheapest cottages, although it costs slightly more to build than a solid wall, and is not an improvement that makes any display of its worth, its merit being that it conduces to dryness and warmth in the house. Not only did no by-laws enforce this method of building, but many did not even mention it, and the fact of their not doing so had actually been used as an argument against its use.

Stoppage of Good Building.

The good service of by-laws in stopping the not very widespread evil of jerry-building was discounted by the discouragement caused to honest builders, who in some rural districts have to deposit two complete sets of plans and sections, plans of the site and of the neighbouring properties, sometimes involving quite an expensive survey, and sections of land and drainage details, before their applications are even considered; while all through their work they were subjected to the interference of officials on the look-out for any technical breach of the vaguely-worded by-laws, officials upon whose decision the fines and penalties practically depended. If permission to build was not granted, the builder had as yet no way of proving his right to it except by building at the risk of having his house pulled down. A scheme for reform was suggested in outline by the lecturer, involving a radical change in the character of the whole system. Instead of the work of the surveyors being punitive as it is now, he would have it made *educative*. Provided that a man observed the sanitary by-laws, the Public Health Acts, and the Common Law, he should be as free to build as to plant a tree, dig a well, or make a speech. He should merely have to give notice to the District Surveyor and to apply to him for a schedule of building instructions which could be kept up to date by leaflets similar to those supplied by the Board of Agriculture to farmers. On completion of a house, the surveyor should write a certificate of merit or demerit to be displayed to intending purchasers, tenants, and mortgagees. A reasonable right of appeal against the surveyor should be open to builders. Compliance with the instructions would not be obligatory, though obviously to their interest, as the value of a property would be discounted by an adverse report. Only work actually unsafe or likely to become so without warning should be pulled down. By these proposals jerry-building would be prevented, honest building encouraged, and both the public and builders protected and educated. Those surveyors whose qualifications would not bear examination would not like this scheme, but intelligent well-trained men would have far more interesting and worthy employment under it.

Mr. George Hubbard, Mr. Mark H. Judge, the Hon. Ernest Pomeroy, Mr. Russ, and others took part in the animated discussion which followed, and the lecturer concluded by replying to the questions and criticisms.

LONDON MASTER BUILDERS' ASSOCIATION.

The Council met on the 21st April, 1910, when the President (Mr. Leonard Horner) occupied the chair.

The Organisation Committee, of which Mr. F. Higgs was re-appointed chairman, reported that the canvassing among builders and contractors who are not members of the Association was meeting with success, and several firms have joined. The committee also suggested a standard to be observed in accepting Associate Members, and the suggestion was adopted by the Council.

Some cases were reported of estimates being called for for large works without quantities being supplied, together with one instance where the bills of quantities had to accompany the tender. The objections of the Association to such proceedings were forwarded to the architect in each case with satisfactory results.

In response to a request from the Board of Trade, Mr. Wm. Shepherd, Mr. F. G. Rice, and Mr. Walter Lawrence, jun., were nominated to represent this association on the Advisory Committee for London about to be formed in connection with the Labour Exchanges.

Arrangements were made as to answering enquiries from the American Vice-Consul with regard to the working of the Workmen's Compensation Act, 1909. Further instructions were given in connection with the new offices in Kingsway. Correspondence with the L.C.C. as to contractors having to take out their own quantities was read and approved. Correspondence relating to slating and roof tiling and other matters of trade interest were considered.



Photo : "Architectural Review" Photo. Bureau

It is satisfactory to learn that the Office of Woods and Forests are resolved that the new front of the building (seen projecting on the right) which is to be set back (under the Piccadilly widening proposals), is to be a repetition of the projecting wing of the Piccadilly Hotel on the left of the picture. The fine block will therefore be completed as arranged by Mr. Norman Shaw.

THE PICCADILLY HOTEL, LONDON: THE PICCADILLY FRONT. R. NORMAN SHAW, R.A., WILLIAM WOODWARD, F.R.I.B.A. AND SON AND WALTER EMDEN, ASSOCIATED ARCHITECTS.

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ART, ARCHITECTURE, AND AND THE ASSISTANT.

By E. J. DIXON, A.R.I.B.A

[This paper was read to the Guild of Architects' Assistants by their Hon. Secretary at a meeting presided over by Mr. J. V. Hibbert, F.S.I. Mr. Dixon, before commencing his paper, referred to the newly constituted "Licentiate, R.I.B.A." which, he said, was a step in the direction of organising the profession in a proper manner. The principal contention of the Guild—not without foundation, we think—rests on the changing conditions in the architectural profession. It is declared that the opportunities for assistants eventually becoming principals are immeasurably decreased; that a very large number have no hope beyond being assistants all their lives; and that the needs, and in fact the existence of this class, generally badly paid and casually employed, is entirely ignored in official circles.]

The first glimmer in the official mind of the existence of the architect's assistant, as we know him, was exhibited in the address of Mr. Walter Cave at the Architectural Association nearly two years ago, and the measures taken by that body in reference to the state of unemployment, as exhibited by their register, indicate the desire for protection so widespread in the profession at the present time, and of which the measures taken by the Royal Institute cannot be too generously praised. But, previous to Mr. Cave's address, and since, the official view of the assistant as a person of private resource apart from the salary he receives for his work has been the predominant one. In listening to presidential addresses one after another, one wonders whether presidents live in another world, whether their productions in this direction are intended as an impertinence, a gross piece of sarcasm by tacit inference to their audiences, who principally consist of the struggling assistant who often finds it a matter of difficulty to pay his annual subscription, or thirdly, whether the assistant is considered so unimportant as to deserve no recognition from the presidential point of view, except as a student.

The Menace to the Profession.

The existence of a large class, much larger than one would suspect, wretchedly paid, quite unrepresented in any society, and having no means whereby their position may be bettered, is a standing menace to the profession as it concerns the assistant, for it means the lowering of the salary and status of the better men, and more casual employment. In many offices men of this class are employed at insignificant salaries (with a paid assistant brought in at intervals to do any creative work, tutor the pupils and backward assistants), and are politely dismissed when the term of their usefulness is past. As a student the assistant has always been interested in matters of art, and especially in relationship to his profession. From the point of view of individual development the study of art is essential, but art in relation to the assistant and to our profession, as matters stand at present, is besmirched with cant and hypocrisy. One cannot but regard the manner in which the cant of art has grown up in our profession, as one of the most important signs of the times, whereby the selfish business man talks insincerely of art in order to blind his sincerely artistic confrères to his real aims; those aims, of course, being those of any profession or business devoid of an appeal to the emotions in the way that art appeals to any architect who sincerely believes in his work.

The Only Opportunity.

The assistant has only the full opportunity of showing his knowledge of the art of architecture when either the cunning, carelessness, laziness, or lack of ability of his principal will allow—a condition of things which often prevails in public offices, where an engineer reaps prestige from the work of an unknown architectural assistant. Art appears to have reached a precarious stage in the profession of architecture. The disciples are busy imitating and collecting from the masters, and the masters are busy in an ostensible game of bluff, that of imitating themselves; so that the final result of the latter's work is little above the average of their disciples.

To describe the present position of the profession of architecture towards art as that of a mere superficial relationship, will probably astonish a few, disgust many, and be looked upon as the idle prattle of an imbecile by others. To describe that relationship as suspiciously dishonest is probably much nearer the truth: and to frankly describe it as dishonest is probably the expression of outspoken sincerity. Those well-known aphorisms so dear to some of us—architecture, "the mistress art," "the mother of all the arts," "architecture not a profession but an art"—have been heard so many times that, had we no genuine basis for our belief in them, the mere repetition would have engendered it. The purely artistic phases of the profession, Grand Manner or No Grand Manner, Decorated Construction or Constructed Decoration, are gradually being narrowed to the position the question of religion popularly occupies; if we are Methodists we buy our bread from a Methodist baker, and if we are Calvinists we feel intense remorse in purchasing goods sold by a grocer who contemns the Five Points. Likewise the Grand Manner disciples gaze with silent disgust on the followers of the cottage cult. All this is very pleasing and amusing, but its economic aspect as affecting the assistant is scarcely worth further reference except in a very few exceptional cases. The most noticeable feature in many of the ardent and talkative adherents of any of the schools of architecture is, that if their principles differ, their work has much in common and usually finds ample shelter under the title "Early Victorian."

As all true camp followers of the art of architecture, the members of this Guild of Assistants duly subscribe to the common declaration of faith which we recite with all due solemnity as our professional fathers have taught us. We do not desire to drag the art of architecture from the high place it occupies, or to trail even the hem of the garments of the Mistress Art in the dust. One would have thought that the position of the art of architecture was sufficiently well established to resist the breath of scandal from any quarter; but it has ever been a commonplace that the gods should be strictly respected, and protected in their implied sufficiency from blasphemous influence.

The Sources of the Evils.

We are not deeply concerned in the small talk of architecture, and as a guild of assistants we desire to study the profession of architecture as it really is, and to discover the sources of the evils we know and feel the effects of; let us leave for a moment the attractive thesis of the art of architecture and examine the less attractive but more engrossing one of the profession of architecture. The principal and the assistant of fifty years ago might be described as standing on the same plane as regards rank and social position, and in a relationship somewhat of tutor and pupil, the latter being practically certain, if he persevered, of reaching the same or, perhaps, a higher position in the profession than his tutor. It is not implied that the service of architecture was entirely the object, for many of the older practitioners have left some goodly sums of money amassed in the service of architecture. The advent of the modern assistant, a man with little or no financial backing and depending solely on his salary to live, was gradual, but eventually he numerically swamped the older class and often proved himself more capable. He immediately endeavoured to imitate the older men; he adopted their superstitions, their habits, and their prejudices. This kind of thing is not, of course, unknown in other walks of life. It is a common social phenomenon. The promoters of any new movement on behalf of any section have, as their initial difficulty, their first obstacle, the prejudices borrowed from the social strata immediately above. The architect's assistant of the present day quickly finds himself in the same position as the wage earners in any other business, due precisely to the same causes. He has hitherto found his prejudices too strong to permit him to combine in his own interests, to recognise, in short, that his position as assistant is rapidly becoming a permanent one, that the possibilities of becoming a principal grows less as he grows older. Signs are not wanting that the principal outlet for the energies of the assistant, the open competition, is gradually becoming limited, either to districts, or more often to architects in practice. I do not think that, in thus rapidly sketching the history of the architect's assistant, I have in any way overdrawn the real state of affairs in the profession as it concerns him. Once granting the truth of this account of the present position of the architect's assistant, it would appear that the only common-sense course to adopt, if no escape from the profession is available, would be to render it as congenial as possible, to recognise the probable limitations of one's genius, without attempting to render null and void any ambition one may possess. The first point to be noticed in assuming this view of the assistant's place in the profession is the fact that nothing definite can be achieved without organisation of some kind or other, and the painful fact that the existing societies are composed of principals or those who are in full possession of the illusion that they will be principals; and, secondly, that a deplorable reception awaits the man who would take up cudgels on behalf of the assistant in such a foreign atmosphere. The question then, for all assistants to decide is the kind of organisation they will select, the work they propose to commit to its care, and the manner of its execution.

The Proposals of the Guild.

The Guild of Architects' Assistants proposes to unite all those who have any title whatever to that designation. It proposes to unite them socially, as a matter of course; and, secondly, it has proposed a programme whereby the

many grievances under which the assistant struggles, and which, before recognising his position as practically that of a mere casual labourer with practically the same wage, he regarded as the necessary struggle of the architectural pilgrim on his way to achieve the crown of a future practice. This programme has now been before the public for the past eighteen months. It proposes to endeavour to do something in the matter of (1) salaries, (2) office hours, (3) office conditions, (4) recognition of an assistant's work where possible, and (5) legal assistance, (6) unemployment bureaux and insurance, (7) education. The Guild will endeavour to carry out the proposals by means of combination, necessitating strength of numbers, and conference with existing societies and principals, necessitating tact and toleration. There are many other advantages a keen, solid combination such as this will immediately suggest, such as parliamentary and municipal action, it being usually found an easier matter to effect changes in the domestic affairs of public bodies by means of correspondence and deputations than in the case of private employers. Bringing forward matters which immediately affect the well-being of the assistant to the notice of existing bodies would have the effect of stimulating the interests of assistants who are members of those bodies.

The Fear of Trade Unionism.

The inclusion of principals who are interested in this, which the Guild trust will become *the* important phase of architectural politics, will provide the necessary element of experience and breadth which such a movement as ours demands. The principal finds it necessary protection for his own interests against the guerilla warfare carried on by the unruly members of his class, by taking refuge within the folds of a Registration Bill; but the assistant feels doubtful as to whether he should combine in like manner, and for exactly similar reasons. You see, "we don't intend to remain assistants: we shall one day be principals," and then "the idea of combination is so like trade unionism, which, of course, is a thing we must not dream of." There are some of us, however, who, after noticing the gradual removal of the elderly assistant who has failed to arrive, desire to bring all assistants together within a bond of their own interests, for their own progress and betterment. Whatever is bad in combination, let us exhibit enough sense to reject, and whatever is good let us hold fast to, whatever borrowed prejudices may be wrecked in the struggle.

To begin with, this Guild of Architects' Assistants welcomes the advice, help, and assistance of all principals who are really interested in the welfare and fate of the assistant. They are able to see the assistant from the business point of view, to appreciate the value of a good assistant and to condemn the incompetence of a poor one. All principals interested in the better organisation of the profession generally will welcome the advent of any well-considered scheme which redounds to their benefit, which will select, classify, and secure to them the best assistant available on the market, instead of continuing the present method of trial and error, in engaging assistants. Principals will recognise that the assistants are even more interested in any sound scheme for the protection of the profession than they are themselves, that they form a potent numerical factor in all societies, and consequently represent an interest which, if well organised, would unquestionably prove of great value in any movement in the direction of the real reform of the profession or the improved status of its units.

A Broad Definition.

We make no attempt to strictly define the term "Architect's Assistant," regarding as such all who are engaged in the practice of the construction of building and who may be likely to compete with us in business life, for any class of work, building or architecture. We want to make the term "Architect's Assistant" as broad as possible, leaving it to the commonsense of those who desire to join to supply their own reasons for inclusion.

Apart from the economic reasons for the Guild of Architects' Assistants, a further and, perhaps, more powerful one may be brought forward to justify our existence, and that is the "social" reason. We are the only "Society of Architects' Assistants," the only architectural society having for its primary object the maintenance of the status of assistants. As all other existing societies place the principals' interests first and the assistants' last, so we fill a place in the profession by providing for and maintaining the assistants' interests, and those not without deference to the principal, whom we ask to join and assist us. We have continually reiterated that we have no desire to compete in any way with other societies, but to collaborate and work with and within them. Unfortunately the fact that we must receive subscriptions if we want to live constitutes in some way a challenge to other societies, but we have endeavoured to minimise this possible source of irritation to as low a figure as possible, (1) in order to allow our members to remain in existing societies and to work within them, (2) to avoid as much as possible any appearance of competition with other societies. Any similarity that may be apparent in the aims of the Guild in comparison with those of other societies demonstrates first, that no radical difference exists; secondly, that the proposals of other societies in relation primarily to the principal are exactly similar to ours in relation to the assistant; and thirdly, the social aspect, that of providing an assistants' society, is exactly similar to that of other societies.

In conclusion, therefore, it is our hope that the Guild of Architects' Assistants, by presenting the assistants' case in an organised fashion to existing bodies, besides carrying out that section of the work which is peculiarly its own, will form a useful cement to existing professional opinion, even if it may not eventually aspire to the position of an important feature in the professional structure itself.

SOME RECENT DOMESTIC WORK.

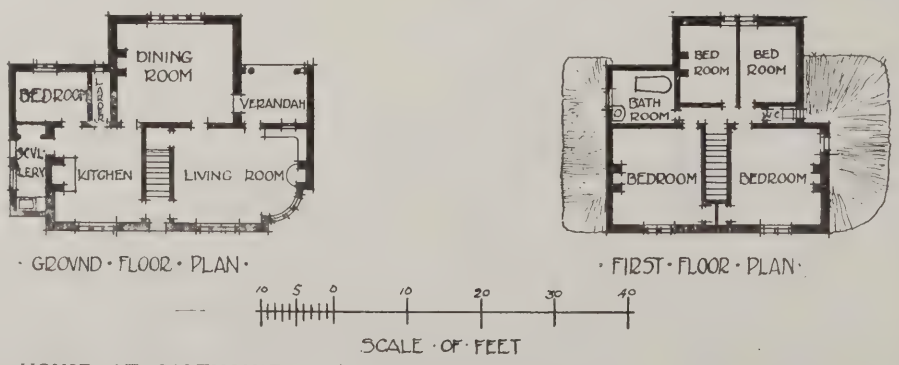
FAIR AND MYER, ARCHITECTS.

On the opposite and following pages we illustrate some minor domestic work, designed by Messrs. Fair and Myer, of 39, Furnival Street, London, E.C. Of the six works shown, four are comparatively small houses, the exceptions being those at Crawley, Sussex, and Sheringham, Norfolk, which have twelve and eleven bedrooms respectively, but the houses illustrate a considerable range of treatment, and are pleasing examples of modern English domestic architecture.

The cottage at Salthouse Bay, Norfolk, is a week-end home designed for a professional man at Peterborough. The waterway seen in the foreground is one of the little drains found in the fen district, and the bridge which has been constructed over it, to give access to the house, is built of old bricks. As regards style the local cottage character has been adhered to, old bricks being used for facing the walls; the roof is covered with thatch, being placed over galvanised iron sheeting, which has been used for fire-proofing purposes. The interior has all the woodwork stained dark; the fireplaces and ingle are built in rough old bricks. The verandah is brick paved. As regards plan the living-room has a corner window to command a view, and the kitchen is conveniently placed, both for the dining-room and entrance doorway. The bedroom off the kitchen has been arranged for a permanent caretaker living in the cottage, so that the owner may be relieved of any difficulty as to the safety of the place during his absence.

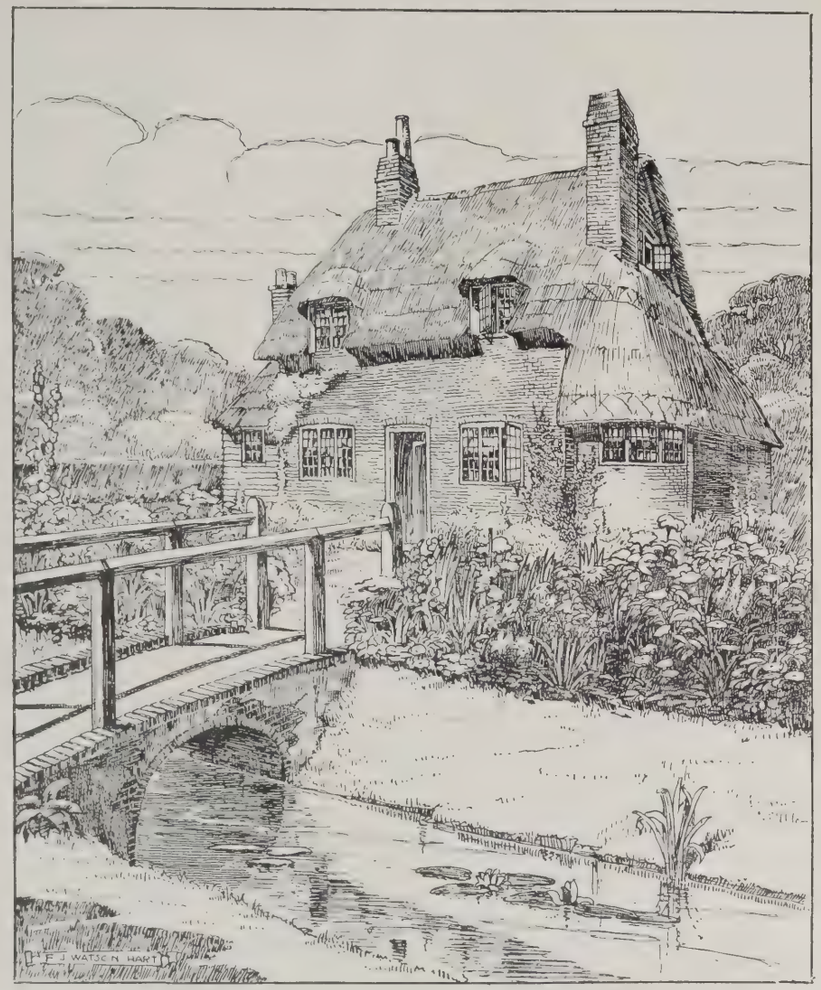
The house at Sheringham, Norfolk, is another seacoast dwelling, built of bricks with fused headers forming patterns. The roof is covered with pantiles. The windows have brick mullions with wooden frames and casements behind. Internally the hall is panelled in elm, and has a fibrous plaster ceiling. The dining-room is panelled in walnut, with coned and enriched ceiling. The drawing-room and library have panelled walls, painted white, and slight enrichment to the ceilings. The garden has been laid out on geometrical lines, and all trees found on the site have been retained. As regards the plan, the large hall has the dining-room on the right and the drawing-room and small library opening off on the left. The kitchen and offices are shut off from the rest of the house, entrance from them to the hall being arranged through the servants' hall; there is also a serving entrance from the kitchen passage to the dining-room. On the first floor are seven bedrooms, a dressing-room and bath-room, and there are four bedrooms in the roof.

The house at Crawley, Sussex is situated on undulating ground, falling



· GROVND · FLOOR · PLAN · · FIRST · FLOOR · PLAN ·

HOUSE AT SALTHOUSE BAY, NORFOLK. FAIR AND MYER, ARCHITECTS.



This is a week-end cottage. The waterway in front is one of the drains found in the fen district. The house is built of old bricks, with thatch over galvanised iron sheeting.

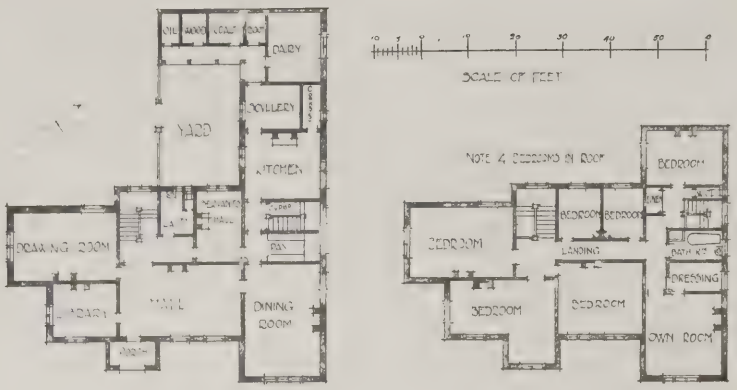
HOUSE AT SALTHOUSE BAY, NORFOLK.



Built of brick, with fused headers forming patterns. Pantiles are used on the roofs. The windows have brick mullions with wood frames and casements.

HOUSE AT SHERINGHAM, NORFOLK.

FAIR AND MYER, ARCHITECTS.



· GROUND · FLOOR · PLAN · FIRST · FLOOR · PLAN

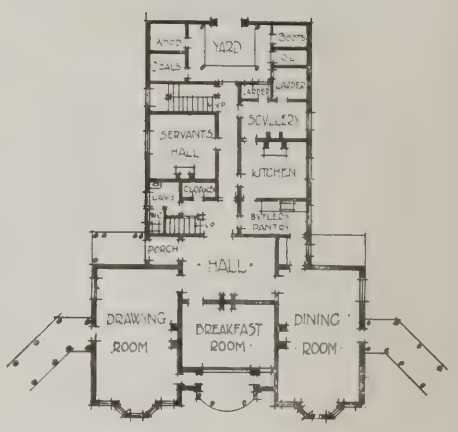
HOUSE AT SHERINGHAM, NORFOLK. FAIR AND MYER ARCHITECTS.

towards the south. The exterior is faced with sand stocks of mixed colours with wooden cornice painted white, and the roof is covered with hand-made tiles. The woodwork to windows, etc., is painted white. The interior is Georgian in character, the hall being panelled in walnut, with gallery over, and walnut staircase. The dining-room is panelled in unpolished oak, and has an enriched ceiling. The library and drawing-room are panelled and finished white, with enriched ceilings. Large dressing-rooms are arranged in connection with the principal bedrooms. The motor garage and stables are situate adjoining the lodge. The garden has been specially designed to suit the site, and the pergola has roughly plastered columns, with reinforced concrete beams and rough cross-rails, all whitewashed.

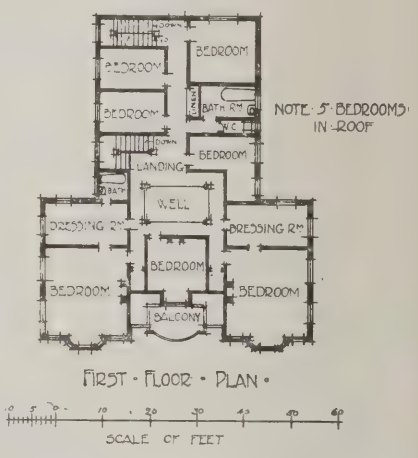
The house on the Chiltern Hills is situated some few miles from Reading, and is built on the site of an uninteresting cottage in an old garden. The exterior is whitewashed, and old tiles are used on the roof. The interior has been finished in a cottage-like character with brick fireplaces, whitewashed beamed ceilings, batten doors with thumb latches. All the walls are finished with buff distemper. The plan is very compact, and shows, on the ground floor, a small hall with dining hall with dining-room and drawing-room on either hand, kitchen and scullery. On the upper floor are four bedrooms and bath-room. The lavatory and w.c.'s are conveniently planned off the staircase.

The house at Braywick Road, Maidenhead, is another small dwelling with a compact plan, with drawing-room, dining-room, library, kitchen, and offices on the ground floor, and five bedrooms, bath-room and box space on the upper floor. The exterior has a red brick base, with rough-cast above, trowelled face and whitewashed, and the roof is covered with sand-faced tiles. Internally, the hall and dining-room have beamed ceilings stained dark, the ingle to the dining-room being panelled in walnut. The drawing-room is panelled and painted white, and the bath-room has a canopy bath and special fittings.

Another week-end retreat is the cottage at Overton, Cheshire; the design being based upon those of other cottages in the district. The exterior woodwork is very



GROUND · FLOOR · PLAN



FIRST · FLOOR · PLAN ·

HOUSE AT CRAWLEY, SUSSEX. FAIR AND MYER, ARCHITECTS.

coarsely tarred, and the plaster-filling finished white. The roof is covered with old stone flags and ridges. The rainwater gutters and pipes are in wood, with wood hangers. The interior has beamed ceilings



This house is faced with sand stock of mixed colours The cornice and other exterior woodwork is painted white, and the roof is covered with hand-made tiles.

HOUSE AT CRAWLEY, SUSSEX. FAIR AND MYER, ARCHITECTS.



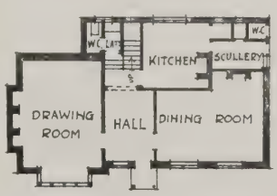
This house is built on the site of an uninteresting cottage in an old garden. The exterior is whitewashed, and old tiles are used on the roof.

COTTAGE ON THE CHILTERN HILLS. FAIR AND MYER, ARCHITECTS.

and batten doors, and the ingle nooks are finished in brick. A motor shed, etc., has been erected behind the house. Considerable thought has been expended on the garden, which has been planted with old-world shrubs and flowers. All the old trees in the grounds have been left undisturbed. As regards the plan the arrangement is compact and well-arranged, the kitchen being conveniently placed both for the front door and the dining-room. There is a large living-room, with doors opening into the dining-room, so that the two rooms can be thrown into one large room. On the upper floor are three bedrooms and bath-room.

A feature of all the houses is the good placing of the bath-rooms, which are placed over or close to the kitchens, thus ensuring that there are no long lines of pipes in which the hot water may lose heat. The kitchens are well considered, with regard both to the dining-rooms and the entrance doors. In one or two cases the ranges are placed with a right-hand light; we think it would be desirable to continue them always with light on the left-hand.

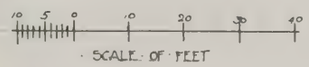
The cottages illustrated appear to us to conform felicitously to the doctrine—which, however, we are very far from desiring to push to the ridiculous extremes to which it is sometimes forced—that a building should be, as it were, racy of the soil whence it springs. The treatment and the materials are in each case sympathetic with the spirit of the locality in which the building has been reared.



GROUND FLOOR PLAN.



FIRST FLOOR PLAN.



COTTAGE ON THE CHILTERN HILLS. FAIR AND MYER, ARCHITECTS.

NEWS IN BRIEF.

The Hampton Court Palace Astronomical Clock, which has been thoroughly overhauled and repaired, is now in going order.

* * *

The expansion of cracks of long standing, and the appearance of a further crack, in the walls of the south transept of St. Asaph Cathedral, have rendered imperative immediate works of repair, at an estimated cost of between £700 and £800.

* * *

In connection with the Winchester Cathedral Preservation Fund, £87,148 has been received. About £11,851 is still required.

* * *

The annual loan exhibition of the prize drawings of the Royal Institute of British Architects, which are sent on circuit to provincial cities, has been on view in the rooms of the Institution of Engineers and Shipbuilders, Elmbank Crescent, Glasgow, under the auspices of the Glasgow Institute of Architects. It will be remembered that Glasgow architectural students won prizes in the Tite competition for Italian design and for measured drawings of the Wellington Monument in St. Paul's.

* * *

In a competition for a design for a clock tower to be erected as a British memorial of the Argentine Centenary in Buenos Aires, the first prize (2,000 dols.) has been awarded to Mr. Ambrose Poynter, F.R.I.B.A.; the second prize (1,000 dols.) to Mr. G. Lauristen Conder, F.R.I.B.A. The tower will be 230ft. high, the clock tower being 150ft. above the ground. The base is to be 50ft. square, and constructed of grey stone, but the superstructure is to be of red brick. Bells will chime the quarters, and the hour-bell will be the largest and highest in South America. The cost will amount to between £30,000 and £40,000.

* * *

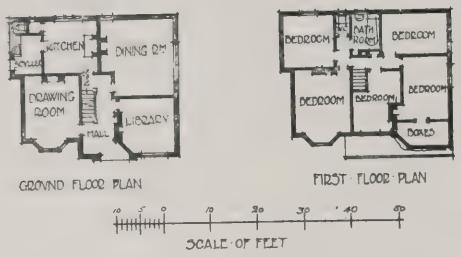
Mr. C. H. B. Quennell, F.R.I.B.A., notifies that, as from April 18th, his address will be 21, Great Peter Street, Westminster, in the building of the National Society. His telephone number is Westminster 6162.

* * *

It appears from the Board of Trade returns that the total number of Labour Exchanges which commenced operations was 93. The total number of applications during February was 216,813. The proportion of vacancies filled to the number of vacancies notified has risen from 60 per cent. in February to 69 per cent. in March. The largest percentages of vacancies filled are: Building works and construction, 17.7; metals, machines, etc., 13.5; conveyance, 12.9; general labourers, 10.9.

* * *

The annual meeting of the Leeds and Yorkshire Architectural Society was held on April 13th, at their premises in Park Street, the new President (Mr. S. D. Kitson)



HOUSE BRAYWICK ROAD, MAIDENHEAD. FAIR AND MYER, ARCHITECTS.

occupying the chair. The report showed that the total membership of the society was 167, as compared with 165 for last year. The school for architecture, held under the auspices of the society in connection with the Leeds Institute, was proving of great advantage to associates in preparing them for the A.R.I.B.A. examinations. A Town Planning Committee had also been formed. The balance sheet showed cash in hand and at the bank amounting to £37.

* * *

The large sanatorium which has been built on the western summit of the Mount of Olives for the benefit of German and other missionaries, and was inaugurated by the Kaiser's son, Prince Eitel Friedrich, whose mother, the Empress, is the foundress, has cost about £80,000 to build. It commands a magnificent view of the Holy City on one side, and the Jordan Valley, Dead Sea, and Mountains of Moab on the other.

* * *

Last June Mr. Banister Fletcher was called upon to examine and advise upon the buttresses in the Banqueting Hall of Croydon Old Palace. He found it imperative that they should be speedily attended to. Since January the work of rebuilding them and looking after the walls generally has been in progress. The fine old Banqueting Hall is the oldest building in Croydon, dating from the thirteenth century. At one time it had fallen to the low estate of a cart shed, but was rescued and became once more one of the chief beauties of the whole building.

* * *

Perth General Station is to be re-roofed, the joint committees of the several railways having placed the contract with Messrs. Alexander Finlay and Co., bridge builders, Motherwell. The new roof will extend over a length of about 800ft., and the maximum width will be about 68ft. The work has been designed by Mr. Donald A. Matheson, engineer-in-chief of the Caledonian Railway Company.

* * *

The officers of the American Institute of Architects for 1910 are as follows:—President, Mr. Irving K. Pond, Chicago; first vice-president, Mr. Walter Cook, New York; second vice-president, Mr. Edgar V. Seeler, Philadelphia. The Executive Committee comprises Mr. Pond, Mr. Glenn Brown (the secretary and treasurer of the Institute), Washington; Messrs. Walter Cook, John M. Carrère, New York; and R. Clipston Sturgis, Boston.

* * *

Messrs. T. C. and E. C. Jack announce an entirely new work on British Costume: Civil and Ecclesiastical, by Mrs. Charles H. Ashdown, well known as a lecturer upon costume and as adviser in connection with many recent pageants. The work will aim at being exhaustive, yet compact in form. It will contain several hundred illustrations, besides plates in colour.

LEGAL POINTS.

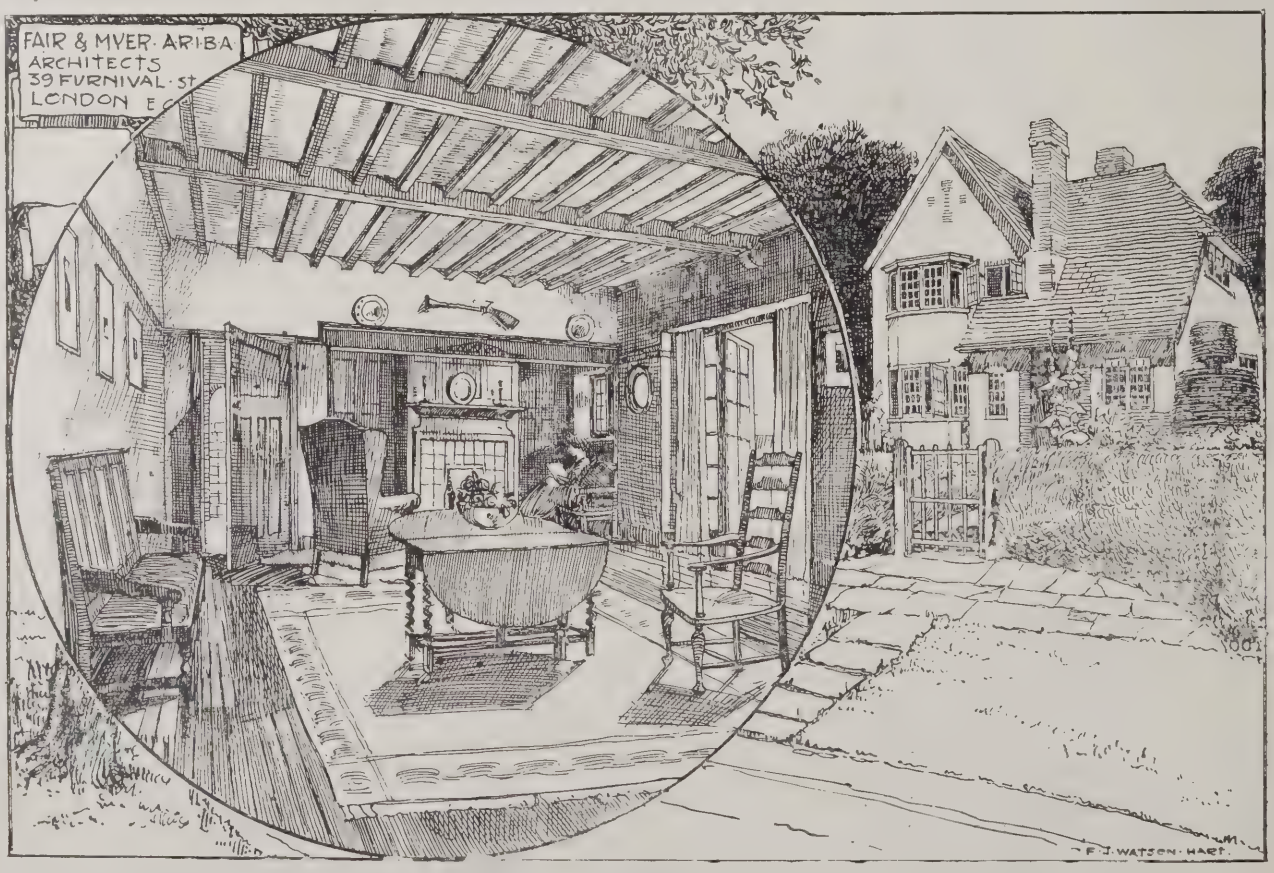
By THE LEGAL EDITOR.

The Right to use the Title "M.S.A."

A case heard in the Chancery Division last week demonstrates once more how futile it is for the members of certain of the professions to try to protect themselves in the use of their titles. An action was brought by the Society of Architects to restrain the defendant from using the title "M.S.A." It was alleged that the defendant, a builder and architect, who was not a member of the society, had used the letters "M.S.A." in the course of his profession, and that what he did would tend to damage the interests of the society.

It appeared that the plaintiff society was incorporated in 1893 under the Companies Acts as a company limited by guarantee and not having a capital divided into shares. Its objects, as stated in the memorandum of association, were (*inter alia*): "The promotion and advancement of architectural art and practice and its allied arts, sciences, and crafts; and the maintenance of the honour and interests of the profession of architect are by the aid of all or any of the following: (a) To hold periodical or other meetings of the members of the society and of the architectural profession generally. . . (b) To support and protect the character, status, and interest of the architectural profession, particularly of members for the time being of the society. . . ." Under the articles the society was to consist of honorary members, retired members, and students. Members were to pay an entrance fee and a subscription of two guineas.

It was declared in the statement of claim that from the foundation of the society members had been accustomed to designate themselves for professional purposes, and had adopted and used as their professional designation the term "Members of the Society of Architects." It was further alleged that the high standard of



HOUSE, BRAYWICK ROAD MAIDENHEAD. GENERAL VIEW, AND VIEW OF DINING ROOM.



COTTAGE AT OVERTON, CHESHIRE.

proficiency and conduct which the society had laid down for its members, and which the members had to the knowledge of the public consistently maintained, had given to the letters "M.S.A." a definite meaning and value in the minds of the public; and that these letters represented to the public that the person using them was a member of the society. If the letters were used by persons who were not members of the society, the society and its members would, as it was alleged, be brought into discredit, and the value of the letters would be destroyed and the object of the society frustrated.

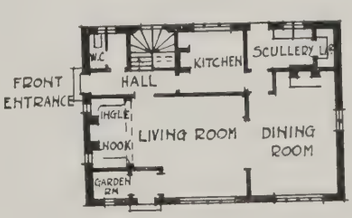
The defendant did not appear, and the "end justified the proceedings" so far as he was concerned, for Mr. Justice Joyce dismissed the action. In giving judgment, he said: "In my opinion this is one of those cases in which the matter is too trivial for the granting of an injunction. Further, with reference to the case of 'Society of Accountants and Auditors v. Goodway,' the facts there were very different, and the Scotch case upon which Mr. Justice Warrington relied is the case of a corporation established by Royal Charter. This is the case of a private joint-stock company, which for payment purposed to give people the right to use a certain combination of mystic letters, the meaning of which, I venture to say, nobody in the Court, except counsel for the plaintiffs, knew. If the decision in 'Society of Accountants and Auditors v. Goodway' was right, it certainly ought not to be extended." Engineers who have cherished the hope that the Courts are in a position to give them some protection in the use of their titles, will read this decision with some dismay.

Liability in a Lump Sum Contract.

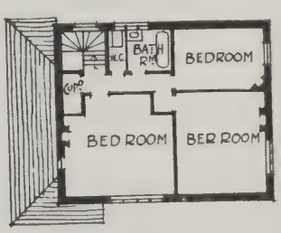
Nearly every contract contains a clause providing that the builder (or contractor) must not rely on any representation made in plans or elsewhere, but must ascertain and judge of the facts for himself. It is satisfactory to note, however, that there is a tendency to modify the rigour of clauses of this kind in favour of contractors. Thus in a case decided in 1907 it was held by the House of Lords that if statements or representations are made in plans and drawings which turn out to be fraudulent, the person making them cannot escape responsibility by providing that the other party shall not rely upon them. As the Lord Chancellor said: Such a clause "contemplates honesty on both sides, and protects only against honest mistakes." A most useful example of the application of this salutary rule is furnished by a recent Scotch case, in which the pursuers had contracted to do certain work, which included a large amount of excavating and embanking, for a lump sum. Owing to these bores being inaccurate, the contractor had 75 per cent. more hard cutting to do than he anticipated. The contractors, having sustained enormous loss, claimed that the contract might be set aside on the ground of what really amounted to misrepresentation, and prepared a claim based on measure and value. The Court of Session has allowed this.

Complete Building Not According to Approved Plans.

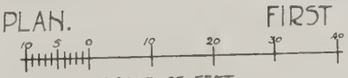
In a case before the King's Heath Bench a builder was summoned for failing to submit complete plans of a skating rink; also with failing to construct stairs and supports to a gallery of incombustible material; with building a wall not of an incombustible material, and with failing to provide a roof of incombustible material. The three first summonses were heard together; the last, relating to the roof, separately. It was urged by the King's Norton and Northfleet Urban Council that though the defendant had submitted plans, the building was not erected in accordance with them. No gallery had been shown on the deposited plans, but one capable of holding 200 people had been erected, with wooden stairs, which, under the by-laws, were not permitted in this class of building. The west wall of the building was built of wood, 5½ inches thick, though shown on the plans as a 13½in. brick wall. This wooden wall had since been replaced by a brick one, it being stated that the wooden wall was only temporary. Defendant had also agreed with representatives of the Council to carry out certain work with the object of meeting their requirements; and it was stated that the stairs were in course of removal. The Bench dismissed the case as to the temporary wall, and convicted in the case of the other two summonses, inflicting fines of 50s. and costs in each case. The question of the roofing was then considered, and the contention of the Council that it was of a combustible nature was strongly contested, the defence calling expert witnesses on the point. On behalf of the Council it was stated that if the roofing material, which is of American manufacture, had been covered with an inch of cement, as recommended by the manufacturers, the building would have been rendered incombustible. Eventually the Bench imposed a nominal fine of 20s. and costs in this case.



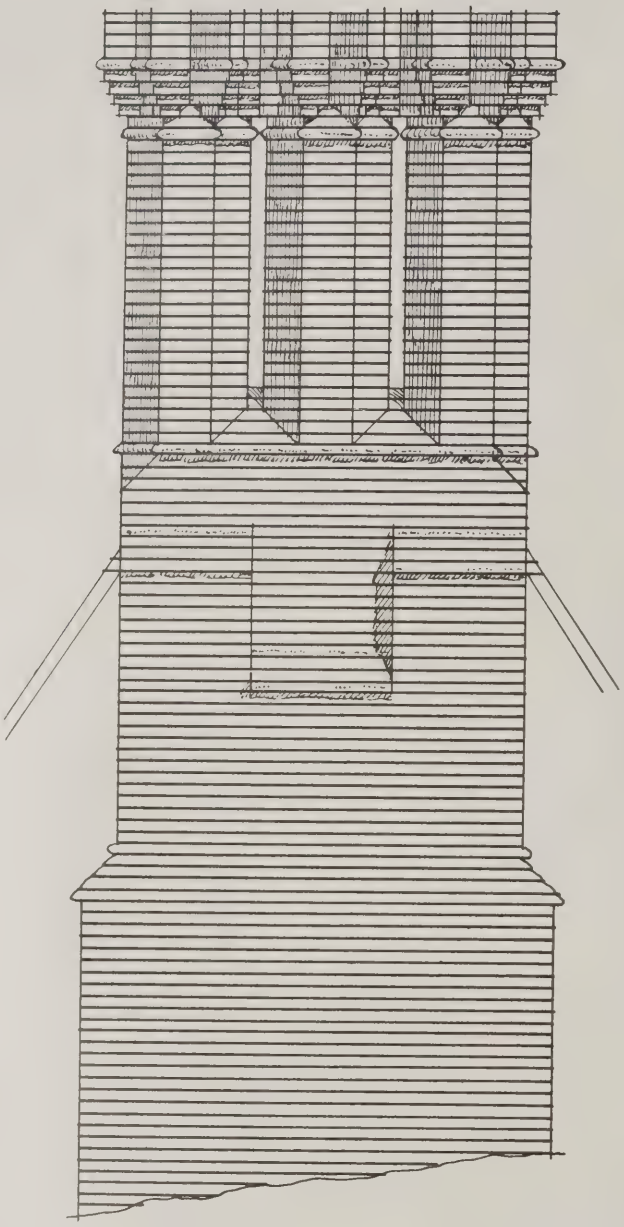
GROUND FLOOR PLAN.

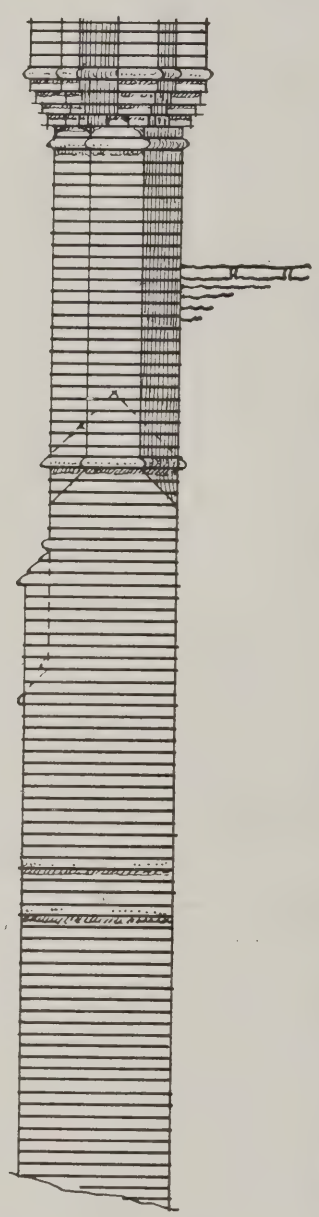


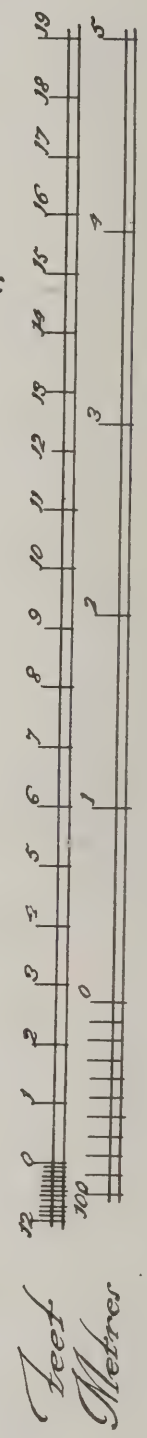
FIRST FLOOR PLAN.

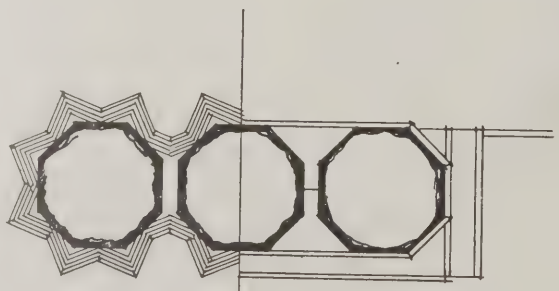


COTTAGE AT OVERTON, CHESHIRE. FAIR AND MYER, ARCHITECTS.









Half Plan (up)

Half Plan (down)

CHIMNEY-STACK LONG MELFORD SUFFOLK.

CHIMNEY-STACK LONG MELFORD SUFFOLK.



This stack is built of thin red bricks, five courses to the foot. The main part is old work; but the upper part of the caps appears to have been renewed.

CHIMNEY-STACK, LONG MELFORD, SUFFOLK.

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THE CRAFT OF REPAIRING BUILDINGS.

By THACKERAY TURNER, F.R.I.B.A., F.S.A.

[This is the abstract of a lecture, the last of the spring series given at the Carpenters' Hall. Mr. Thackeray Turner is, of course, well known as the Secretary to the Society for the Protection of Ancient Buildings, whose chief aim is set forth as follows:—"To put Protection in the place of Restoration, to stave off decay by daily care, to prop a perilous wall or mend a leaky roof by such means as are obviously meant for support or covering, and show no pretence of other Art, and otherwise to resist all tampering with either the fabric or ornament of the building as it stands."]

There is a striking difference between the present-day views of architecture and the views taken of it by our forefathers in any of the great periods of the past. Everybody then understood architectural work, which stood in much the same position then as science does at the present day. But very little "architecture" is now being done compared with the enormous amount of building. At the present time, only the buildings of the past excite our admiration, and it is clearly our duty to protect these old buildings left to us, and to preserve them in an authentic state.

Common Causes of Decay.

This being so, I am justified in laying before you how buildings may be made substantial without robbing them of those qualities which make them valuable. Decay is caused in many ways: timber roofs by the snow and rain getting in and decaying them; stone walls by moisture in the joints, which are expanded by the frost and particles forced away; ivy getting into the joints of the stonework, forcing them apart, and by covering roofs keeping them damp and preventing the sun getting in to dry them. Another cause is the subsidence of the ground upon which the walls rest. The ground giving way is of course a great danger to any building, and one very insidious cause is the water from the roofs being allowed to run off and sink into the ground around the walls. Bad mortar is often the cause of decay. Old builders of the past always used the native lime for their mortar, consequently where good lime was found the mortar is invariably in good condition, and where blue lias lime was used, is as hard as, if not harder than, the stone. There is yet another cause which did not exist in old times, namely, the surface decay of stonework and mortar caused by the enormous and wasteful consumption of coal. This affects not only buildings in towns but also those in districts miles away from them.

Sutton-on-Trent Church.

Take for example Sutton-on-Trent tower, Nottinghamshire. This is a building of the thirteenth century, which had been in a bad state of repair for a long time owing to bad mortar. Both the architects and the engineers had said that the only recourse was to pull it down and rebuild. It is no disgrace to them that this advice was given. Those who said so, said it would be dangerous even to pull it down. Mr. William Weir said he could repair the tower without spoiling it, and he did so.

[Slides were shown illustrating the cracks which occurred not only on the face but splitting vertically through the thickness of the wall.]

Mr. Weir argued that the walls could not fall down if they did not fall outwards, and so he planked the whole of the face of the tower. When this had been done the work was started on the inside, beginning at the ground level. The loose stones were removed as far as the face would allow, part at a time and the space filled with new brickwork and concrete, care being taken to strut up the part over. The tower is 60ft. high, and the total expense was less than two-thirds the cost of re-building. Remember that the whole of the original outside wall was left as the original builders left it, except in one or two places where it bulged so badly the part had to be taken out, toothing left, and the new work bonded in. The essential to the proper carrying out of this work is to have a man on the spot in constant supervision over the work who has had previous training. He must have a clear head for construction, and must know all about materials; so it can be seen that it cannot be carried out from the office, and a specification is an absurdity.

Sutton Courtenay Church.

Another church at Sutton Courtenay, Berkshire, was covered with plaster, in which the water had got behind the plaster and had kept it wet. It was decided in this case to point the work and not replace the plaster. In pointing old work, the joints should first be raked out, then thoroughly washed out, and when the new mortar is put in, well pressed in, not just laid in, and flush with the face. All modern joints as far as I can see—and there are many of them—are bad. The raised joint not only looks bad, but the wet hangs on the top—could anything be worse than tuck pointing? All good pointing is flush with the wall face, and even then if frost comes while the wall is still damp, the mortar will expand and come out. The mortar should be composed of four or five parts washed river sand to one part blue lias lime. It is well known that blue lias lime has slow-setting properties, and so should be kept wet for two weeks if possible with a syringe. The chancel arch, also at Sutton Courtenay, was badly cracked. Here the first thing to be done was to secure the arch with a strong wood frame. Then the loose earth was removed at the foot of the walls until a good foundation was found about 6ft. down. From this new brickwork was built up in cement, and finally covered with plaster and limewhited.

Coln St. Denys Church.

The next example is the interior of Coln St. Denys, Gloucestershire, which, though extensive repairs have been carried out, preserves its character practically unchanged. In this case the western arch of the tower had gone, and by a process of replacing little by little the old work by new, a solid band of brickwork the thickness of the wall except the facing was put in

Imbury Church.

Imbury Church, Shropshire, has been made fit for divine worship without any loss of interest. The only change noticeable is that the belfry windows now have louvres in them, and if you visited the church you would find a stone channel all round the building. This is not so nice as the turf, but is necessary. These channels should be made of concrete about 2ft. wide, sloped to gullies leading into surface water drains: they should have a slow slope from the walls and a quick slope up to the turf, and should be faced with stone; if faced with cement, it invariably cracks and perishes.

West Walton Church.

We now come to West Walton Church, near Wisbech, in Norfolk, which is a thirteenth-century building with fourteenth century windows. Here the lead roofing was taken off and relaid. Mr. Crickmay has told me he recollects a building in which part of the cast lead in the building which was in a bad state of repair, was replaced by milled lead; later on in life he saw it and found the new milled lead was in a far worse state than the cast lead on the part which had not been touched. When repairing the timber roofs, it is a great gain to do the work in situ, then the bad wood can be cut away and the new wood spliced on. The rafters in this roof had oak battens and wide oak boarding. We placed deal battens and then boarding, as it is well known that lead perishes if in contact with oak, owing to the "tannin" in the oak. One thing to remember in repairing roofs is that, if the carpenter can't see his way to make a strong job of it, the blacksmith will do it.

West Stow Hall.

We will now turn to some domestic building. [West Stow Hall, near Bury St. Edmunds, was shown on the screen.] You will not see a finer piece of brickwork anywhere in England. Whatever was necessary for preservation was renewed, but what was mere ornament was left untouched. One of the questions in this building was whether to remove the roughcast from the upper part of the building. Underneath was half-timber work, and the danger we feared was the decay of the oakwork, after being so long covered up. There is a wall painting over the fireplace in the guard room [of which a slide was shown] representing the four ages after childhood. These old paintings are neither frescoes nor in tempera, but simply distemper paintings; size only being used for a medium. There is one thing you must not do, and that is, varnish them. This keeps all the gases and moisture between the walls and plaster, and the latter is sure to break away. The best thing to do is to spray with size, but if the subject is an important one, read Professor Church's advice on the subject.

Some General Advice.

[Two views of West Ham Church Tower were shown, and attention was drawn to the scaffolding.] This is "double" or independent scaffolding, and used to avoid making holes in the walls for the putlogs. In this case the tower was found to be substantial, but it was faced with Kentish ragstone, which was in a particularly bad condition, as the acid had eaten its way into the surface. What was done was to rake out the joints and cut out decayed stonework, filling the joints with tiles finished about flush with face of stonework, and where the stone face had been taken out vertical pieces of tile were inserted, and all flushed up with lime mortar. There are some technical points in these methods. For instance, we always use lime mortar instead of cement. One reason is that when cement has been used we find it hard when we cut away, but it is not homogeneous with the old work. When pointing has been done with cement it generally comes away. Blue lias lime gives better results and hardens with years, provided it has moisture at first. Tiles are good because they hold water like a sponge.

Several other buildings at which repairs had been carried out were shown, including Wilby Church, Norfolk; Denton Church, near Grantham; Wilby Hall, and North Stoke Church, Berkshire. A view of Marton Church Tower, Lincolnshire, showed the Saxon herring-bone work, the tower being a Saxon one.

Abstracts of the interesting series of lectures at the Carpenters' Hall, of which the above is the last, have been published in The Architects' and Builders' Journal during the spring. For the convenience of readers who have not closely followed them we give a list of the reports and the dates on which they appeared as follows:—

"What is Artistic Craftsmanship?" by Professor Beresford Pite. Jan. 19. "The Art of building with special reference to the use and abuse of materials," by M. H. Baillie-Scott. Jan. 26. "The Carpenter's Craft," by Banister F. Fletcher. Feb. 2. "The Joiner's Craft," by Sir A. Brumwell Thomas. Feb. 16. "Native Craftsmanship in Timber, Brick, and Stone, before the eighteenth century," by Arthur Stratton. Mar. 2. "The Art of the Lead-worker," by Lawrence Weaver. Mar. 2. "The Art of the Plasterer," by Geo. P. Bankart. Mar. 9. "Coloured Materials in Building," by Halsey Ricardo. Mar. 23. "Castles in the Air," by C. F. A. Voysey. Mar. 30. "Coloured Mosaics and Reliefs," by R. Anning Bell. April 20. "The Craft of Repairing Buildings," by Thackeray Turner. May 4.

PORTABLE SCAFFOLDING FOR STEEL-FRAMED BUILDINGS.

By G. McARTHUR and A. G. H. THATCHER.

Steel-framed buildings cannot now be considered new. Nevertheless, they are so sufficiently modern that the means of scaffolding for these erections is not generally known or properly used in many instances where an effort is made to cope with the difficulties which arise. The general practice is for the framework to proceed much in advance of the filling in. Consequently pole scaffolding is not in request until most of the steel is in its place. There are reasons for this, one of the principal being that at all times steelwork is difficult to handle. It is unsymmetrical in that the length of the members is considerable in proportion to the other measurements. This difficulty necessitates the builder giving space in order to move his material freely, and as it is obvious that pole scaffolding minimises this greatly the practice has been to do with the least possible extraneous erection. It does not necessarily follow that the workmen can do entirely without platforms to work from. A much greater freedom from accident risks is ensured if these are provided, and, in consequence, builders and others concerned in the erection of steel have devoted some thought as to how a greater degree of safety can be attained without limiting the required freedom of action. A general agreement has now been reached in that the desired end can be gained by the use of portable steel hangers. They can be of practically any design, are easily made, and of great adaptability. A platform of two boards wide—that is, 18ins.—is usually given, although this can be increased. The illustrations herewith show those most generally in use, but it will be seen, if a consideration is given to them, that a lack of ingenuity would be the only bar to many others, which may be wanted in special circumstances.

Fig. 1 illustrates the ordinary wrought iron hanger carrying a platform 18ins. wide. The hook end in this case has just sufficient depth to clip over the top flange of the girder. If simply hung in that position there would be a tendency for the hanger to roll or twist when loaded. To prevent this a wood block is placed where shown on the sketch. This block is about 18ins. in length, being of such other measurements as are necessary. Wood screws through the hanger should be used to keep the block in position, although wedging is sometimes trusted to hold firmly. It is needless to say that this practice is not wise: vibration will loosen a block not firmly fixed, and therefore the screws should be considered as necessary as the block itself.

Fig. 2 shows how a hanger too deep in the clip for the flange can be used and kept firm. This is achieved by using a block of sufficient thickness to take up the superfluous depth of the hanger clip. In this instance the screws are absolutely necessary, as the liability of the block to move is increased.

Fig. 3 is a side view of the girder showing the wood block in elevation instead of in section.

In many cases the boards for the platform are simply laid on the hangers, being lapped in their run. This method is often secure enough. If any doubt arises, however, the boards can be fixed by means of a clip, as shown on Fig. 4. If the bolt projected at all it might prove to be a cause of tripping. To obviate this in thicker timbers, the bolt head can be sunk as shown.

Fig. 5 illustrates clips which are useful where the top flanges of the girders are not available. As will be seen, the hanger need not be immediately under the centre of the girder, but either to the right or left, as necessary. In the diagram the haunching which supports the flooring is supposed to be cut away to free the lower flange.

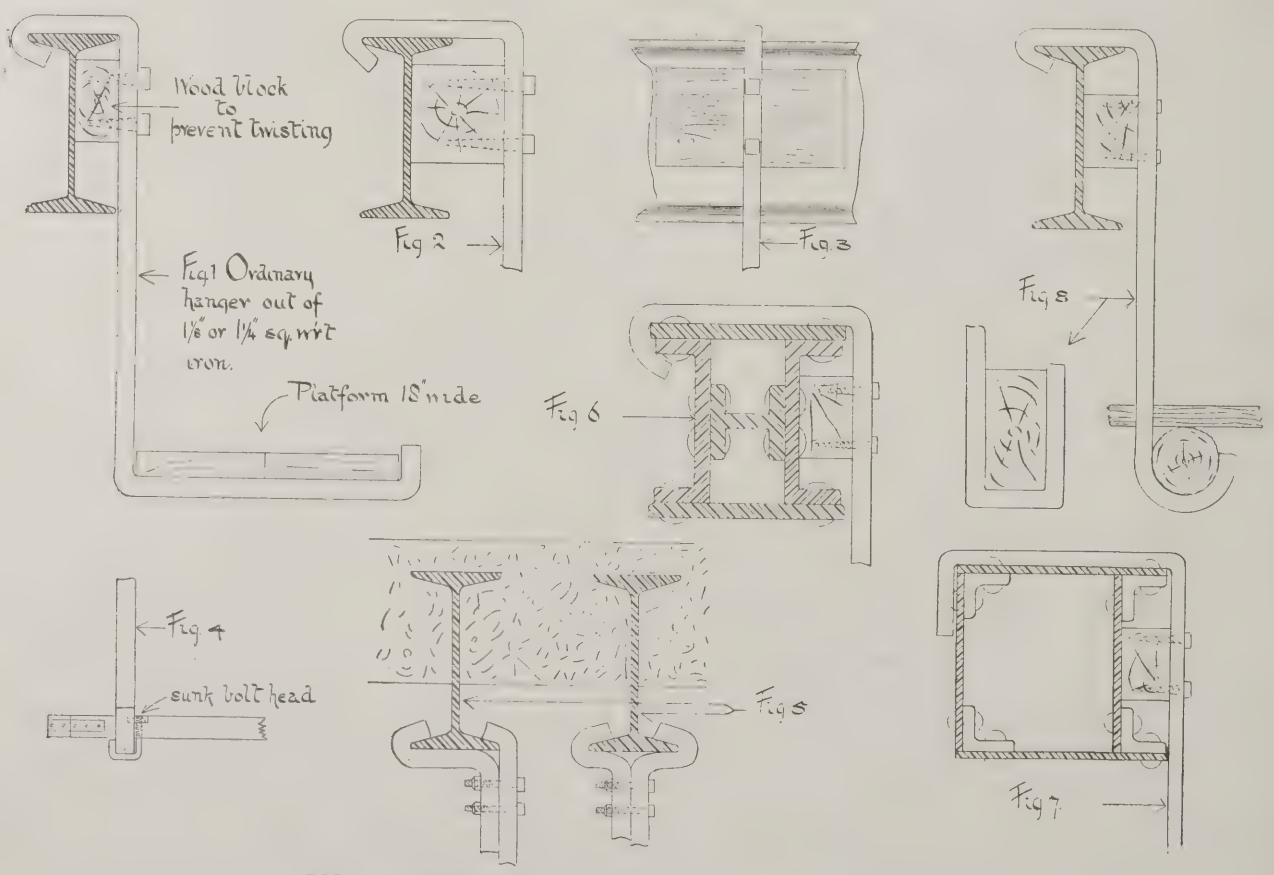
With compound girders the same methods can be adopted, as shown on Figs. 6 and 7. In the latter figure the top flange does not afford a purchase, but, providing the block is well and truly fixed, no disadvantage need accrue from this.

At times it may be found useful to lay a platform at right angles to the run of the girder. To enable this to be done the hangers can be made to carry a pole or a length of quartering of sufficient strength, as shown on Fig. 8. Two poles hung from different girders are necessary, and on these the boards can be laid. A particular advantage is gained by this method, which is useful in many cases. It allows of the platform being laid to a width which is only limited by the effective length of the bearer poles. If a platform of 18ins. only is wanted, it can be gained by arranging the hangers as shown in Fig. 9. Fig. 10 illustrates a section of the platform when arranged in this manner, and also shows how the end of the hanger can be continued upwards to carry a guard rail or rope, and permit the edge board being fixed. The edge board is particularly necessary on steel construction works. Bolts and nuts, spanners, and other tools often fall, partly due no doubt to the extremely narrow platform on which the men work. To prevent this in a practical way nothing better than an edge board has been used in this country, although matting is used abroad—notably in Northern Italy.

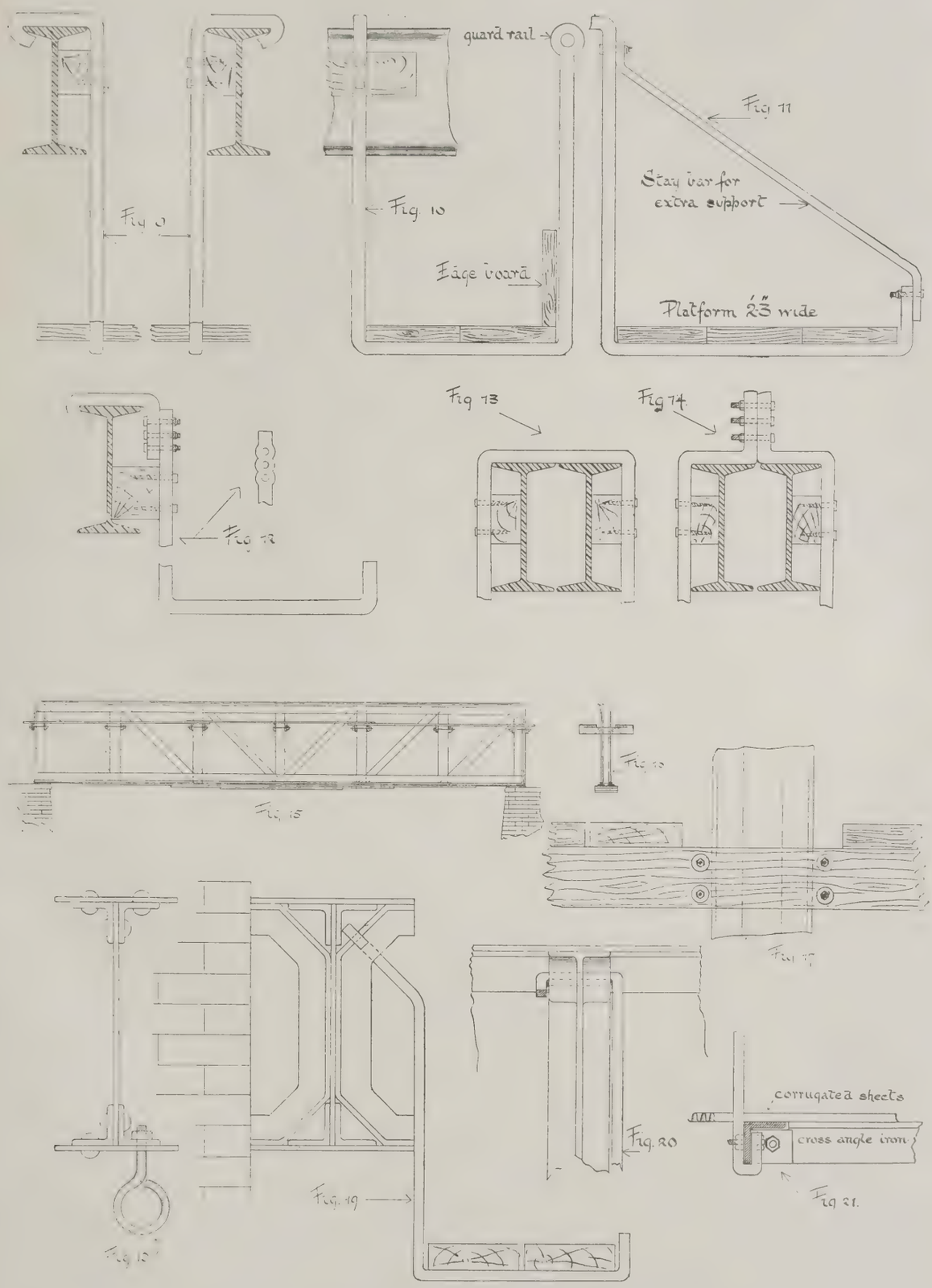
The ordinary hanger, as already stated, is usually made to carry two boards, and this platform with its loads are considered sufficient for its strength. If, therefore, three boards are wanted, additional support must be provided, and this is given by fixing a stay bar as shown on Fig. 11.

A disadvantage can be urged against the hanger in that it is cumbersome. They can, however, be made in two parts (see Fig. 12). This also permits of differently sized clips being used to suit the flanges, the remaining portion of the hanger remaining of the standard size. Three bolts are wanted to make the connection, and the bars where joined should be slightly flattened out before the holes are drilled, to give sufficient material round the bolt-holes to withstand the stress that arises.

Figs. 13 and 14 are illustrations of how the hangers can be made to cover double girders and carry a platform on each side. Fig. 13, being in two parts, is, of course, the most portable. When used in this way the wooden blocks are doubly needed, for by keeping the



PORTABLE SCAFFOLDING FOR STEEL-FRAMED BUILDINGS.



PORTABLE SCAFFOLDING FOR STEEL FRAMED BUILDINGS.

whole arrangement rigid they act in effect as if the hangers were braced.

Fig. 15 shows a method of erecting a platform for heavy lattice girder work. It will be noticed that on the top boom of the girder flange plates have still to be put on, similarly to those on the lower boom. These plates could not readily be put in position if ordinary hangers were used, therefore a method of glanding timber cross-heads to the struts is found most desirable. In the figure the cross-heads, or needles as they are sometimes termed, are shown fixed at the required distance from the top boom, in order to allow of easy reach by the workmen. Fig. 16 is a cross-section showing the planking resting on the needles, and Fig. 17 gives an enlargement of the detail.

Fig. 18 is a method often adapted to carry scaffolding. Rivets are cut out of the bottom flange at suitable distances apart, say, every 8ft., and ring bolts inserted in their place. From these depend chains or cordage to carry whatever scaffolding may be required.

Figs 19 and 20 show a hanger which is useful where a girder of the type shown is hard against a wall, or some other obstruction, which will not allow an ordinary hanger to be fixed.

Fig. 21 illustrates a method of supporting a fireproof scaffold on which fires for heating rivets are to be used.

The hanger is adapted to carry angle irons, and they in turn carry cross angle irons covered with a corrugated sheeting deck.

Fig. 22 is a sketch showing a safe hanger for supporting planks on their flat, which in turn carry cross planks. It is, owing to the amount of bolting required, rather slow in adjustment, but when once put together, is certainly reliable.

By removing the plate and bent flat from the holes marked A to those marked B, the planks can be made to lie at right angles to the position first shown, see Fig. 23.

Figs. 24, 25, 26, and 27, show a scaffold capable of carrying a number of men, and is useful for fixing corrugated sheets or painting or similar purposes on the vertical sides and ends of buildings. By trussing it as shown on Fig. 24, with a ½in. wire rope and two hook bolts, a fairly long platform is obtained, enabling a considerable amount of work to be done before the removal of the scaffold is necessitated. For ease in hoisting or lowering, a wheel of about 9ins. in diameter is fixed at each end (Fig. 25). This lessens the friction arising when the scaffolding and wall come in contact.

Fig. 26 shows a section of the arrangement with the hanger entire, but without the lower strut, a detail of which is given in Fig. 27.

The manufacture of these hangers is easily accomplished by any ordinary smith. They call for no particular skill, but care must be exercised for the production of good workmanship. A common fault is shown on Fig. 28, and is a source of weakness which should be carefully guarded against.

CORRESPONDENCE.

[The Editor declines responsibility for the statements made or opinions expressed by correspondents.]

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

Licentiates R.I.B.A.

SIR,—May I ask why the R.I.B.A. fixed 30 as the age limit for licentiates. Are there no distinguished men under 30? What about our Ralph Knotts and Gilbert Scotts. I myself am 28 years of age, have been in practice four years, am a winner of competitions, and yet am debarred from this distinction in favour of my neighbour who combines a little house planning with his rent collecting and estate selling, but had the good fortune to be born two years previous to myself. Is not actual work of more importance than a mere matter of age.

AD. REM.

PRACTICAL NOTES.

Cleaning Buildings.

The inefficiency of either hot or cold water for cleaning buildings in towns which have become dirty through exposure is well known, and though the use of weak acid may be satisfactory for some kinds of brickwork, it cannot be used on stone without seriously attacking the material and producing white patches of scum, owing to the soluble salts produced, unless the washing after the application of the acid is far more thorough than usual. Even with brickwork, there is a strong tendency to produce scummed surfaces.

The use of a sand blast has been carefully investigated, and though the sand is driven against the surface with such force that it certainly cleanses it, a portion of the surface of the material is removed in addition to the dirt. With natural stone this is not often important, but with bricks and terra-cotta the results may be serious, as these latter have naturally a denser surface than interior, and if this protective "skin" is removed the more porous and open interior will absorb the dirt all the more readily. Consequently, the use of a sand blast is distinctly limited.

Many attempts have been made to use steam as a cleansing agent, but unless the pressure is considerable, and the steam is impregnated with a cleansing chemical, the results are not satisfactory. With a suitable detergent, however, and a sufficient force of steam, followed by a good rinsing with water, excellent results may be obtained. The steam having no abrasive action on the brickwork or masonry cannot damage it, and consequently with its use a building when once cleaned remains so for a much longer time than when the surface has been obtained by an abrasive such as sand or a corrosive such as acid.

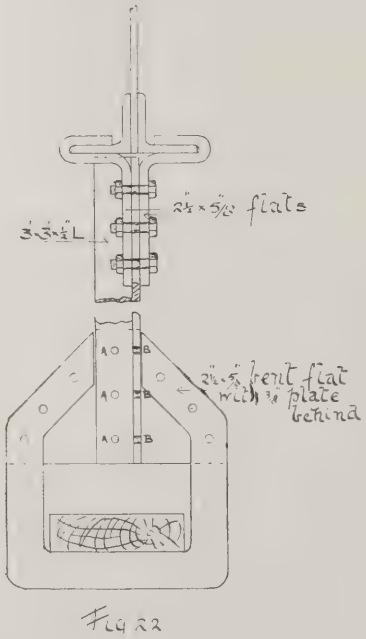


Fig. 22

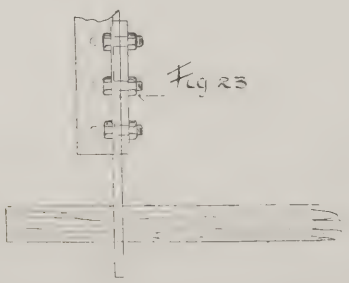


Fig. 23

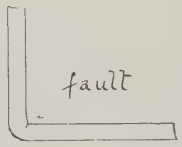


Fig. 28

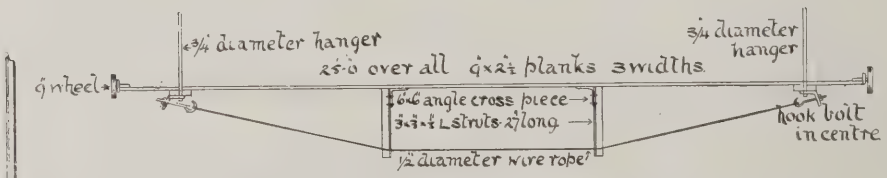


Fig. 24



Fig. 25

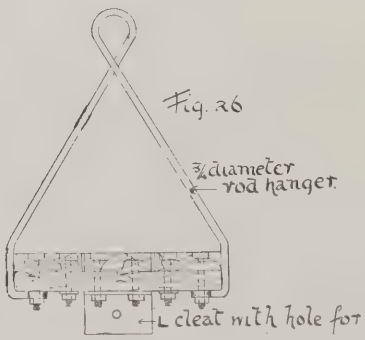


Fig. 26

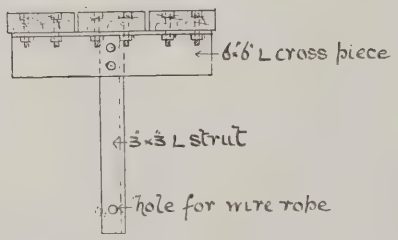


Fig 27.

PORTABLE SCAFFOLDING FOR STEEL-FRAMED BUILDINGS.

RAILWAY RATE OVERCHARGES IN CONNECTION WITH THE BUILDING TRADES.

By S. WHETTALL.

The railways in Britain receive about £40,000,000 annually for goods being carried over the railways. This enormous sum no doubt includes many overcharges in rates, which are made owing to various reasons. It would doubtless surprise many people if they knew what a lot of overcharges are made in railway accounts every year; but when one reflects on the immensity of such accounts, it is not at all surprising. Some of the principal reasons why the traders are overcharged are given below. Many others could be cited if we had sufficient space to enumerate them all.

(1) The public not consigning properly.

(2) The public not having sufficient knowledge of railway matters to enable them to check the accounts.

(3) The railway clerk having insufficient knowledge of the classification book.

(4) The unwritten rule, "If in doubt, always charge high enough."

(5) Not allowing cartage and other rebates unless applied for.

(6) Charging ordinary rates when there are special (and lower) rates in operation.

(7) Frequently charging a higher class than the goods are actually chargeable under.

(8) Errors made in weights which often occur.

A fair and moderate estimate of the amount which is annually overpaid to the railway companies in overcharges would be 1-5 per cent. of the total carriage on merchandise, and this figure would be under rather than over the mark. The overcharges are mainly made inadvertently, but the same cannot be said when referring to the unclaimed rebates, of which there are many thousands lying unclaimed. From a moral standpoint, it reflects to a certain extent against the railway company, but still more does it reflect on the business capacity (or otherwise) of the public that the rebates are allowed to go unclaimed. For the benefit of the trader a list of some of the articles used in the trade is given herewith:—

Carpenters' tools, Class 3H.

Gas stoves, if not properly packed, only to be accepted at owner's risk, 3Z.

Joiners' tools, 3A.

Joiners' work (common wood): Beadings, and mouldings (not gilt lacquered or varnished), doors and door frames, fittings and fixtures for buildings, staircases, balusters, and hand rails, window sashes, and frames and shutters, 3Y.

Doors, door and window frames, made of mahogany, walnut and other expensive timber, 4Y.

Joists iron or steel, CI.

Gas fittings in parts, except brass and copper tubing, 3H.

Builders' implements, not new, and consisting of barrows, centreings, crab winches, hoists, ladders, mortar-boards, mortar-mills, ropes, scaffold boards, steps, struts, trestles, planks, etc., I.

Flooring boards and other planed or prepared boards, etc., or at 1 per cent. above any special rates noted for deals, C.

Deals, etc., battens, and boards, unprepared, generally special rate lower than C, in operation, C.

Nails and Spikes, iron and steel, Ci.

Bolts and Nuts, iron and steel, Ci.

Bolts, door, 3H.

It will be seen that the goods are divided into classes, and for the benefit of the reader it may be said that railway rates are divided into eight sections or classes; the names they go under being given below.

Classes A, B, C, 1, 2, 3, 4, 5. Class A is the lowest rate, and the charges in the rate include conveyance and station terminals (for use of station).

If the railway company provide wagons, or do the loading or unloading, or cartage, a charge is made for each in addition to the rate.

Class B is the next lowest rate, and the charges included in the rate are the same as A, but wagons are provided, in this case, by the company. Unloading and loading and cartage to be found by the trader, or else paid for in addition to the rate.

Class C is next as regards price, and this rate includes conveyance charges, loading and unloading, covering and uncovering, use of companies' wagons, station terminals for use of stations; in fact, all charges with the exception of cartage (at both ends).

Classes 1, 2, 3, 4, 5, include in the rate all the charges mentioned in class C and also cartage at both ends, unless specially provided for in the railway companies' rate books. An exception that may be mentioned is the City of Liverpool, and cartage in Liverpool is generally charged for in addition to the rate in any of the classes 1, 2, 3, 4, 5.

Commencing with "A" as the lowest rate, the classes get higher by degrees, until they reach class "5," which is the highest.

Should the trader perform any of the services which are given above as being included in the rate, he must make application to the railway company for an allowance on rebate. The service which the trader most frequently performs is that of cartage, and the allowance usually given to the public varies from 10d. to 1s. 6d. per ton at each end carted.

In the list given, the reader will have noticed a letter against some of the classes, the meanings of these letters are:—

"I" signifies that these articles are included in the iron and steel list, and whenever there are any special rates in operation they will apply.

"H" signifies that "gas fittings" are in the hardware list, and any special rates apply.

These special rates are generally lower than the ordinary class rates, and it frequently occurs that the railway clerks charge the ordinary class rate instead of the special and lower rate. This is a thing which the trader should keep a check on, as the difference between the special rate and the class rate often equals 10s. per ton.

"Y" means that should the trader sign an owners' risk note for this particular traffic, he will obtain a reduction of a sum equivalent to 15 per cent. off the rate.

"Z" signifies that if an owners' risk note is signed, the rate will be reduced by 20 per cent

If the goods are well packed, it will often pay the trader to send at owners' risk, and so obtain the benefit of the reduced rate.

Another place where the trader is overcharged is in the articles under 3 cwts. The railway companies may charge from 3d. to 1s. 6d. per package, in addition to the tonnage charge for lots 3 cwts. or under. For the purpose of charging this traffic, a scale, termed the "Small Scale," is used.

Frequently the railways charge separately instead of lumping together.

Right way—					
1 gas oven..	2	2	0	at 65s.	
1 pkge. gas stove ftgs. ..		2	0		
	3	0	0	at 65s. =	10 6
Wrong way—					
1 gas oven..	2	2	0	at 65s.	8 11
1 pkge. gas stove ftgs. ..		2	0	,,	2 4
					11 3

Bear in mind that the articles can only be lumped together when sent on the same day from the same sender to the same consignee.

By watching the points enumerated herein, and by paying particular attention that no article mentioned is charged at a higher class than given, there is not much doubt but what some saving to the trader will accrue.

The trader should also see that all articles consigned be properly described. When an article is not described at all the railways charge the highest possible rate.

HINTS ON PAINTING AND DECORATION.

By ARTHUR SEYMOUR JENNINGS.

White Lead and Zinc White.

It is a remarkable fact that perhaps ninety-nine out of a hundred practical house painters believe firmly that no paint is or can be superior to pure white lead, although scientific investigation has shown quite definitely and clearly that a mixture of pigments produces a paint that is much more durable. As a matter of fact there is no pigment in existence which can correctly be described as perfect. White lead, for example, possesses the advantage of a splendid "body" or covering property, and also of being easily applied because of its "slippery" nature when mixed with oil, when it might be correctly described as a lead soap. But white lead is very susceptible to the action of sulphuretted hydrogen and sulphur compounds generally, and as these are present everywhere it is not a desirable paint for every purpose, to say nothing of its poisonous qualities. Again, oxide of zinc, although beautifully white and exceedingly durable under conditions which would totally destroy lead, is by no means so easily applied. It lacks body to some extent unless it is mixed with great care, and under certain circumstances it is apt to become brittle. But a mixture of the two pigments in effect causes the shortcomings of one pigment to be supplied by the strength of the other, and vice versa. Recently reported experiments made on an extensive scale in the United States of America show conclusively that in every case mixed pigments produce a more durable paint than a single pigment used by itself. Most first-class decorators would be horrified if one were to suggest that they should use "No. 1" white lead, that is, a lead mixed with some 10 per cent. of barytes, yet the experiments referred to show that such an addition actually improves the durability of the paint, although a large percentage would doubtless be detrimental because it would lower the "body" to a serious extent, and an extra coat might be required. I was once present at a trial in which the question of the durability of a "reduced" or adulterated lead was involved, and among the witnesses was an old and experienced house painter who became very indignant when it was suggested by counsel that the small percentage of barytes did no harm. He said that every man of experience knew that no paint in existence could be superior to white lead, but when he was asked whether he had ever used anything else as a white paint base he acknowledged that he had not.

It is here that we arrive at a solution of the problem. Most painters have never used anything but white lead, and are hopelessly ignorant of the quality and value of mixtures. As a matter of fact architects and engineers permit the painter to adulterate his white lead, although probably they do not realise the fact. This adulteration arises from the practice of using large quantities of patent or paste driers. Most of such driers consist largely of barytes, whiting, etc., often with as little as 5 per cent. of actual drying material, and yet no restriction is placed on their use. Liquid driers are always preferable because the quantity used can be accurately measured, but they are not popular because there are so many brands that are worthless. The highest-class varnish houses produce splendid liquid driers, and the builder cannot go wrong in using them, or the architect in specifying them, provided always that they are employed in strict moderation and on the principle that the smaller the quantity of driers used in paint the better.

Testing Varnishes.

A few weeks since I said something in these columns about testing varnishes. These remarks have brought a request for information concerning the testing of ready-mixed paint. It is practically impossible to test quickly such paints for durability, and the only way

is to paint three or four coats on boards and to expose them for a year or so to the action of the weather. It is useful at the same time for the purposes of comparison to paint a board with pure white lead and another with a paint made of half lead and half zinc oxide. Of course, an examination of the paint when the can is opened will tell something as to its quality. If it has been at rest for any length of time, the greater part of the pigment will be found at the bottom of the can, but if the paint is a good one this can readily be mixed by stirring with a stick. In the case of a very common ready-mixed paint the pigment at the bottom may be quite hard, even like cheese in character, and this will be amply sufficient reason for rejecting it. When brushed out the paint should possess good body, and two coats should be sufficient to obliterate all signs of knots, etc. The third coat should make a good finish, free from brush marks and somewhat glossy in appearance when dry. It is always well to have the paint applied by a skilled painter because the architect who attempts to do his own testing is apt to put on too much paint instead of brushing it well out. Sometimes resin oil is used in cheap ready-mixed paints, and this is always objectionable. A chemist will be able to detect its presence without difficulty, but when his services are not called upon a rough test is to warm the hand and place it upon the surface of the paint when dry. The heat will have the effect of softening the resin oil and rendering it more or less "tacky." In addition to this objection resin oil after some time causes the paint to become brittle, so that it quickly decays.

Church Decoration.

The decoration of churches, chapels, etc., often involves so much expense that the work is held over from year to year until the necessary sum can be raised to meet the expense. I am speaking now of cases where a considerable amount of ornamentation is required, and here wall papers may be used with great advantage. I am well aware that in the average pattern books there are not more than two or three designs suitable for the purpose, but most manufacturers have patterns used in former years which would be available. Recently I was delighted at coming across in the showroom of a very old firm of wall-paper manufacturers a whole book full of wall papers designed long ago by Pugin, nearly every one of which is suitable for church work, while many would answer admirably for masonic temples, council chambers, etc. I was not aware that Pugin designed wall papers at all, but there the papers are, and very fine some of them appear. They are not kept in stock, but the old blocks are still available, and in a week or so any of them could be printed—they are all hand-printed goods—to order.

NOTES ON COMPETITIONS.

Endcliffe Park Congregational Church, Sheffield.

Thirty-three architects submitted designs in the above competition, which was assessed by Mr. Charles Hadfield, F.R.I.B.A. The award was given as follows:—

1. Messrs. Morgan and Brace, London.
2. Messrs. W. Waddington and Son, Manchester.
3. Messrs. Withers and Meredith, London.

In his report Mr. Hadfield informed the committee that in his judgment the first design was of a higher order of merit and superior to any other submitted. There was a spaciousness and dignity about the laying-out of the plans which showed that the author had grasped the difficulties of the site. The four entrances and exits were admirably planned, while both exterior and interior were designed on dignified lines with full appreciation of architectural effect. The style had apparently been suggested by the use of reinforced concrete for the dome, roofs, and general construction. It was based upon the architecture of the brick churches of Northern Italy, the Adriatic, and the Levant, all of which were influenced by the Emperor Justinian's great Church of the Holy Wisdom of Constantinople, erected in the sixth century, at which period, following the break-up of the Roman Empire, it marked a new departure in Christian architecture.

LIST OF COMPETITIONS OPEN.

MAY 31. MUNICIPAL OFFICES, KARACHI. Particulars given in our issue March 16th.

JUNE 11. COVENTRY. ENLARGEMENT OF SCHOOL at STOKE. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

JUNE 15. ELEMENTARY SCHOOLS, ACTON. Particulars given in our issue of March 16th. The Royal Institute of British Architects has requested architects not to compete.

JULY 9. PROPOSED USHER HALL, EDINBURGH. Particulars given in our issue of April 20th. Inquiries to be addressed to Thomas Hunter, Town Clerk, City Chambers, Edinburgh.

AUGUST 31. COVENTRY. NEW ELEMENTARY SCHOOL in Centaur Road. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

TRADE AND CRAFT.

British Fireproof Partitions.

The slab which forms the unit of these partitions appears on examination (for which opportunities had been afforded us) to substantiate the claims that they are proof against fire, sound, and vermin; that they can be rapidly erected without skilled labour; that, as compared with lath-and-plaster partitions, they effect a considerable saving of floor-space; and that the design of the slab ensures perfectly sound construction and extraordinary strength.

The slabs, which interlock by means of fillets and grooves, are further furnished with screwed holes, running both vertically and horizontally. It is obvious that the grouting poured into the former and gravitating into the latter must form on setting, a perfect lock joint, the fact that the holes are screwed ensuring monolithic stability. It is therefore impossible for these partitions to buckle.

The slabs are made rough on both sides, affording a good key for plastering, or can be supplied with a smooth finished face. The material affords a good grip for nails; and a groove in the top fillet of each slab, which is provided for the insertion of a strip of white metal, wire, or other suitable material, might, we imagine, be turned to account for electric wiring. The slabs, which are uniformly 29in. by 15in. are made 2in., 2½in., and 3in. thick; but any special requirements as to size can be met. These partitions, which are patented in Great Britain, America, Germany, the Argentine, etc., are specially adapted to meet the requirements of the new London Building Acts Amendment Act, 1905; more particularly that clause relating to fireproofing over protecting shops, staircases, lavatory enclosures, etc; and they are obviously well suited to the construction of bungalows and similar buildings. Particulars and samples may be had from British Fireproof Partitions. Ltd., contractors to H.M. Government, 69 and 70, Mark Lane, E.C.

Lifts and Cranes.

A new illustrated list that has just been issued by Messrs. R. Waygood and Co., Ltd., Falmouth Road, London, S.E., shows lifts, cranes, and gear for various services, and actuated by electric, hydraulic, and hand power. The illustrations are all photographic, and that which adorns the cover is an excellent specimen of three-colour work, showing the offices of the Royal Liverpool Friendly Society, Liverpool, which are being fitted with seventeen Waygood lifts, including fifteen for high-speed electric passenger service. The Palace of the President of the Brazils at Rio de Janeiro, which is fitted with a Waygood electric passenger lift, is also shown, and a remarkably up-to-date-looking elevation it is. The firm also state that a Waygood hydraulic passenger lift has been supplied for the Turkish Houses of Parliament, Constantinople.

"Pyramid" Portland Cement.

In a pamphlet describing the Knight, Bevan, and Sturge "Pyramid" brand of British Portland cement, it is recalled as illustrating the improvements in manufacture that have taken place within recent years, that whereas a cement that was ground to a degree of fineness not exceeding a residue of ten per cent. on a 50 by 50 mesh sieve (2,500 holes to the square inch) was some fifteen years ago considered a finely ground product, to-day all "Pyramid" brand cement passes this sieve, and only a trace is found on a 76 by 76 mesh sieve (5,776 holes to the square inch), whilst on a 100 by 100 mesh sieve (10,000 holes to the square inch), the residue is less than half of one per cent., and on a 180 by 180 mesh sieve (32,400 holes to the square inch), it does not exceed six per cent. The brand complies strictly with the standard specifications, contains no admixture other than the purest chalk, and the most suitable clay, and every stage of its manufacture is supervised with scrupulous care. The "K.B. and S." brand was first established in 1853, and was transferred in 1900 to the Associated Portland Cement Manufacturers (1900), Ltd., the present proprietors, who adapt to its production their up-to-date processes, such as that of hydration, which obviates the delay and expense of aeration. The booklet, which contains several interesting illustrations, as well as much useful information, can be had from the Associated Portland Cement Manufacturers (1900), Ltd., Portland House, Lloyds Avenue, E.C.

COMING EVENTS.

Wednesday, May 4.
R.I.B.A.—Art Committee meets.
Thursday, May 5.
ARCHITECTURAL ASSOCIATION.—Members' dinner.
ARCHITECTURAL ASSOCIATION DEBATING SOCIETY, 7 p.m.
Friday, May 6.
NATIONAL HOUSING AND TOWN PLANNING COUNCIL.—Conference of Local Authorities on Greater London Town Planning. Caxton Hall, Westminster. 10.30 a.m.
Saturday, May 7.
EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Newliston.
R.I.B.A.—Issue of voting papers; election of Council and Standing Committees; publication candidates for membership, June 6th election.
MUNICIPAL AND HEALTH EXHIBITION.—Royal Agricultural Hall, London; opens and continues to May 14th.
NORTHERN ARCHITECTURAL ASSOCIATION.—Visit to Soap Works and Grain Storage Silos at Dunston.
Tuesday, May 10.
R.I.B.A.—Practice Committee meets.
Wednesday, May 11.
ROYAL SOCIETY OF ARTS.—Mr. Sydney Perks on The Guildhall: the recent discoveries and restoration.
Thursday, May 12.
R.I.B.A.—Science Committee meets.
Friday, May 13.
R.I.B.A.—Last day for receiving applications and testimonies of study for June final examination and probationary work for special examination.
Saturday, May 14.
MUNICIPAL AND HEALTH EXHIBITION.—Royal Agricultural Hall, London, closes.
Monday, May 16.
Whit-Monday.—Bank Holiday.
Thursday, May 19.
R.I.B.A.—Literature Committee meets.
Saturday, May 21.
EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Broomhall, Fife.
R.I.B.A.—Last day for receiving notices of questions for discussion at meeting on June 6th.

Publisher's Notices.

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Subscribers can have their volumes bound complete with Index, in cloth cases, at a cost of 3s. 6d. each or in the new cheap binding case for 2s. 9d.

Advertisements for the current week, alterations to serial advertisements, etc., must reach the office not later than first post on Saturday.

Rates for Serial Advertisements, Special positions, etc., sent upon application.

Situations Wanted.
4 lines (about 28 words), one insertion .. 1s. 6d.
Each additional line .. .. .. 6d.
Three insertions .. .. 3s. 0d.
*This includes 6 weeks under Employment Register.

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The above must be prepaid.

Box numbers will be allotted to advertisers free of charge, and replies addressed to a Box Number can be forwarded to the advertiser per post upon request. Postage of such letters will be charged but rolls or parcels of drawings in reply to advertisements are not accepted.

Property and Land Sales. Contracts Open, Legal Notices etc., 9d. per line.

Advertisements for the above can be received up till 12, o'clock mid-day on Monday at

CAXTON HOUSE, WESTMINSTER, S.W.

Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, Architects' and Builders' Journal, Caxton House Westminster.

Information from accredited sources should be sent to "The Editor," at latest by noon on Friday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Abergavenny.—Accepted for alterations and additions to the Girls' County School, Abergavenny. E. A. Johnson, F.R.I.B.A., Abergavenny, architect.
J. G. Thomas and Sons, Abergavenny, £1,895.

Addlestone.—Accepted for erection of a holiday home, for the committee of Princess Mary Village Homes. Quantities by Thurgood, Son, and Chidgey, Adelphi Terrace, W.C.
Drowley and Co., Woking, £1,283.

Ammanford.—Accepted for erection of the Ammanford Y.M.C.A. Institute.
J. Evans, £3,500.

Bedwas (Mon.).—For erection of a police-station at Bedwas, for the Standing Joint Committee. William Tanner, Newport, county surveyor.

G. Beames, Cardiff ...	...£2,259 7 0
W. E. James, Cardiff ...	2,021 0 0
Blundell and Bevan, Blackwood	2,000 0 0
D. Davies and Son, Cardiff ...	2,000 0 0
Gibby and Cleak, Barry Dock ...	1,909 0 0
A. S. Morgan and Co.	1,869 0 0
Leadbeter and Co.	1,861 0 0
Hamilton and Millard, Caerphilly	1,850 0 0
R. W. Moon	1,847 0 0
Williams Bros., Bedwas ...	1,843 3 7
C. H. Reed	1,840 0 0
J. Charles	1,835 0 0
E. Sainsbury, Pontynool ...	1,834 0 0
T. F. Howell, Cardiff	1,800 0 0
J. Brownscombe and Son ...	1,795 0 0
M. Harding, Caerphilly ...	1,795 0 0
J. Jenkins, Ltd.	1,782 0 0
J. H. Williams	1,757 0 0
G. Prosser	1,697 0 0
G. F. Leadbeter	1,658 0 0
J. L. Hancock, Cardiff	1,615 13 2
E. King and Co.*	1,584 0 0

Rest of Newport.

*Accepted.

Cheltenham.—For the erection of a farm-house and farm buildings, at The Crippells, near Cheltenham. Thomas Malvern, architect, 21, Winchcombe Street, Cheltenham.

W. Mills and Son, Fossbridge, Glos.	...£2,553 12 5
W. Drew, Cheltenham	2,195 0 0
A. Wilson, Cheltenham ...	1,981 0 0
Collins and Godfrey, Tewkesbury	1,974 0 0
R. R. Skimp, Cheltenham ...	1,925 0 0
Billings and Sons, Ltd., Cheltenham	1,883 0 0
Saunders and Sons, Ltd.,* Cirencester	1,827 15 0

*Accepted.

Cambridge.—For rebuilding Newton Hall, Cambridge, for Prof. Chas. Waldstein. Fred. W. Foster, 26, Bedford Row, architect. Quantities by L. H. G. Stanbrough, 26, Bedford Row.

W. Mills and Sons	...£14,298
W. Bell and Sons	13,947
J. Longley and Co.	13,049
W. Sindell	13,500
Foxley and Co.	12,994
J. Carmichael	12,975
F. G. Minter*	12,975

*Accepted.

Coventry.—New laboratory and testing house at Edgwick Works, for Alfred Herbert, Ltd., Tait, and Herbert, M.R.I.B.A., Architects, Leicester and Coventry.

F. Elliott, Leicester ...	...£570 0 0
Garlick's Exors., Coventry ...	570 0 0
T. Hancox and Co., Coventry ...	570 0 0
Wellerman Bros., Hyde	569 5 0
W. Higgins, Northampton ...	537 0 0
Jones and Bacon, Coventry ...	532 17 0
T. Randle*	525 0 0

*Accepted.

Dartford.—For cleaning and painting works and repairs at the Gore Farm Hospital, for the Metropolitan Asylums Board.

S. T. Wright, 150, Brixton Hill, S.W.	...£4,805 13 0
E. Proctor and Sons, 326, High Street, Plumstead	3,377 0 0
J. W. Ellingham, Dartford ...	2,840 0 0
S. Squire, 25, Saxon Road, Bow, E.	2,655 0 0
B. E. Nightingale, Albert Embankment, S.E.	2,399 0 0
H. E. Milton, Kent House, London Road, Northfleet ...	2,292 0 0
J. S. Fenn, 42, William Street, Woolwich	2,200 0 0
L. Kazak, 3 and 4, Station Road, Belvedere*	2,114 0 0

Engineer-in-chief's revised estimate, £2,100.

*Recommended for acceptance.

Farnham Common (Slough).—Detached house, The Avenue, Farnham Common, near Slough, Bucks. J. Wornell, architect, 19, Ludgate Hill, E.C., and Slough, Bucks.

Cox and Sons, Maidenhead* ...	...£587
H. D. Bowyer, Slough	... 524
Burfoot and Butler,* Slough ...	... 512
E. Clarke, Melton Mowbray ...	... 485

*Accepted subject to modification of plans.

Kingston-on-Thames.—For erection of house, shop, and electric bakery, for S. E. Turner, Richmond Road, Kingston-on-Thames. G. Smith, surveyor.

Oldridge and Sons	...£1,867
E. Charles	1,844
Gaze and Sons	1,758
J. Brewerton	1,193
F. Hawkey	1,625
Ide and Son	1,539
F. Feltham*	1,527

*Accepted.

Leicester.—Extensions to the Museum and Art Gallery Buildings for the Museum and Art Gallery Committee. Tait and Herbert, architects, Leicester and Coventry.

F. Elliott, Leicester ...	...£7,648 0 0
Bowles and Son, Leicester ...	7,346 0 0
Edwin Fox, Leicester	7,300 0 0
W. M. Sharp, Leicester ...	7,190 0 0
J. C. Kellett and Son	7,150 0 0
J. Hutchinson and Son ...	7,126 0 0
J. Bentley and Co., Leicester ...	7,098 0 0
Clark and Garrett, Leicester ...	7,055 0 0
H. Herbert and Sons, Leicester	7,035 0 0
A. and W. Chambers, Leicester	7,024 15 0
J. Chapman,* Leicester ...	6,901 0 0
F. J. Bradford, Leicester ...	6,726 7 0

*Accepted.

Leicester.—For erection of new factory and warehouse at Sanvey Gate, Leicester. Topott and Son, architects, 15, Hotel Street, Leicester.

F. Sleath	...£5,219 0 0
Herbert and Sons	5,170 0 0
W. M. Sharp	4,977 0 0
Duxbury and Co.	4,940 0 0
J. Chapman	4,899 0 0
Bowles and Son	4,897 0 0
D. Booth	4,865 0 0
Mason and Sons	4,840 0 0
J. Cole and Sons	4,822 0 0
E. Fox	4,809 0 0
W. Potter	4,804 19 0
Bradshaw Bros.	4,779 11 6
W. Hanson	4,744 0 0
W. Bradford	4,739 0 0
W. Haddon	4,707 8 0
Clark and Garrett	4,686 0 0
W. H. Cox and Co.	4,684 5 3
Marston and Son,* Leicester ...	4,682 0 0

* Accepted.

London, W.C.—Accepted for proposed rebuilding of 210 and 211, High Holborn. F. W. Foster, 26, Bedford Row, architect. Quantities by L. H. G. Stanbrough, 26, Bedford Row.
C. Allen and Co., £14,257.

London.—For alterations to the Manchester Square Fire Station, for the L.C.C.

W. Johnson and Co., Ltd., Wandsworth Common	...£1,470
F. and H. F. Higgs, Loughborough Junction	1,448
G. Munday and Sons, 9, Botolph Lane, Eastcheap	1,379
Higgs and Hill, Ltd., Crown Works, South Lambeth Road	1,284
J. and C. Bowyer, Ltd.,* Upper Norwood	1,197

Architect's approximate estimate, £1,470.

*Accepted.

Long Eaton (Notts.).—For the following works, for the Long Eaton U.D.C.: Contract No. 1, proposed bridge over Erewash canal, Sawley Road, Long Eaton, with approaches and other contingent works; contract No. 2, proposed widening of existing bridge over the Erewash canal, Derby Road, with approaches and other contingent works; brick, concrete, and road-making works. Frank Worrall, A.M.I.C.E., engineer and surveyor.

Contract No. 1.

C. Bates and Sons, Chesterfield	£8,322 7 4
A. Thorne and Sons, Westminster, S.W.	5,360 3 2
W. Muirhead and Co., 35, Queen Victoria Street, E.C.	4,471 1 2
A. H. Price and Co., Nottingham	4,214 0 4
A. Hyslop, Derby	3,962 12 0
G. F. Tomlinson, Derby ...	3,835 3 7
H. Ashley, Mansfield	3,767 18 8
Johnson and Langley,* Leicester	3,629 5 1

Contract No. 2.

C. Bates and Sons ...	...£3,928 9 8
A. Thorne and Sons	2,098 18 2
W. Muirhead and Co.	1,670 1 1
A. H. Price and Co.	1,350 1 11
A. Hyslop	1,447 12 7
G. F. Thomlinson*	1,296 0 8
H. Ashley	1,365 4 5
Johnson and Langley	1,312 19 1

*Accepted.

Malton.—Accepted for erection of new grammar school, Broughton Road.
H. Oldfield and Sons, Malton, £3,911 5s. 5d.

Mountain Ash (Wales).—For erection of an infants' school, with offices, etc., at Clarence Street, Mountain Ash, for the Mountain Ash Education Committee. W. H. Williams, Town Hall, Mountain Ash, architect.

T. F. Howells, Caerphilly ...	...£4,230
C. Jenkins and Sons, Porth ...	... 4,005
D. Davies and Sons	... 4,024
J. Lewis, Caerphilly	... 3,8[illegible]
A. R. John, Mountain Ash ...	... 3,77[illegible]
Jones Bros., Treharris	... 3,77[illegible]
E. D. W. Evans	... 3,76[illegible]
S. Shail	... 3,6[illegible]
R. Jones, Caerphilly	... 3,[illegible]
T. W. Davies,* 65, Paget Street ...	3,50[illegible]

Rest of Cardiff.

*Accepted.

Nottingham.—Accepted for the erection of Portland stone gate piers and wall for Sir Jesse Boot's residence. Bromley and Watkins, architects, Prudential Buildings, Nottingham.
Ward and Adkins, Glapton Road, Nottingham.

Ramsgate.—For erection of the new Lillian Road infants' school, for the T.C.

G. Attwood	...£6,070 9 6
J. T. May, Broadstairs ...	6,000 0 0
L. Seager, Sittingbourne ...	5,899 0 0
Grummant Bros.	5,839 0 0
Stephens and Bastow, Bristol...	5,697 0 0
G. Browning, Canterbury ...	5,696 0 0
J. W. Woodhall and Son ...	5,648 0 0
T. T. Denne, Walmer	5,639 0 0
Amos and Foad, Whitstable ...	5,525 0 0
G. T. Denne, Deal	5,460 0 0
W. J. Ballard*	5,421 0 0

Rest of Ramsgate.

*Accepted.

Rougham (Norfolk).—For work at new schools at Rougham, Norfolk. H. J. Green, 31, Castle Meadow, Norwich, architect.

R. H. Spragg	...£1,085 6
R. Shanks	1,075 0
J. Youngs and Son,* Norwich ...	1,059 0

*Conditionally accepted.

Southampton.—Accepted for erection of new buildings, for the Harbour Board.
Playfair and Toole, Southampton, £1,260.

Walsoken (Norfolk).—Accepted for new school, Ramnoth Road, for the Norfolk Education Committee. H. J. Green, Norwich, and King's Lynn, architect.
W. Sutton and Sons, Upwell, £2,140 17s. 11d.

Woolwich.—Accepted for erection of a new factory and stores at Beckton, North Woolwich, for the London Flambo Fuel Company. John Moir Kennard, architect.
J. E. Whiter and Co., £2,347 3s.

COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about **five days** or longer after the date of this issue.
Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders.
The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

May 5. **WARLEY TOWN.**—Masons', joiners', plumbers', slaters', plasterers', and concretors' work required in the erection of a detached residence. Plans and specifications may be seen and bills of quantities obtained at the office of Walsh and Nicholas, Architects and Surveyors, 10, Harrison Road, Halifax, from April 28 to May 5.

May 5. **DOUGLAS, I.O.M.**—Mason's work, etc., required in the completion of tower and spire at Rose-Mount Wesleyan Church. Send names to Josiah Goldsmith, Westwood, Somerset Road, Douglas, not later than May 5, after which date bills of quantities and other information will be supplied. A deposit of £2 2s. to be made with the application.

May 9. **GLASGOW.**—Erection of industrial hall and offices, for the Executive of the Scottish Exhibition of National History, Art and Industry. Plans may be seen at the offices of the architects, Walker and Ramsay, 123, Wellington Street, Glasgow.

May 9. **BRADFORD.**—Shed, warehouses, etc.—Erection of woolcombing shed, warehouses, engine and boiler house, chimney, etc., Canal Road, Bradford. Drawings may be seen, and bills of quantities obtained at offices of Moore and Crabtree, architects, York Chambers, Keighley.

May 9. **DUMFRIES.**—Mason, carpenter and joiner, plumber, slater, plaster, and iron and smith work of new female hospital and male closed block proposed to be erected at the Crichton Royal Institution, Dumfries. Apply for schedules of quantities to Sydney Mitchell and Wilson, Architects, 13, Young Street, Edinburgh.

May 9. **PONTYPRIDD.**—Alterations, additions, and renovations to Tabernacle Chapel, Pontypridd, for the Trustees. Plans and specification can be seen at the offices of A. O. Evans, Williams, and Evans, architects, Pontypridd, and bills of quantities obtained on deposit of £2 2s. Tenders to be sent to the Rev. W. A. Williams, 12, Mackintosh Place, Pontypridd.

May 9. **NOTTINGHAM.**—Erection and completion of sliding shutters at the Female Sanatorium, Bagthorpe Workhouse, for the Guardians. Specifications and all particulars may be obtained on application to Arthur Marshall, A.R.I.B.A., architect, King Street, Nottingham. Tenders must be delivered at the Poor Law Offices, Shakespeare Street. Persons whose tenders are accepted must regularly pay the standard rate of wages to all workmen in their employment, and conform to the working rules of the district applicable to this trade.

May 9. **KILLADREENAN (Ireland).**—Erection of a doctor's residence and dispensary for Newcastle Dispensary District at Killadreenan, near Newtownmountkennedy, for the Guardians, in accordance with plan and specification prepared by the architect and engineer, G. T. Moore, C.E., etc., 1 and 2, Foster Place, College Green, Dublin, who will show same and explain all particulars to intending contractors. Tenders, giving the names of two sureties for the performance of the contract, will be received by B. Manning, clerk, Board Room, Workhouse.

May 9. **HEANOR (Derby).**—Erection of proposed secondary school to accommodate 250 students for the Derbyshire Education Committee. Drawings, specification, agreement, etc., may be seen at the office of the architect, St. Mary's Gate, Derby. A copy of bill of quantities, specification, conditions of contract, and forms of tender can be obtained at the architect's office, upon deposit of £1 1s. Tenders must be delivered to George H. Widdows, A.R.I.B.A., architect to the Committee, County Education Office, St. Mary's Gate, Derby. Two approved sureties as security for the performance of contract will be required.

May 10. **CHORLEY.**—Part or whole tenders for the erection of four houses in Congress Street, for the Chorley Co-operative Society, Ltd. Plans, etc., may be seen on application to W. H. Dinsley, architect, Chorley.

May 10. **EBBW VALE.**—Erection of 11 pairs of semi-detached villas and 34 houses near Intermediate Schools, Ebbw Vale, for the Blaen Ebbw Building Club. Plans and specifications may be seen at the office of Wm. Harris, architect and surveyor, Bank Chambers, Bargoed. Tenders to be sent to the Secretary, G. W. Stephens, solicitor, St. Bride's, Ebbw Vale.

May 14. **HAY (Hereford).**—Erection of public buildings. Plans, specification, and form of tender, may be seen at the Crown Hotel, Hay, upon payment of £1 10s. For further particulars, apply to J. J. Price, Architect, Hardwick House, Clifford, Herefordshire.

May 10. **KILLESHANDRA (Co. Cavan).**—Erection of a large central creamery (brick-built and slated) at Killeshandra, Co. Cavan, for the Co-operative Dairy Society, Ltd., in accordance with plans, etc., to be seen at the office of the Manager, Killeshandra.

May 10. **WHALLEY.**—The Committee of Visitors of the Lancashire Asylums Board are about to erect an asylum at Whalley which may involve an expenditure on the first contract of about £300,000. Contractors who are desirous of having an opportunity of tendering must send in their names and addresses to the Architect, County Offices, Preston, on or before May 10.

May 10. **DARLASTON.**—Erection and completion of a new Council school for 304 infants, at Salisbury Street, and for the enlargement of Dorsett Road Council school by 120 places, for the Staffordshire Education Committee. Apply to Graham Balfour, Director of Education, County Education Offices, Stafford. Quantities will be supplied upon receipt of a deposit of £1 1s., which should accompany the application to tender.

May 10. **TYLORSTOWN (Wales).**—Erection of new premises at Tylorstown, for the Ferndale Industrial Co-operative Society. Plans and specification can be seen at the offices of W. Morgan Lewis and T. Naunton Morgan, architects and surveyors, Pontypridd, and bills of quantities obtained at their Pontypridd and Tonypandy offices, and 12, Edward Terrace, Cardiff, on deposit of £2 2s. Priced bills of quantities, with tender, to be sent to the Pontypridd office of the architects.

May 10. **EPSOM.**—Erection of a Nurses' Home, and for alterations to the Girls' Home at Woodcote, Epsom, for the Guardians. Drawings and specification may be seen at the office of A. C. Williams, 53, Doughty Street, W.C., where also bills of quantities and form of tender can be obtained on deposit of 10s. 6d. A contract and bond with two approved sureties in the sum of £200 will be required. Tenders are also invited for the carrying out of certain alterations in the kitchen and adjoining offices. Copies of the drawings and specification and form of tender may be obtained on application to the architect as above upon deposit of £1 1s. A contract and bond with two approved sureties in the sum of £100 will be required. Tenders, addressed to Alick G. Ebbutt, clerk, are to be delivered at the Guardians' Offices, Waterloo Road, Epsom.

May 11. **TOTTENHAM, N.**—(See "Painting.")

May 12. **CHESTER.**—Foundations for purifiers and sheds, with drains and boarding, slating, glazing, and flashing to roofs, comprising about:—1,250 cube yards of excavation, 380 cube yards of cement concrete, 430 super yards of brickwork, etc., at the Roodee Gasworks, for the Directors of the United Gas Company. Drawings may be seen at the Gasworks, and specification, bill of quantities, and form of tender obtained on deposit of £1 1s. Tenders to be delivered to Fred. A. Pye, secretary and general manager, Gas Company's Offices, Cuppin Street, Chester.

May 14. **HALIFAX.**—Erection of a police station with three cells, inspector's house, and quarters for six single constables at the junction of Burnley Road and Warley Road, King Cross, for the Watch Committee, viz.:—(1) Mason's, excavator's, and bricklayer's; (2) carpenter's and joiner's; (3) plumber's and glazier's; (4): slater's and plasterer's; (5) concretor's; (6) painter's; (7) electrician's; (8) steelwork; (9) reinforced concrete and asphalte roofing; and (10) heating. Plans and specifications may be seen and forms of tender obtained on application to James Lord, M.I.C.E., borough engineer, Town Hall, Halifax, upon deposit of the following sums:—£10 for No. 1, £5 each Nos. 2, 3, and 9, and £1 each for Nos. 4, 5, 6, 7, 8, and 10. Tenders must be sent to Herbert Ashling, town clerk. The persons whose tenders are accepted will be required to observe the fair contracts clauses adopted by the Corporation.

May 17. **DURHAM.**—Alterations and improvements at East Hedley Hope, Springwell, Lanehead, South Church and Etherley infants' Council schools, for the C.C. Sole tenders are required. Plans specifications, and general conditions of contract may be seen at the office of F. E. Coates, Shire Hall, Durham. Tenders to be sent to A. J. Dawson, Clerk to the Education Committee, Shire Hall, Durham.

May 17. **BRIDGEND.**—Erection of a new boardroom and offices at the workhouse, for the Guardians. Plans, etc., may be seen, and all particulars obtained at the office of P. J. Thomas, architect, Bridgend. Tenders to be sent to R. Harmar Cox, Clerk, Union Offices, Bridgend.

May 17. **HARTLEBURY.**—Provision of all materials for, and the erection of new schools, in accordance with the drawings and specification prepared by the Architect to the Governors, S. S. Reay, F.R.I.B.A., 4, Unity Street, College Green, Bristol. Drawings and specification may be seen at the offices of the Architect. Quantities may be obtained on deposit of £2 2s. Tenders to be delivered at the office of C. Hugh Watson, Solicitor, Stourport, Clerk to the Governors.

May 18. **LEEDS.**—Demolition of the existing bridge and the construction and erection of a temporary timber bridge, together with other accommodation works, and the masons', bricklayers', excavators' and ironfounders' works in connection with the construction and erection of a new 50ft. wide bridge, in three spans, across the River Aire at Kirkstall, Leeds, for the Corporation. Drawings may be seen, and a copy of specification, conditions of contract, and bill of quantities obtained at the office of W. T. Lancashire, city engineer, Municipal Buildings, Leeds, on deposit of £5 5s. Tenders must be received at the Town Clerk's Office.

May 30. **CHELMSFORD.**—Alterations and additions to King Edward VI. Grammar School. The drawings and specifications may be seen on application to the architects, Charles and W. H. Pertwee, Chelmsford. A deposit of £5 is required. Quantities will not be supplied. Tenders to be delivered to William Stunt, solicitor, Clerk to the Governors, 71, Duke Street, Chelmsford.

ENGINEERING.

May 9.—**WOLVERHAMPTON.**—Supplying and fixing heating apparatus at Red Cross Street Girls' School (accommodation 359) for the Education Committee. Firms desirous of tendering must send in their names to "The Secretary, Education Committee, Town Hall, Wolverhampton."

May 9. **SHREWSBURY.**—Construction of a dam or weir across the river Severn, near the Castle Fields and Cherry Orchard ferry, also for dredging the shoals in the five miles length of river between Cherry Orchard and Berwick House, for the Corporation. Contract drawings, terms and conditions of contract, specification, bill of quantities, and form of tender may be seen on application to the Borough Surveyor, The Square, Shrewsbury. Copies of the documents (but not drawings) may be obtained from the Borough Surveyor upon deposit of £2 2s. Tenders, endorsed "Shrewsbury Dam or Weir and Dredging," are to be addressed to H. C. Clarke, Town Clerk, Guildhall, Shrewsbury.

May 9. **CHELMSFORD.**—Subsidiary works in connection with the Trinity Road Council school, which is now in course of erection:—Supplying and fixing floors of steel and coke breeze concrete, in conformity with the architect's specification, for the Borough Education Committee. Plans of the school building may be inspected at the office of the architect, W. H. Pertwee, the Institute, London Road, Chelmsford, from whom all particulars may be obtained. The contract for the erection of the school building has been let to Henry Potter and Son, of Chelmsford, and the person whose tender is accepted for the before-mentioned works will be, and act as sub-contractor to, and will be paid by, that firm. Tenders must be addressed to W. Smith, Town Clerk, Municipal Offices, 16, London Road, Chelmsford.

May 11. **WOOD GREEN.**—Schemes and tenders for a reinforced concrete swimming tank, heating of the bath, private baths, etc., and steel roof trusses and sliding lantern over same, from firms who are respectively specialists in such work for the U.D.C. Forms of tender, preliminary specifications, and copies of plans may be obtained at the office of Wm. P. Harding, Clerk of the Council, Town Hall, Wood Green, on payment of a cash deposit of £3 for each set. The general conditions, and all further information may (on the production of receipt for deposit) be inspected and obtained from the architect, Harold Burgess, Capel House, 62, New Broad Street, E.C., between the hours of 3 and 5 p.m. Tenders must be delivered to the Clerk of the Council. The contractor will be required to pay the wages and observe the hours of labour in accordance with the scheme, a copy of which will be annexed to the contract.

(*Continued on page xiv.*)

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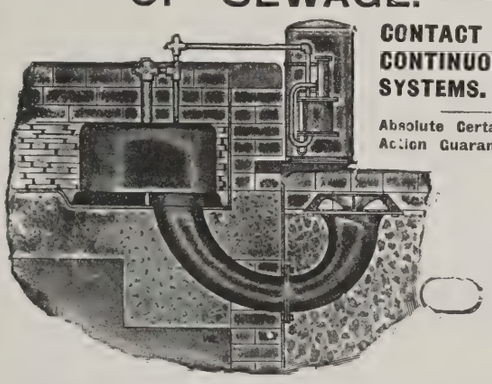
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May 11. **BELFAST.**—Supply and erection of apparatus for the aeration, purification, filtration, and heating of the water used in plunge baths at Templemore Avenue and Falls Road Baths, for the Baths and Lodging-House Committee. Plans of buildings, specifications, and other particulars may be obtained at the City Surveyor's office. Tenders to be delivered at the office of R. Meyer, town clerk.

May 14. **HALIFAX.**—(See "Buildings.")

May 14. **BROOKLAND (Kent).**—Erection of a steel girder and concrete bridge over the White Kemp main sewer at the Flats, near Brookland, Kent, on the road from Rye to Brookland, for the Commissioners of the Level of Walland Marsh and Elderton's Innings. Drawings and specifications can be seen at the office of J. T. Welldon, Clerk, 11, Bank Street, Ashford, Kent.

May 18. **LEEDS.**—(See "Buildings.")

SANITARY ENGINEERING.

May 9. **SOUTHAMPTON.**—Construction and erection of a cast-iron sludge tank, with steel substructure and foundation piles, at the Corporation Wharf, for the Corporation. Plans, specification, and conditions may be inspected, and form of tender and schedule of prices obtained, at the Borough Engineer's office on production of the borough treasurer's receipt for a deposit of £1 1s. Tenders must be delivered at the Town Clerk's office.

May 9. **MARGAM (Port Talbot).**—Completion of the following works for the U.D.C.:—(1) Main intercepting sewer; (2) flushing pond and penstock chamber. (The main intercepting sewer above high-water mark, and the flushing pond, are nearly completed). (3) Main outfall, 42in. cast-iron pipes, to 55 yards beyond low-water mark. (Of the main outfall to low-water mark 1095 yards have been laid out of a total of 2,034 yards, and no part of the work beyond low-water mark has been done). (4) Subsidiary works. The drawings may be seen and copies of the specification, form of tender, and schedule of quantities may be obtained on application to William Fox and La Trobe Bateman, 5, Victoria Street, Westminster, S.W., on deposit of £10. The drawings may also be seen at the office of the Council's Surveyor, Taibach, Port Talbot. Tenders must be addressed to D. E. Jones, Solicitor, Clerk to the Margam U.D.C., Port Talbot.

May 10. **ROTHERHAM.**—Construction of sewers and the laying out of land, together with the necessary machinery for sewage disposal works in the parish of Laughton-en-le-Morthen, for the Rotherham R.D.C. Plans, sections, and specifications can be inspected and quantities obtained at the office of Fowler and Marshall, engineers, 3, Hartshead, Sheffield, on deposit of £1 1s. Tenders to be sent to Oxley and Coward, Clerks to the Council, 6, Westgate, Rotherham.

May 10. **SHEERNESS.**—Provision and laying of about 4,540yds. of 12in., 9in., 8in., and 7in. stoneware pipe sewers, together with manholes and flushing tanks, and about 1,560 yds. of 12in., 9in., 7in., and 6in. cast-iron pipes, comprising a sea-outfall syphon, and two rising mains; also for the construction of two pumping stations, storage, liquefying and storm tanks, percolation beds, humus tanks, and sundry other works in connection therewith, for the Sheppey R.D.C. Plans may be seen, and specifications, bills of quantities, and forms of tender obtained at the London office of the engineer, F. W. S. Stanton, A.M.I.C.E., 3, Victoria Street, Westminster, S.W., till April 30, on deposit of £4 4s. (cheques only). Uncoloured prints of the drawings may be purchased from the printers on production of a signed permit, which prints must be delivered with the tender before the deposit fee of £4 4s. is refunded. Tenders to be forwarded to the office of John Copland, clerk, Sheerness.

May 12. **WATERLOOVILLE (Hants).**—Construction of sewerage works, for the Havant R.D.C. For all particulars apply to Wilberforce Cobbett, Civil Engineer, Fareham, Hants.

May 13. **HANFORD.**—Hanford sewerage and sewage-disposal works—contract No. 1, for the Stone (Staffs.) R.D.C. Drawings, etc., may be seen, and bills of quantities obtained, at the office of the engineers, Willcox and Raikes, M.M.Inst.C.E., of 63, Temple Row, Birmingham, on a deposit of £3 3s.

May 13. **STONE (Staffs).**—Provision, laying and jointing of about 2,820 yards of stoneware pipe sewers, together with manholes and lampholes; the construction of about 920 yards of 5in. and 6in. cast-iron rising and hydraulic main; also the construction of pump-well, engine-house, liquefying tanks, bacteria beds, laying-out of irrigation area, and other incidental works in accordance with the drawing and specification prepared by the engineers, for the R.D.C. Drawings and specification may be seen and bills of quantities obtained at the office of the engineers, Willcox and Raikes, MM.I.C.E., 63, Temple Row, Birmingham, on deposit of £3 3s. Tenders to be delivered at the office of J. Buckley Norris, clerk, Union Offices, High Street, Stone, Staffs.

May 18. **BIGGLESWADE.**—Construction of about 7¼ miles of stoneware pipe sewers, varying in size from 15in. to 6in., together with manholes, lampholes, ejector chambers, and other works; also for the laying of about 1¼ miles of cast-iron and steel rising and compressed air mains, from 10in. to 2¼in. diameter, for the U.D.C. Plans and specifications may be seen, and bills of quantities and schedule of prices obtained, at the offices of the Engineer, J. T. Eayrs, M.Inst.C.E., 39, Corporation Street, Birmingham, April 25 to April 30, and also at the office of the Surveyor to the Council, Market Place, Biggleswade, from May 2 to May 7, on deposit of £3 3s. Tenders to be delivered at the office of Henry Chaundler, Clerk to the Council, Council Offices, Biggleswade, Beds. It is hoped that only substantial contractors with extensive experience in similar works will apply.

May 28. **WIGSTON MAGNA (Leicester).**—Construction of sewage works:—Contract No. 1, sewers, pumping station, and outfall works; the construction of about 1¼ miles of concrete, brick, and stoneware pipe sewers, varying from 6ft. by 4ft. to 9in. diameter, the laying and jointing of about ¼ of a mile of 13in. cast-iron pumping main, the construction of a pumping station, tanks, two continuous filters, distribution, and other works. Contract No. 2, cast-iron pipes: the supply and delivery of about 190 tons of coated cast-iron pipes and specials, varying in diameter from 18in. to 4in. Contract No. 3, sewage ironwork: the supply, delivery, and fixing of two rotary sewage distributors, 70ft. in diameter, floating arm, screen with power rake, and the supply and delivery of about 130 various sluice valves, air valves, and penstocks. Drawings may be seen at the offices of the engineers, Everard, Son and Pick, 6, Millstone Lane, Leicester, from whom conditions, specification, quantities, and form of tender may be obtained on deposit of £2 2s. for each contract. Tenders upon the form supplied to be sent to A. H. Burgess, Clerk, 2, Wycliffe Street, Leicester.

May 30. **WAKEFIELD.**—Alterations and additions to existing precipitation tanks, etc., the construction of about three acres of percolating filters, containing approximately 31,000 cubic yards of filtering material, effluent settlement tanks, liming and ferric sulphate houses, offices, mess-room, culverts, carriers, drains, and other appurtenant works at Calder Vale, for the Corporation. The contract drawings may be seen, and specification, bill of quantities, and form of tender obtained at the office of the engineer, J. P. Wakefield, A.M.I.C.E., city surveyor, Town Hall, Wakefield, on deposit of £5 5s. (Bank of England Note). Tenders must be delivered to W. W. Greenhalgh, Town Clerk.

IRON AND STEEL.

May 10. **SEVENOAKS.**—750ft. of 4in. and about 150ft. of 3in. socket and spigot cast-iron water pipe, with hydrants, etc., at Union Workhouse at Sundridge, near Sevenoaks, for the Guardians. Also for supplying a telescopic ladder, hydrant, cases, hose, etc. Specification may be obtained on application from F. H. Vibert, Clerk to the Guardians, Bank Chambers, Sevenoaks, and a plan seen at the Workhouse.

May 12. **GUILDFORD.**—Supply, delivery, and erection of the iron and steel work required for their new retort-house at the Gasworks, Onslow Street, for the Guildford Gaslight and Coke Company. Specification, blue prints, and further particulars can be obtained on deposit of £1 1s. from P. C. Cleasby, Gasworks, Guildford. Tenders, addressed to the Chairman of the company, to be delivered at the office of William Titley, secretary, Gas Offices, Onslow Street, Guildford.

May 14. **HALIFAX.**—(See "Buildings.")

May 14. **BROOKLAND (Kent).**—(See "Engineering.")

May 17. **LINCOLN.**—Supply of 2,260 tons approximately 21in. pipes and special castings, for the Corporation. Specification and form of tender may be obtained and drawings seen at the office of the Engineer, Neil McK. Barron, Waterworks Engineer, Lincoln. Tenders, addressed to the Chairman of the Waterworks Committee, to be delivered at the office of W. T. Page, Town Clerk, Guildhall, Lincoln.

May 30. **DARLINGTON.**—Corrugated iron roofs to tar macadam sheds, for the Corporation. For all particulars apply to George Winter, Borough Surveyor, Town Hall, Darlington.

PAINTING.

May 9. **GREATHAM.**—Painting about 100 houses and cottages, for the Hospital Trustees. Specifications may be had on application to W. H. Mawson, Estate Offices, Greatham.

May 9. **WAKEFIELD.**—Painting the exterior of the workhouse and infirmary, for the Guardians. Forms of tender and specifications may be obtained from the Workhouse Master, and must be returned to H. Beaumont, Clerk, Union Offices, Tetley House, Wakefield.

May 9. **SALFORD.**—Painting of all the exposed wood and iron work at the Frederick Road Electricity Works and offices, for the Corporation. Particulars may be obtained from the borough electrical engineer, Electricity Works, Frederick Road, Pendleton. Tenders to be sent to the electrical engineer.

May 11. **GOOLE.**—Painting of Dutch River bridge, for the U.D.C. Form of tender and other particulars may be obtained on application to the Town Surveyor. Tenders to be delivered to Robert Tyson, Clerk, Council Offices, Goole.

May 11. **TOTTENHAM, N.**—Cleaning and painting and repairing work at the North-Eastern Fever Hospital, St. Ann's Road, Tottenham, N., for the Metropolitan Asylums Board, in accordance with conditions of contract and specification prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., engineer-in-chief. The conditions of contract, bills of quantities, specification, and form of tender may be inspected at the office of the Board, Embankment, E.C., and can be obtained upon deposit of £1. Tenders, addressed as noted on the form, must be delivered at the office of the Board.

June 12. **KIRKBY-IN-FURNESS.**—Re-painting the cottages at Herschell Terrace, for the Kirkby-in-Furness Co-operative Society. Specifications can be seen at the stores on application to the manager.

May 12. **CUCKFIELD.**—Cleaning, stopping, distempering, preparing, and painting at the Workhouse. Specification can be seen at office of Edward J. Waugh, Clerk, Union Offices, Haywards Heath, or at the Workhouse. Persons tendering must be ratepayers in the Union.

May 12. **TOOTING.**—Decorations and repairs to the church, chapel, and lodges at Lambeth cemetery, Blackshaw Road, Tooting, S.W., for the Lambeth Borough Council. A copy of the specification and form of tender may be had on application to Henry Edwards, C.E., Borough Engineer, Lambeth Town Hall, Brixton Hill, S.W. Tenders must be delivered to Henry J. Smith, Town Clerk, Lambeth Town Hall, Brixton Hill, S.W.

May 12. **LONDON, W.**—Painting and cleaning at the Infirmary, Marloes Road, Kensington, for the Board of Guardians. Specification and form of tender can be obtained at the office of the Guardians, Marloes Road, Kensington, or by post by sending a stamped addressed foolscap envelope, to which address tenders must be sent. Fair wages clause. Two sureties required.

May 14. **HALIFAX.**—(See "Buildings.")

May 17. **LONDON, S.E. and S.W.**—Cleaning and painting at the Lambeth parish school, Elder Road, West Norwood, S.E., and No. 220, Brixton Road, S.W., for the Lambeth Guardians. Tenders must be sent to James L. Goldspink, Clerk to the Guardians, Guardians' Offices and Board Room, Brook Street, Kennington Road, S.E., or placed in a box provided for their reception in the office of the Clerk to the Guardians, by May 17, and will be opened at the Board Room at noon on the following day, when all persons tendering, or their authorised agents, must be in attendance. Forms of tender may be obtained at the office of the Clerk. Specifications will be supplied on personal application on deposit of £2.

May 19. **STIFFORD (Essex).**—Distempering and painting works, at the Children's Home, at Stifford, near Grays, Essex, for the Guardians of Stepney Union. Specification, forms of tender, etc., can be obtained on application at the office of T. G. Stacey, Clerk, Guardians' Offices, Barnes Street, Stepney, E., to whom tenders must be sent.

LUMBING AND SANITARY.

May 13. **BRIGHTON.**—Supply of such glazed drain pipes as may be required by the Corporation during the period ending June 30, 1911, for the B.C. Specification and form of tender may be obtained on application at the office of the Borough Surveyor at the Town Hall, Brighton. Tenders must be sent to Hugo Talbot, Town Clerk, Town Hall, Brighton.

ROADS AND CARTAGE.

May 9. **CHURCH.**—Supply of kerbs, setts (grit), limestone, granite, pitch, glazed socketed pipes, etc., for the U.D.C. Forms of tender, etc., may be obtained on application to W. E. Wood, Surveyor, Surveyor, Church.

May 9. **SUDBURY (Derby).**—Supply of granite and limestone during year ending March 31, 1911, for the R.D.C. Forms of tender and full particulars may be obtained from the surveyor, John Barker, Cubley, Derby. Tenders must be delivered at the office of F. S. Hawthorn, Clerk, Uttoxeter.

May 9. **BILLERICAY (Essex).**—Supply of Guernsey granite, Queenast granite, Kentish rag, flints and gravel, up to Mar. 31, 1911, for the R.D.C., according to forms of tender, which may be obtained of the surveyors, F. E. Ennals, Shelley Road, Hutton, Essex, and R. J. W. Layland, Billericay, Essex. Tenders to be sent to C. Edgar Lewis, Clerk, New Road, Brentwood. Samples must be sent to the Union House, Billericay.

May 9. **LEEDS.**—Paving and flagging of the following private streets:—Kepler Grove, East Park Mount, Eyre's Terrace, and Eyre's Grove. Also for the tar-macadamising and flagging of St. Ive's Mount and Heathfield Terrace, for the Highways Committee of the Corporation. Drawings may be seen at the City Engineer's Office, Municipal Buildings. Forms of tender and bills of quantities may be obtained, and copies of the documents forming the contracts inspected, on application at the Highways Office, 155, Kirkstall Road, Leeds. Tenders addressed to the Highways Committee, must be delivered at the Town Clerk's Office, Town Hall, Leeds.

(For further Contracts see page xvi.)

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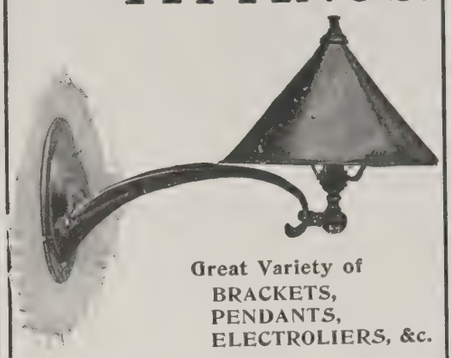
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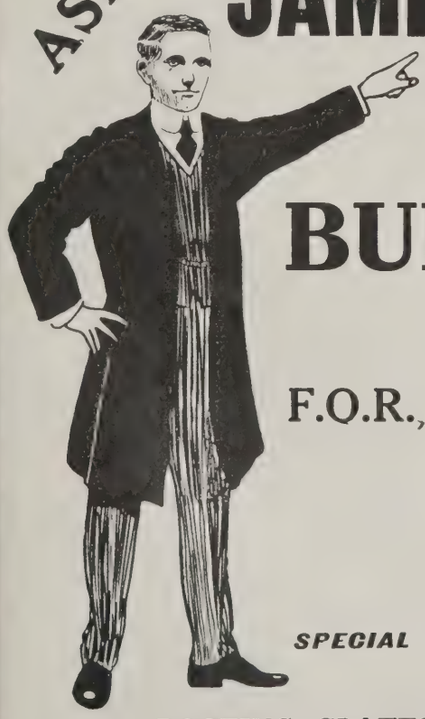


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LATE CONTRACTS.

BUILDING.

May 9. **HEMINGFIELD (Barnsley).**—Pulling down of the Milton Arms Hotel, and rebuilding the new hotel. Forward names to Stubbs and Brown, Architects, etc., 74, High Street, Shefield, not later than May 9, together with a deposit of £2 2s., after which quantities and other information may be obtained and plans inspected.

May 10. **TREHARRIS.**—Erection of a masonic lodge and caretaker's house, for the Forest Lodge of Freemasons. Plans and specification can be inspected and all particulars obtained at "Bryntaf," John Street, Treharris. Tenders are to be sent to D. Myrddin Williams, Myrddinfa, Pontypridd.

May 10. **HIGHTOWN.**—Erection of a working men's club at Hightown, for the Heights Working Men's Club, Liversedge. Plans may be seen and bills of quantities obtained at the offices of Howorth and Howorth, Architects, etc., Old Bank Chambers, Cleckheaton, to whom tenders must be sent.

May 10. **THURLSTONE.**—Alterations and additions to the Crystal Palace Hotel, Thurlstone, for Brooke and Co. Plans can be seen, and quantities may be obtained on application at the offices of R. and W. Dixon, Architects, 5, Eastgate, Barnsley, to whom tenders must be delivered.

May 10. **DURHAM.**—Erection of two farm houses and steadings on Bracken Hill Farm, Shotton Colliery (sole tenders) for the Durham C.C. Plans, specifications, and general conditions of contract may be seen at the office of the Clerk to the County Council, Shire Hall, Durham. Tenders to be sent to Wm. Fleming, Jr., County Land Agent, Tudhoe, County Durham.

May 11. **BODMIN.**—Erection of dwelling house and repairs to outbuildings, etc., at "Penquite," near Bodmin. Plans and specifications can be seen at the office of the architect, Menear Olliver, Bodmin, from whom all particulars can be obtained, and to whom tenders must be sent.

May 12. **GOSPORT AND ALVERSTOKE.**—Erection of a cottage and certain gates, wall, etc., at the air compressing station, Westfield Road, for the U.D.C. Further information may be obtained at the office of the surveyor to the Council, where plans and specifications may be seen. Tenders to be delivered to E. Talbot Palmer, Clerk to the Council, Gosport.

May 13. **BARNSLEY.**—Pulling down and rebuilding the Corner Pin, Peel Square, and Wellington Street, for Clarkson's Old Brewery, Barnsley, Ltd. Plan and specifications may be seen, and bills of quantities obtained on application, from R. and W. Dixon, Architects, 5, Eastgate, Barnsley, to whom tenders must be sent.

May 14. **TRIM (Ireland).**—Repairs of Innfield Dispensary Residence for the Board of Guardians. For full particulars as to terms of contract, see hand-bills, which can be obtained on application to Vincent J. Sheridan, Clerk of the Union, at the Workhouse, Trim.

May 14. **MOUNTMELICK (Ireland).**—Erection of 58 single labourers' cottages and 12 double labourers' cottages; also the fencing of 45 plots, for the R.D.C. For full particulars see posters.

May 17. **STORNOWAY.**—Erection of a spire on the U.F. English Church. Plans are to be seen with Alexr. Macdonald, architect, Municipal Buildings, Stornoway, from whom schedules of quantities may be obtained. Tenders to be lodged with Neil M'Callum, merchant, Cromwell Street, Stornoway.

May 20. **WATH-UPON-DEARNE (Yorks.).**—Erection of Park Road Council school: new infants' department (builder, joiner, slater, plumber, plasterer, painter), for the West Riding Education Committee. Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders to be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

May 21. **PORT-CHESTER (Hants).**—Erection of two semi-detached small holdings dwelling houses. Plans, specification, and conditions of contract (no quantities), may be seen, and other information obtained, at the office of W. J. Taylor, County Surveyor The Castle, Winchester, on and after May 17. Tenders, on form to be obtained from the County Surveyor, are to be delivered to H. Barber, Clerk of the County Council, The Castle, Winchester.

May 24. **WEDNESBURY.**—Erection of Holyhead Road Council school, for the Education Committee of the Borough. Plans of the proposed buildings may be inspected, and bills of quantities obtained, not later than May 10, at the office of the Architect, C. W. D. Joynson, Springhead, Wednesbury, on a deposit of £2 2s. Tenders to be sent to E. Foster Knowles, Secretary to the Education Committee, Education Offices, Wednesbury.

No date. **WHITBY.**—Erection of (1) Villa residence in Carr Hill Lane, Whitby; (2) villa residence in Ruswarp Lane, Whitby. Quantities will be sent to applicants when ready. Harold G. Walker, Architect and Surveyor, Golden Lion Bank, Whitby.

ENGINEERING.

May 10. **LONDON (for India).**—Supply of girder bridges, for the Directors of The Bombay and Central India Railway. Tenders must be made on forms, copies of which, with specification, can be obtained at the office of C. Crommelin, secretary, Offices: Gloucester House, 2, 3, and 4, Bishopsgate Street Without, E.C., on payment of 21s. each (which will not be returned).

SANITARY ENGINEERING.

May 9. **SELBY.**—Laying of pipes for sewer, at Back Lane, Cawood, for the Selby R.D.C. For particulars apply Thomas Braithwaite, Surveyor to the Council. Tenders to be received by E. Townend, Clerk, 1, Abbey Place, Selby.

May 9. **CHEETHAM (Manchester).**—Diversion of a sewer, for the Paving, Sewering, and Highways Committee of the Corporation. Plans may be seen and specification, bill of quantities, and form of tender obtained on application at the City Surveyor's Office, Town Hall, Manchester, on payment to the City Treasurer of deposit of £2 2s. All cheques or postal orders are to be made payable to the order of "The Corporation of Manchester." Tenders to be addressed to the Chairman of the Paving, etc., Committee.

May 10. **SALFORD.**—Silt elevator and sewage screen and rakes. Particulars may be obtained at the Borough Engineer's Office, Town Hall, Salford.

May 17. **LIMEHURST.**—Extension of sewage works in the townships of Bardsley and Waterloo, which comprise the construction of storm-water tanks, bacteria beds, final settling tanks, and other appurtenant works, for the R.D.C. Plans, sections, details, and specifications may be seen at the office of the Engineer, H. Leonard Hinnell, M.InstC.E., 41, Corporation Street, Manchester, and also at the District Council Offices, 250, Oldham Road, Waterloo, between 9 and 12 o'clock on Monday, Tuesday, and Wednesday, in each week, on or after May 7, and quantities obtained from the engineer on deposit of £1. Tenders to be delivered to J. Taylor, Clerk, Limehurst R.D. Council Offices, Ashton-under-Lyne, addressed to the Chairman of the Council.

May 17. **TIVERTON.**—Laying and jointing of about 3,000 yards of stoneware pipe sewers, including the construction of manholes, lampholes, and flushing chambers in connection therewith; also the construction of two sewage sedimentation tanks, carriers, and other incidental works, in accordance with the plans, sections, detail drawings, and specification prepared by the engineers, for the R.D.C. Drawings and specification may be seen and bills of quantities and form of tender obtained at the offices of the engineers, Willcox and Raikes, 63, Temple Row, Birmingham, on deposit of £3 3s. Copies of the drawings and specification may also be seen at the office of J. Follett Pugsley, Clerk to the Rural District Council, Tiverton, to whom tenders must be sent.

IRON AND STEEL.

May 10. **MANCHESTER.**—Supply of steel tie bars for tramway rails, for the Tramways Committee of the Corporation. Specifications and forms of tender may be obtained on application to J. M. McElroy, general manager, Corporation Tramways, 55, Piccadilly, Manchester. Tenders to be addressed to the Chairman of the Tramways Committee, 55, Piccadilly, Manchester.

PAINTING.

May 9. **ISLINGTON.**—Repairs and painting at the Coroner's Court in the St. Mary Magdalene Gardens, Holloway Road, N., for the Islington B.C. Conditions may be seen, and specification and other particulars obtained, upon application to the Borough Engineer, J. Patten Barber, at the Town Hall. Upper Street, N. Tenders must be received by Wm. F. Dewey, Town Clerk, Town Hall, Upper Street, N.

No date. **CONSETT.**—Painting, etc., of business and other premises at Dipton, Flint Hill, Iveston, and Consett. Specifications may be seen on application to W. Ward, Balfour Street, Consett, to whom tenders are to be sent.

No date. **WHITBY.**—White-washing the exterior of the Royal Hotel. For particulars, apply to H. Walker, Khyber House.

PLUMBING.

May 11. **NAAS (Ireland).**—Keeping the plumbing work of the Workhouse in repair for one year ending April 30, 1911, in strict accordance with specification, which can be seen at the office of D. J. Purcell, Clerk of Union, Naas, to whom tenders (naming sureties) must be sent.

ROADS AND CARTAGE.

May 9. **TENDRING (Essex).**—Supply of about 2,500 tons of granite, broken to go through a 1½in. ring, and delivered as required on to the wharves or into trucks, free of all dues, at the following places, viz.:—Harwich, Wivenhoe, and Mistley; also for the supply of the following quantities of red Kent flints, broken to a 2in. gauge, and delivered alongside the wharf, hard or beach, at the following places, as and when required by the surveyor, for the R.D.C.:—Beaumont 500 cubic yards, Harwich 400, Clacton 200, Kirby 200, St. Osyth 200, Great Oakley 200, Mistley 300, Landermere 300, The Flag, St. Osyth 200. A quantity of above will be loaded on rail to different stations, and will be paid for according to railway weight, i.e., 1 yard—21 cwt. Tenders must be sent to A. J. H. Ward, clerk, 42, Church Street, Harwich and samples should be sent addressed to the Clerk, Workhouse, Tendring Weeley. R.S.O.

May 9. **CHESHAM.**—Roadmaking works in Essex Road, for the U.D.C. Plans, sections, and specifications may be seen upon application to Percy C. Dormer, Engineer and Surveyor, to whom tenders must be sent. The person whose tender is accepted will be required to enter into a contract and bond in an approved guarantee society as surety for the due performance of the contract, a copy of which may be seen at the office of John Gibbon How, Clerk to the Council, High Street, Chesham.

May 10. **SALCOMBE.**—Supply of 1½in. broken forder stone, 2in. broken limestone, forder shippings, and limestone chippings, for the U.D.C. Particulars may be obtained on application to Frank Swinburne, surveyor, Fore Street, Salcombe. Tenders to be forwarded to C. E. Turner, clerk, Salcombe.

May 10. **BRIDLINGTON.**—Formation of Clifton Street, for B. T. Harland. Drawings, specification, and conditions of contract may be inspected at the office of J. Earnshaw, Architect and Surveyor, Carlton House, Bridlington, to whom tenders must be delivered.

May 10. **LIVERSEDGE (Yorks.).**—Sewering, levelling, kerbing, flagging, channelling, macadamising, etc., of Railway Street, off Quarry Road, for the U.D.C. Plans, sections, and specification may be seen, and bill of quantities and form of tender obtained, at the office of F. Langley, M.S.E., engineer and surveyor, Council Offices, Liversedge, upon deposit of £1 1s. Tenders to be delivered to Thos. Mitcheson, clerk, Council Offices, Liversedge. The successful contractor will be required to observe the fair contracts clauses, and to provide security for the due fulfilment of the contract.

May 11. **BALBY (Doncaster).**—Supply of concrete flags, 2½in. thick, for the U.D.C. Full particulars and forms of tender may be obtained from George Gledhill, Engineer and Surveyor, Council Offices, 61, Low Road, Balby, Doncaster, to which address tenders must be delivered addressed to the Chairman of the Stores Committee, accompanied by samples.

May 11. **DARTFORD.**—Road repairing and other work at the Gore Farm (Convalescent) Fever Hospital, for the Metropolitan Asylums Board, in accordance with drawings, conditions of contract, and specifications prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., Engineer-in-Chief. Drawings, conditions of contract, specification, and form of tender may be inspected at the office of the Board, Embankment, E.C., and can be obtained upon deposit of £1 Tenders must be delivered at the office of the Board.

May 11. **KINGSTON-UPON-THAMES.** — Levelling, paving, metalling, flagging, channelling, sewering, and lighting Rowlls Road and Piper Road respectively, from the Corporation, in accordance with the plans and specifications prepared by the Borough Surveyor, R. Hampton Clucas, which can be seen at his office, Municipal Offices, where forms of tender can be obtained. Tenders, on a separate form for each road, to be sent to Harold A. Winser, Town Clerk, Municipal Offices, Kingston-upon-Thames. The persons whose tenders are accepted will be required to enter into contracts and bonds, with two sureties, for the due performance of the work.

May 12. **CARLOWAY (Stornaway).**—Completion of the new road between Stornoway and Carloway with the branch to Breaselete, measuring 13 miles or thereby, parts of which are firmed and stone-bottomed. Specifications and plans can be seen in the office of Hugh Miller, Lewis District Committee Chambers, Stornoway, to whom tenders must be sent.

May 12. **RAWTENSTALL.** — Sewering, paving, flagging, etc., of nineteen streets situate at Crawshawbooth, Rawtenstall, Cloughfold, and Waterfoot, all within the borough, for the Rawtenstall Corporation. Plans and sections may be seen and forms of tender, general conditions, specifications, and quantities obtained on application to James Johnson, C.E., Borough Surveyor, Municipal Offices, Rawtenstall, on deposit of £2 2s. Tenders to be delivered to James Whalley, Town Clerk, Municipal Offices, Rawtenstall.

(Continued on page xviii.)

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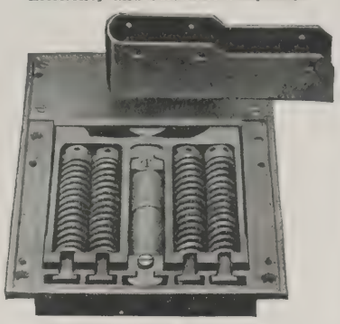
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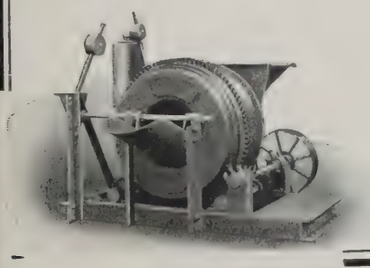
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AGRICULTURAL HALL, N., MAY 7 to 14.

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The points that tell in a CONCRETE MIXER are

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RANSOME CONCRETE MIXER

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and have made it the most popular machine on the market.

HANDBOOK sent FREE on application.

The Ransome verMehr Machinery Co., 507, Caxton House, WESTMINSTER, S.W.

May 12. **OGMORE AND GARW.**—Supply of broken limestone and limestone chippings, equal in quality to the "Ewenny Blue Mountain Limestone," and also broken granite and chippings for road metalling within the Urban District of the Ogmore and Garw, for the period of twelve months, commencing May 16, 1910, and to be delivered in such quantities and at such times as the surveyor may direct from time to time at the following stations: Brynmenyn, Pontyrhyl, Pontycymmer, Blaengarw, Blackmill, Gilfach, Goch, Ogmore Vale, and Nantymoel. All limestone and granite shall be broken cubically and sufficiently small to pass through a 2½in. gauge by its largest dimensions. All chippings shall be broken to pass through a ¾in. screen, and must be free from dust when loaded into the trucks at the quarries. The approximate quantities of limestone and granite will be about 10,000 tons. The council will undertake to pay the railway freight. Specifications and forms of tenders and all other particulars may be obtained from the Surveyor, Council Offices, Brynmenyn. Tenders to be sent to the Clerk of the Council, S. H. Stockwood, solicitor, Bridgend.

May 14. **HOYLAND NETHER.**—Supply and delivery of the following road materials for the year ending March 31, 1911, for the U.D.C.:—Slag, granite, tar macadam. Full particulars and form of tender may be obtained on application to Frank Hewitt, Engineer and Surveyor, Town Hall, Hoyland, near Barnsley, to whom tenders must be sent.

May 14. **HASTINGS.**—Supply of 500 yards (in two separate contracts of 200 and 300 yards each) of best unbroken blue stone, delivered in the parishes of Guestling and Fairlight, for the R.D.C. Forms of tender may be obtained of A. R. Inskipp, Clerk, 11, Wellington Square, Hastings; or of the District Surveyor, D. Paine, Stonelynk Farm, Fairlight, Hastings, and must be returned to the Clerk.

May 18. **ALRESFORD.**—Grading, draining, and tar-paving the playgrounds at the new Alresford Council School. Plan and conditions of contract may be seen, and specification and other information obtained at the office of W. J. Taylor, County Surveyor, The Castle, Winchester. The plan and conditions of contract can also be seen at the school. A deposit of 10s. 6d. will be required for a copy of the specification and form of tender. Deposits must be made by cheque, payable to Hants County Council and crossed Bank of England, or particulars will not be sent. Tenders to be delivered to H. Barber, Clerk of the County Council, The Castle, Winchester.

May 23. **STREATHAM.**—Making-up and paving of that part of Becmead Avenue, Streatham, for the Wandsworth B.C. The specification and drawings may be seen, and forms of tender obtained, of the Borough Engineer, at the office of the New Streets Department, No. 56, East Hill, Wandsworth, S.W., upon deposit of £5 5s. Tenders must be delivered at the Council House, East Hill, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose. Persons tendering must in the case of all workmen employed by them pay wages at not less and observe hours of labour not greater than the rates and hours recognised by the associations of employers and employees and in practice obtained in the district where the work is to be executed. If required, the contractor must provide two sureties for the due execution of the contract.

May 25. **RUNCORN.**—Supply of macadam for the R.D.C. Forms will be supplied on application to Geo. F. Ashton, Clerk to the Council, 71, High Street, Runcorn.

May 30. **CAMBERWELL.**—Kerbing and York paving the footways in Peckham Rye West Side (from Barry Road to Nigel Road); also for roadway paving (patent or otherwise) to specification as submitted by contractors, for the B.C. Full particulars and form of tender can be obtained from Wm. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E. Contractors are invited to state the roadway paving they are prepared to lay and their conditions as to maintenance for a term of years. Tenders to be delivered to the Town Hall, Camberwell, S.E., addressed to the Works Committee.

May 24. **STROUD.**—Supply of Clee Hill stone, Tytherington stone, and Chepstow stone, for the twelve months ending March 31, 1911, for the U.D.C. Tenders should be sent to E. Northam Witchell, Clerk. Samples of the stone to be supplied should be sent to the Council Offices, Town Hall, Stroud, for inspection.

No date. **KEIGHLEY.**—Tar-macadamising Mayfield Road.—Particulars from the Borough Engineer.

MISCELLANEOUS.

May 9. **LONDON, W.**—Supply and delivery of about 830,000 3in. by 5in. by 9in. best Swedish yellow deal creosoted paving blocks, for the St. Marylebone B.C. Forms of tender may be obtained on application at the Town Hall, Marylebone Lane, Oxford Street, W., and any further particulars may be had of the Borough Engineer and Surveyor, J. Paget Waddington, M.I.C.E. Tenders must be sent to James Wilson, Town Clerk, Town Hall, Marylebone Lane, Oxford Street, W.

May 10. **RICHMOND.**—Supply of Buxton lime, grey lime, etc., for the Main Sewerage Board. Specifications, etc., may be obtained, on personal application only, at the office of the Engineer to the Board, West Hall Road, Kew Gardens, S.W.

May 13. **BRIGHTON.**—Supply of Portland cement for the year ending June 30, 1911, to be delivered at any of the Brighton Railway Stations as ordered in quantities of from 6 to 20 tons at one time, for the B.C. Specification and form of tender may be obtained on application at the office of the Borough Surveyor at the Town Hall, Brighton. Tenders must be sent to Hugo Talbot, Town Clerk, Town Hall, Brighton.

NEW BUILDINGS.

PROPOSED.

Cardiff.—Mr. A. G. Drury, M.Inst.C.E., an inspector of the Local Government Board, has held an inquiry at the Glamorgan County Council's offices, Cardiff, into the application of the County Council for sanction to borrow £76,500, for the erection and equipment of the new county offices in Cathays Park.

Ilkeston.—The Ilkeston Corporation having applied to Local Government Board for permission to borrow £3,700 for providing chapels, lodge, etc., at the Park Cemetery, a public inquiry has been held in the Town Hall, by Major J. Stewart, R.E., one of the Local Government Board's inspectors.

Reigate.—It is proposed by the Town Council to acquire the Lodge estate of 28 acres on which to build a Grammar School, in conjunction with the Surrey Education Committee.

Shirebrook.—A company has been formed to provide a public hall for Shirebrook, and has a capital of £2,000. The site of the

(Continued on page xx.)

THE WOULDHAM CEMENT Co. L.D. RED CROSS BRAND
Telegrams "Earthing London" Telephone No. 1846 Avenue
highest quality. London
PORTLAND CEMENT.
quick medium or slow setting.
LION WORKS, GRAYS. ESTABLISHED 1855.
OUTPUT, 3,000 TONS WEEKLY.
35, GREAT ST. HELENS, E.C.

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Applied as Paint for Coating
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to produce a natural Stone effect.
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TRUE TO SCALE.
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Price List Free.

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Parquet & Oak FLOORING.
Herringbone 8d. per foot. for quantities.
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Many exhibits in this year's Academy.
All commissions executed with dispatch
See this week's number for specimens.
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TO ARCHITECTS & BUILDERS.—Please Note. Tip-up Baths are our invention, years of experience, as used at Bournville Village. Three Gold Medals awarded. Prices lowest, quality best.—THE PATENT TIP-UP BATH CO., 13, Broad Street, Birmingham.
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Inside and Outside Blinds, Also Casement Curtains. BLINDS
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AGENTS WANTED.

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JELLY SOAP.

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LESS WORK, BETTER RESULTS

THE PAINTERS' SOAP

WHAT IT IS!

"JELLSO" is soap in the form of jelly. But that is not all. "JELLSO" is not an ordinary soft soap of doubtful composition, objectionable smell and destructively alkaline propensities; "JELLSO" is what the painter has hoped for, but till now not yet realised—**a pure jelly soap,** harmless to the hands and to the most delicate enamel or varnish surface, with cleansing properties described by some enthusiastic decorators as "magical."

WHAT IT DOES!

"JELLSO" is emphatically a cleanser, cleaning paint, varnish, enamel, marble, mosaic, tiles, leaded glass, stonework, etc., quickly and well without injuriously affecting the surface. It is the ideal soap for spring cleaning, yielding satisfaction to householder and decorator alike.

Can be obtained from all the leading Builders' Supply Merchants, or from—

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who will send free sample on application.

GAY'S PAINTS do credit to

the Architect who specifies them,
the Builder who applies them,
the Property-owner who buys them.

They have a reputation extending over 50 years, and have been used on practically every important Government Building, on hundreds of large Estates, on Hospitals, Infirmaries, Seaside Piers, etc., etc.

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Exceptionally durable and damp-proof, they give a handsome, smooth, hard, glossy yet elastic surface, retained for a number of years. The careful and skilful manufacture ensures uniformity of quality, colour, and consistency. Free from obnoxious smell, they dry hard in a few hours, and do not crack, fade or blister. Economical owing to great covering capacity. Sent out ready for use.

In full Gloss, Semi-flat or Flat. Large range of Colours and Shades shown in our Booklet, "A RECORD OF COLOUR," sent free by—

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TURNS SEWAGE INTO CLEAR WATER.



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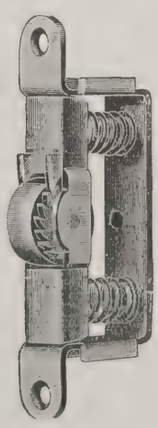
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The "Forward" Patent Automatic Sash Holder.

BRITISH MANUFACTURE.



It acts automatically, and holds in any position required both lower and upper sashes of window.

It is invisible, being inserted into the stile of the sash, thereby eliminating the unsightly appearance of ropes and pulleys.

By dispensing with sash weight pockets a maximum amount of light space is obtained.

It prevents windows from rattling while in any position—a very great annoyance heretofore.

It can easily be adapted to old Window Frames.

It is manufactured of the finest material obtainable.

The price is considerably lower than the cost of weights, cords and pulleys.

There is a decided saving of labour and material in making Sashes and Frames by doing away with the pockets, grooves, etc. A set of four holders with full particulars will be sent upon application.

PARKER, WINDER & ACHURCH, Ltd.

Patentees & Manufacturers,

Broad Street, BIRMINGHAM.

proposed new hall is in Main Street, and the plans provide a "picture palace" on the ground floor to hold about 500 people, while upstairs there will be an assembly room capable of holding 400 to 500 persons. The building will be of brick.

Thirsk.—Messrs. Barclay's Bank premises in the Market-place are to be considerably enlarged by the pulling down of the existing bank and the adjoining shop, and the erection of a new bank on the site, from the designs of Mr. W. H. Brierley, architect, York. The new building will consist of two storeys, the lower portion faced with stone, and the upper part of red brick with stone dressings. The contract for the work has been let to Messrs. William Jackson and Son, Thirsk.

Tredegar.—The Local Government Board has sanctioned the loan, of £4,811 for the extension of the Gasworks, and the Town Council has approved the plans of streets and sites of 137 houses at the rear of Park-row, and of 76 houses on the site.

Upper Renfrewshire.—The following plans have been submitted to the Buildings Committee:—Church hall in Kilmarnock Road, Newton-Mearns; terrace of 10 cottages in Cromartie Avenue, Newlands; double villa at the corner of Merrylee Road and Kilmarnock Road, Newlands; motor garage at Newark, Corsebar, Paisley; dye house at Broadlie Works, Neilston; gardener's cottage in Old Coach Road, Giffnock; two double cottages in Linwood Road, Elderslie; three tenements at the corner of Old Mearns Road and Busby Road, Clarkston; store and workshop in South Street, Scotstoun; and terrace of 12 houses in Victoria Drive, Scotstoun.

Wallasey. — The Harrison Memorial Church, of which the foundation-stones were recently laid, is in course of erection from the designs of Mr. J. Francis Doyle, architect. The church will be in the Perpendicular Gothic style and the interior will consist of nave, north and south aisles, north and south transept, narthex, chancel, clergy and choir vestries, organ chamber, and morning chapel. There will be two main entrances opening into porches at the east end, with exit door from the morning chapel. The whole of the building, including the tower, will be of Storeton stone, and will provide seating accommodation for between 600 and 700 people. The builders are Messrs. J. Thomas and Sons, of Oxton, Birkenhead.

IN PROGRESS AND COMPLETED.

Aberdeen.—The Town Council has approved the following plans:—Elgin Street, cellars; Fairfield Road, stable, etc.; Forfar Road, addition to villa; North Lindsay Street, addition to property; Panmure Street, addition to property for the Dundee Chamber of Commerce; West Wynd, warehouse for James Scott and Sons, Ltd.; Lynnewood Place, alteration on stable; Laburn Street, motor shed.

Ashburton.—The Borough Council has accepted the following tenders for contracts for the projected waterworks:—Supply of pipes, Mason, Struthers, and Co., Christchurch, £5, 893 17s. 2d.; engine and pumps, John Chambers and Son, Dunedin, £2,459 10s.; erection of water tower, Scott Bros., Christchurch, £2,380; laying pipes, Russell and Co., Ashburton, £1,915 6s. 1d. The total sum of the tenders amounts to £12,648 13s. 3d.

Ayr.—The following plans have been passed by the Ayr Dean of Guild Court on behalf of the Town Council Pavilion on the Low Green to cost £6,000; Vestry and organ loft in Newton Parish Church to cost £500.

Bishop Auckland.—The new Girls' Secondary School, which the Durham County Council are erecting on a site in South Church Lane, will cost over £14,000, and is to be of stone. Mr. Thos. Lumsden, of Jarrow, is the contractor, and it is anticipated that the building will be completed by September next.

Blackpool.—The new Baptist Church in Hornby Road East has been opened, Mr. F. Keighley, M.S.A., of Blackpool, being the architect. The contractors were Marsh and Fretwell, of Darwen; Sudall and Heap, South Shore, plumbers; J. Richardson, roof tiler, South Shore; S. Butterworth, mason; J. and T. Livesey, heating engineers, Accrington; and George Morrison, of Birley Street, electric lighting.

Bo'ness.—The Town Council have agreed to proceed with an extension of the waterworks, including the laying of 2¼ miles of 8in. pipes from their service reservoir at Bomains to the burgh, and the addition of two batteries of Bell's mechanical filters. The estimated cost of the extensions is £2,500, and it has been agreed to lay the main street of Grangepans for a distance of 2,560 superficial yards with whin setts on a concrete foundation at a probable cost of £1,060.

Clydebank.—The Clydebank Dean of Guild has passed the following plans:—Seven tenements of one room and kitchen houses in Glasgow Road, Yoker; for Brown and Co., Ltd., shipbuilders; testing-house in North Albion Street for Dawson and Downie, engineers.

Dunoon.—The plans of the Roller Skating Pavilion, which is to be erected in the Castle Gardens have been passed by the Dean of Guild Court, and building operations will be commenced immediately to ensure the completion of the work by the middle of June. The building is 210ft. by 90ft., and has a skating surface of some 14,000 square feet, and is constructed on a steel frame, finished in wood and fibre plaster and roofed with red felt. The estimated cost is £3,000, the architect being Mr. Albert Fountain, 68, Gordon Street, Glasgow, and the measurers Messrs. Shearer and Marr, I.M., 217, St. Vincent Street, Glasgow.

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THE ARCHITECTS' & BUILDERS' JOURNAL.

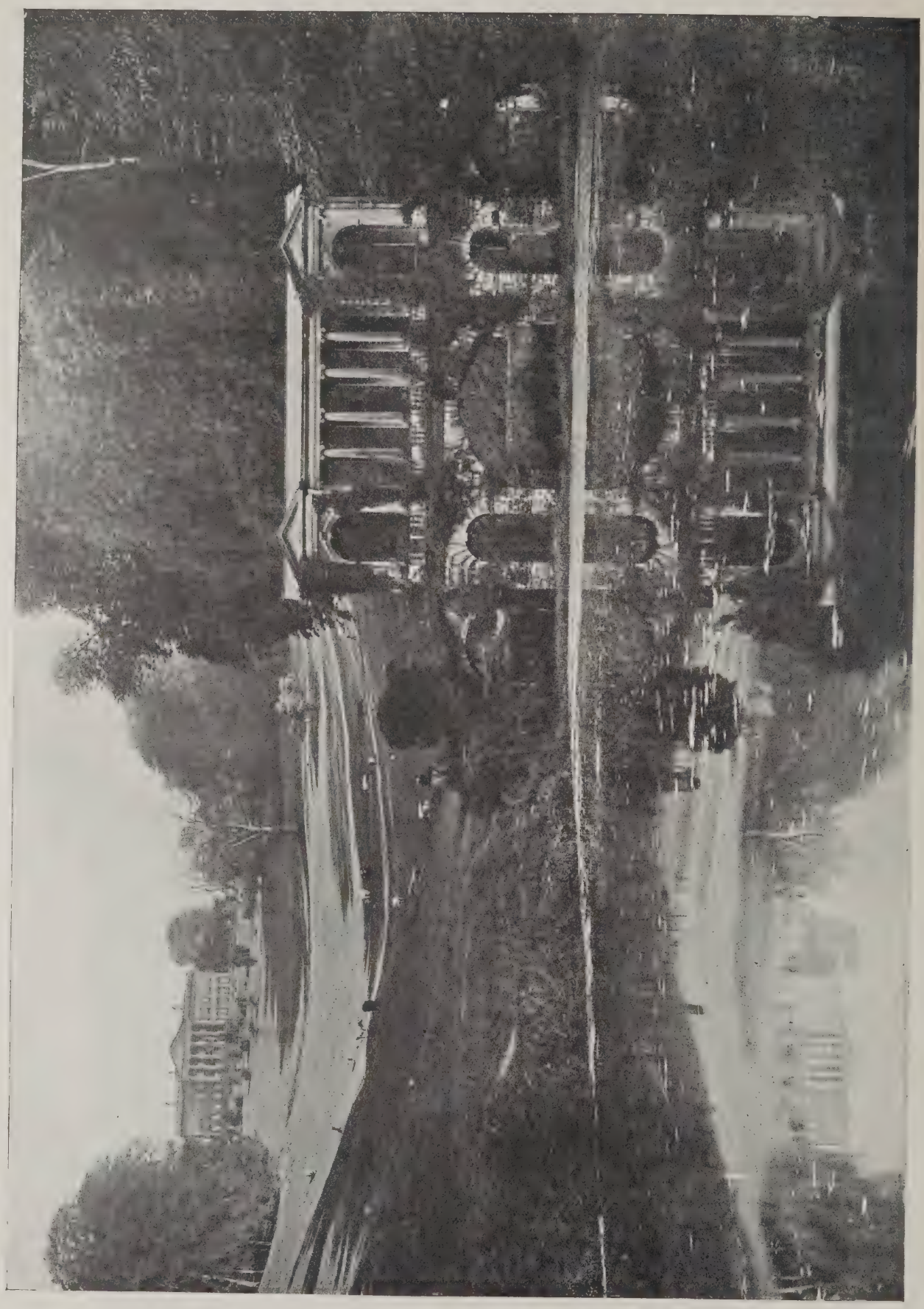
WEDNESDAY,
MAY 11th, 1910.

Volume XXXI. No. 797



BATH STREET, BATH, AS IT APPEARED BEFORE THE RECENT DEMOLITION.

(See "The Eighteenth Century Architecture of Bath," p. 444.)



Photochrom.

This was the country seat of Ralph Allen, and is said to have been built in 1737 to advertise his stone quarries. The bridge (built in 1756) is almost an exact copy of the one built by Robert Morris at Wilton House in 1736.

PRIOR PARK, BATH: SOUTH FRONT OF THE HOUSE, JOHN WOOD (SENR.), ARCHITECT, AND THE PALLADIAN BRIDGE.

(*See "The Eighteenth Century Architecture of Bath," p. 444.*)

THE ARCHITECTS' & BUILDERS' JOURNAL.

MAY 11, 1910. *CAXTON HOUSE, WESTMINSTER.* VOLUME 31. No. 797

Note : The List of Contents will be found on Page V of the front advertisements in this and subsequent issues.

In Memoriam—King Edward VII.

THE lamented and unexpected death, on Friday last, of King Edward, is an event which affects all classes of British subjects, without distinction of profession or occupation; and while more detailed commentary on the historical and political aspects of the subject may suitably be left to the general Press of this country, we naturally feel called on to express, on behalf of the profession which we represent, their share in the general sorrow at the great loss which the nation has sustained. Edward VII., owing to the prolonged reign of his illustrious predecessor, came to the throne comparatively late in life, and his reign of a little over nine years is a short one among the annals of British Sovereigns; but it has been long enough to afford proof of some remarkable qualities both in his political and personal character; of a great deal of tact and wisdom in his relations with the rulers of other countries, whereby he has done much to promote the interests of peace and friendly feeling between British and Continental Powers; and of an unfailing kindness of heart and courtesy of manner which gained him the affectionate regard of those whom duty or occasion brought into personal relations with him. Without any claim to be considered a man of genius, the King had the quality of sterling good sense which enabled him always to say the right thing at the right moment. He may be said to have been a typical English gentleman, in his tastes, his love of field sports, and in his general spirit of courtesy and fair play to others. And his good sense and perception of the fitness of things were shown also in his invariable recognition of his political position as a constitutional sovereign. Whatever the King's private wishes or inclinations on a subject of public policy might be, he was never known to overstep the limit of action which the British constitution imposes on the Sovereign. When, as Prince of Wales, he was once asked by Bismarck, in conversation, why England did not frankly take possession of Egypt and govern that country for its good, he replied at once, "You must put that question to Mr. Gladstone, not to me" (Gladstone being then in office), and turned the conversation. But the King has always shown a desire to promote important schemes for the public good. Both the Imperial Institute and the Royal College of Music owed their foundation mainly to his influence. The latter has proved a great success; and if the former has failed, it was through no fault of his. The King has shown also especial interest in all schemes for the promotion of public health, and he was to have been Patron of the Conference on Town Planning to be held in London in July. His care for the public interest in lesser things was touchingly shown in his desire, in spite of a painful illness, to have the Coronation ceremony at the date originally fixed, saying "I cannot disappoint the people"; and it was only when warned that the consequence of the effort might be fatal to him that he consented to abandon it. It is to be feared that he hastened his own end by the same kind of determination not to give way to illness—by continuing to transact business (even on the day of his death), when he was really not fit for the exertion; a kind of imprudence which, at all events, does honour to his courage and his sense of duty. There can be no doubt that the late King leaves behind him the general regard and sorrow of his people in Great Britain and the Colonies. It is to be hoped that there will be some project to erect a suitable monument to his memory.

Architecture at the Paris Salon.

THERE could hardly be a greater contrast than is experienced in going from the Architectural Room at the Royal Academy to the Architectural Gallery at the Salon. In the former we find a small room full of more or less pretty pictures of buildings, from which plans are either excluded or only admitted apologetically and on a minute scale, and which for the most part represent the current building of the day. At the Salon we find a long range of galleries occupied by sets of drawings, many of them of immense size, in which plans are invariably shown to a large scale, and are evidently regarded as of equal importance with elevations and perspectives; indeed, the last-named type of drawing is quite in a minority, elevations and sections alone illustrating many of the works. And the nature of the exhibits differs equally from those at the Academy. At Paris the exhibitors aim at presenting great ideas in architecture, or at restorations of great monuments of antiquity; works executed or in progress are comparatively few—fewer, in fact, than they ought to be; the inadequate representation of contemporary architecture at the Salon has been a subject of frequent criticism, not without reason. Still, there are great ideals suggested, and represented by drawings which are great both in size and in splendour of execution. There is, it must be admitted, no place for such drawings at the Academy—there is not room to hang them. The drawings of one exhibitor alone, M. Hebrard, would more than fill the Academy room. The misfortune for architecture is that while all other paintings and drawings exhibited at the Salon are on the upper floor, the galleries for architecture are on the ground floor, and rather outside of the general traffic of spectators, consequently they are very little visited. The one advantage for architecture at the Academy is that the room devoted to it is, at all events, *en suite* with the picture-galleries, so that there is no need to go out of the way to reach it; and in proportion to its size it is, in fact, much better attended than the Salon architectural gallery.

The Feature of the Collection.

THE exhibit of M. Hébrard, already alluded to, is the great feature of the collection. It consists of a great series of drawings of a restoration of the Palace at Spalato, including, of course, as usual with French restorations of

this kind, large and careful drawings of the existing remains and their adjuncts, made on a scale and with a minuteness of detail such as we never see in England. The drawing of the sea-front as existing, with Diocletian's wall-arcades partly showing and partly engulfed in later utilitarian erections, is of great interest, for it will be found, on careful examination, that it really affords data for the whole of the author's effective restoration of this front. There is a splendid bird's-eye view, in water-colour, of the whole palace in its presumed original state; a perspective section of the Mausoleum showing its structure; a restoration of the temple, and a number of beautiful drawings of details from both temple and Mausoleum. M. Hébrard has also made a series of studies of the public square of Siena as it was in the middle ages, girt round with an encircling array of the tall narrow towers, cut off square at the top, which formed the outward symbol of the internecine strife of mediæval Italy, and of which San Gemignano alone possesses a surviving handful. But the Spalato drawings are the chief exhibit, and the set ought to be seen in London. The drawings, being made by the author (we presume) as a Prix de Rome student, are the property of the French Government, which would, no doubt, be willing to lend them if applied to.

Drawings of Restorations.

AMONG other drawings showing restorations of ancient buildings is a fine set by M. Lucien Magne, of the Abbey of Fontevrault. A section of the nave shows the well-known construction of a series of domes carried on massive transverse arches, the voussoirs of which are cut to the curve of the dome section, which thus starts from the intrados and not from extrados of the arch. A remarkable set of drawings of the Tour d'Evrault shows the whole structure of this curious building, octagon on plan, with a semicircular apse on each face, and a great conical stone roof covering the whole; but how much of this is restoration and how much *in situ*, the drawings do not convey. The seventeenth century cloister of the Abbey, with its coupled columns between round arches, makes an effective contrast with what Ruskin would have called "wolfish" Gothic of the twelfth century work. Another noteworthy set of restoration drawings is that by M. Levard of the basilica of San Clemente at Rome. Here, of course, there is less to restore; the interior is complete, but the original exterior aspect with its white plaster and small windows under the eaves is shown. M. Lucien Magne has, besides Fontevrault, another large set of restoration drawings of the Palais de Justice at Poitiers. The main portion of the building, which in its complete state must have been one of the most picturesque and characteristic of mediæval piles, is a nearly rectangular plan round a courtyard, with round towers at the external angles; all this part had been at some period cut down to little more than half its original height, and covered with a flat-pitched roof put on anyhow. M. Magne's restoration of the conical roofs and galleries is probably as near the truth as can be, since there are plenty of examples of the kind to go by. A more imaginative piece of restoration is the attempt of M. Camille Formigé to reconstruct the ancient erection in honour of Augustus at Turbia, above Monaco. A fine water-colour drawing shows the strange and confused mass of building still existing, alluded to in Tennyson's poem, "The Daisy":—

> "What Roman strength Turbía showed
> In ruin, by the mountain road."

There was more than "Roman strength" concerned, however, for it seems evident that in mediæval times the upper circular portion of the monument, or whatever was then left of it, was developed into a round tower with battlements. The evidence of an original square base with a circular superstructure remains, and M. Formigé restores the upper portion as a circular erection with an exterior colonnade and a pyramidal stepped roof, somewhat of the same nature as that which must have crowned the mausoleum at Halicarnassus. The restoration is only conjectural, but it is not improbable. A small restoration by M. Favry, of Amiens, shows the "Porte du Ravelin de Montrescu," at Amiens; there is nothing very conjectural in the restoration, for it is a French Renaissance structure, dated 1531, of which the upper portion with the entablature had been destroyed. It is a curious piece of work, of very regular ashlar masonry; on every alternate stone the device of the salamander is carved in relief.

"Projets" and Illustrative Drawings.

IT will be seen that the contents of the architectural room at the Salon afford (as they usually do) considerable opportunity for the study of points in architectural history. The other exhibits may be divided into three classes: what are called *projets*, designs for imaginary buildings, often of the most Utopian dimensions and grandeur; illustrations of buildings actually erected or intended to be erected; and purely illustrative drawings and sketches—a very numerous section. A good many of the *projets* have resulted from subjects set to the students of the Ecole des Beaux-Arts. These are always of most ambitious character, both in the actual size of the drawings and in the scale of the proposed buildings, and they tend to run very much into one style, that of modern French Free Classic—the style evidently favoured at the Ecole. It has its defects, among which is the obvious effort to show *cleverness* in detail, which seems to be more thought of than beauty. Nevertheless, there is always a sustained style in these works; they do not run into eccentricity (which would probably be fatal to the prospects of the eccentric one); and the careful treatment of plan and the effective manner in which the plans are drawn are remarkable. The small elevations and plans sufficient to secure medals at the Royal Academy seem child's play beside these monumental drawings. Among some of the *projets* which are worth attention is the tremendous scheme by M. Jacques Droz for "Un Port d'attache pour dirigible militaire"—a design looking ahead to the time when a "dirigible" shall be as large as an ocean liner, and providing for it an enormous stone arched kennel, as one may say, with vast folding doors at the entrance, and appearing externally as an artificial hill laid out in terraces. Of course, a complete plan is given on the same scale as the elevations. It seems a preposterous scheme now; yet we do not know that the future may not require some such provision as is shown here. M. Pin's scheme of "le Salle Principale du Musée d'un Grand Etat" is a noble conception, at all events, shown in a plan and in one of those pictorial sections in which the French excel. There is a domed vestibule first, with a colossal antique statue in the centre; then a flight of steps flanked by columns and large windows, leading up to a great hall with a coved roof, and paintings arranged in architectural compartments on the walls. A more practical and possible kind of *projet* is that of M. Albert Bray, for a new Palace of the Institut de France, in the event of the long-talked-of prolongation of the Rue de Rennes. This is shown as continued over a new bridge across the river, and the Institute building, as at present, faces the quay with a concave line of frontage and a dome, but on a larger scale than at present. A square *Place* is formed in the rear, one side flanking the new road. This is a fine architectural scheme, and kept within reasonable dimensions. The author is a pupil of M. Pascal.

Current Work.

AMONG the illustrations of current architectural work one of the most important is M. Masson-Detourbet's Commercial School in connection with the Chamber of Commerce of Paris. This is a remarkably original building in red and grey brick, with a staircase pavilion at each end in which the raking lines of the staircase show externally between narrow grey brick mullions of great height, and which must have required first-rate execution on the part of the bricklayers. These terminate in three arches combined under a main arch, of which the archivolt is decorated in a chequer of white and black (probably marble). The whole design is

a piece of architectural polychromy in brick and other materials, very well carried out. M. Chaussemiche's "Etablissement Thermal de Châtel-Guyon" is the largest scheme in practical architecture exhibited. The plan is the finest part of this. A large hall with an apse at each end runs across the front, behind which is a square garden with fountains, surrounded by the smaller apartments of the building, forming the other three sides of the quadrangle. An immense splendidly executed elevation is shown, and a section on the same scale showing the whole arrangement of baths and water service in detail. The complete manner in which such practical details are illustrated in the French architectural drawings is to be noted. Another exhibitor, M. Choret, exhibits a large bird's-eye view of a great set of oil-mills, but he does not, like an English architect, confine himself to a bird's-eye view. There are large drawings showing the whole arrangement and work of the mills and oil-wells, so that one can see what the bird's-eye view really means. Indeed, in this case the view is evidently quite a secondary element in the exhibit. It serves to show, however, that the element of attractiveness has not been overlooked even in so utilitarian a kind of building, for the principal open space between the buildings is planted round three sides with a mass of clipped trees.

Domestic Architecture.

THERE are some private houses, interesting from their plans, showing the French habit of grouping the rooms in house-planning. The French country house usually consists, architecturally, of rather low stone walls, with immense masses of steep roof above them. You cannot, apparently (to the French mind), give the true character to a country house without making two-thirds of it roof. Formerly this was always combined with portentous barge-boards of the most rampant character, but there has been some improvement in taste in this respect of late years, and country houses are somewhat less like exhibitions of fireworks than they used to be. But they are mostly very well and systematically planned. M. Bitterlin's "Maison de Campagne en Normandie," for instance, shows on the upper floor the "Chambre de Maîtres," with its two large and commodious "toilette" compartments en suite; then the "Chambre des Amis," or what would be called in England, "the spare bedroom," with its "toilette" compartments, forms a separate suite in the left wing, and the day nursery and night nursery and governesses' room form a suite in the right wing. It is noticeable how almost universal, in the French upper-class house plan, is the separate "toilette" or bathroom; the bedroom is not regarded as a room for lavatory operations. M. Gaudon's "Château de Vaux-le-Vicomte" is a French house on a larger scale; it is possible that it is an enlargement or alteration of an older house, but this is not stated. Externally it is a high-roofed château, with pilasters on the walls; but the arrangement of plan is at all events modern and very effective; a square vestibule leads to a great oval hall, with windows towards the garden side; the high roof of this hall makes rather an ugly feature in the elevation, but the room should be a noble one. A "Proposed House," by M. Rutté, shows again an interesting and symmetrically worked plan; the entertaining rooms and living rooms arranged in the centre block, with considerable attention to internal effect, while the lower wings, partially connected with the centre, contain on the one side the owner's business rooms, on the other side the servants' quarters. Among the drawings of executed work, that of a new boys' school at Noisy-le-Sec shows unhappily the usual programme of a Government school building—the brick pilasters and segmental-headed windows and general mill-like appearance. The idea of giving a school a domestic and home-like appearance never seems to have occurred to the French; their schools have the aspect of teaching-mills; and, from all accounts, their architecture perhaps accurately expresses the nature and system of instruction carried on in them.

Drawings of Old Work.

THE drawings merely illustrative of old work are, as before observed, very numerous. The smaller and slighter ones, generally catalogued as "croquis du voyage," are not on the average as good as English sketching of the same type. We have nothing to learn from the French in that way. But there are larger illustrations, of a more elaborate and finished kind, which are quite beyond what is generally to be seen in English exhibitions. Among these is the fine collection of drawings of the old Byzantine churches at Arta (Greece), with their brick cupolas and walls of brick and stone in alternate courses, drawn and coloured with the greatest exactness and verisimilitude. Among other interesting details is the restoration of Vauban's design for the architectural framework of the drawbridge of the Porte de Brisach at Belfort, with copies of Vauban's original drawings; and, by the same exhibitor (M. Damis) the drawing of the curious old fountain at Belfort, a baluster-shaped column and capital with masks of human faces at the base, from which project horizontal spouts delivering water into the fountain basins.

Three Architectural Pictures.

IN the Salon Nationale (New Salon) three pictures connected with architecture may be worth mention. One is M. Rachon's "La Cité de Carcassone," a very large architectural picture of the mediæval city ramparts restored, a work which has been bought by the Government. Another is the portrait by M. Renouard of M. Binet, the eminent architect, who is now carrying out the new building of the Magasins de Printemps in Boulevard Hausmann. M. Binet is represented in a rough working costume, clinging to the rail of a scaffold on a building in progress; a good suggestion, one may say, of the architect as he ought to be, looking personally after the work on his building. The third is a small picture by M. Guillaume, entitled "A l'Architecture," a title calculated to excite one's curiosity, seeing that M. Guillaume is known as a very refined painter of small figure subjects, and has never touched architecture. "A l'Architecture" turned out to be an amorous scene between a young couple who had found the architectural room the only one which afforded the solitude desirable for such an interview. But the architectural gallery of the Old Salon is not so deserted; nor should be. It would be worth while for the Architectural Association to organise a trip for the students of its classes to visit the Salon. They would get some new ideas as to the height to which architectural drawing and architectural illustration can be carried

New Use for Old Door-knockers.

"A NEW use for old door-knockers" is said to be their application to the doors of bedrooms. A dealer in antiques informs a contributor to a provincial newspaper "that builders of the modern houses constructed on the Early Victorian style of architecture, which are brightening the suburbs, are using the knockers especially for the bedroom doors." We are further informed that some of the knockers are silvered over, or the black iron is painted; but brass knockers, especially those of grotesque design, are in great demand, and command good prices. That the practice is not exactly new may be inferred from its having got down to the level of those suburb-brightening modern houses in the Early Victorian style; and one has become only too familiar with internal knockers from their persistence in chambers, flats, colleges, hotels, and other unhomelike buildings; which associations, however, do not strongly recommend them as an ideal adornment for the bedroom doors of the ideal home. But though their value as an adornment may be questioned, their sheer utility is undoubted. A discreet cough outside the chamber door has its well-marked limitations; and if, as not infrequently happens, one *must* knock at the door, it were well to provide some convenient means for the better avoidance of abrasion of knuckles or of paint.

THE EIGHTEENTH CENTURY ARCHITECTURE OF BATH.

By MOWBRAY A. GREEN, F.R.I.B.A

[*The most complete and convincing history of the Architecture of Bath is that written by Mr. Mowbray Green, published some years ago. His lecture to the Architectural Association, of which the following is the second and concluding part, will be found full of interesting facts and information.*]

Many of the ceilings at this time were panelled in plaster, but the decorative low relief enrichments of foliage and other conventionalised natural forms had not yet come into general use. The charm of the house is the staircase, and the finest one in Bath is to be found in the house on the west side of this square. The handrails, newels, balusters, and dado are all of Spanish mahogany; the newels are worked as fluted Corinthian columns, and the baluster caps are partially enriched. There are, as usual, three balusters to each tread, and the stairs themselves are formed of pieces of oak dowelled together so as to form solid steps; these are moulded underneath and enriched on their outer ends, and there is a double strip of mahogany inlaid on the treads. The quarter-space landings are also inlaid. At the bottom of the stairs is a lazy-tongs gate of mahogany, to be used if necessary to prevent dogs from going upstairs.

The west side of the square was originally completed with three detached piles of buildings, the centre one being set back a considerable distance with a large forecourt in front.

The last house of Gay Street, which faces diagonally across Queen's Square, forms part of the Queen's Square scheme of building, and was in later years the residence of the younger Wood. The circular bay window has very fine detail at the first floor, where the coupled Ionic columns in the Venetian window are divided by blocks, and the arch in the centre is similarly treated. The unique plan of the interior shows the principal rooms formed of a rectangle with an apse at each end, and with this the rest of the house has to conform. On the ground floor the angles of the apses are marked by Ionic pilasters, and on the first floor by three-quarter Corinthian columns. The interior is panelled in wood, and the carving is very freely done. The embossed brass finger-plates are of the same date as the house.

The staircase is of oak and Spanish mahogany, and the quarter spaces are inlaid.

Wood's Work Around Bath.

Eagle House, Batheaston, though reputed to have been the work of the elder Wood, was certainly not built by him, and it has been altered at least twice since its erection. In a recess upon the side facing the road the date, 1729, is cut upon a shield under the eagle, and it was about this time that Wood is said to have gone there. Perhaps he added the excellent porch, but even here the moulding round the door is quite unlike his usual work, though a common one in the neighbourhood. At any rate, the columns and entablature have been applied to the wall, and do not form part of its original construction. The younger Wood died here in 1781.

One of Wood's best works in the neighbourhood of Bath is Belcombe Brook, Bradford-on-Avon. It was merely an addition made in 1734 to the older clothworks of Francis Yerbury, and was intended as a residence for the owner. At this time there was a very flourishing cloth trade in Bradford-on-Avon. The buildings on the right are a dovecote and stabling, and the forecourt which lies between them and the house is paved with local Bradford stone set on edge, the centre being in circular courses. Upon the dial of the clock in the gable end of the stables is the date, 1770, and the initials J. Y. (one of the Yerburys). The house contains a hall, a drawing-room 20ft. square, and an octangular study with a coved ceiling and fine enrichments in plasterwork. The grounds of this house were laid out without formality, but a stone balustrade runs diagonally from the two angles of the house to the lawn. The little domed building of stone was erected by a working mason, whom Wood praises for his ability. Close to the river bank is an octagonal structure about the same size, which was used by the owner for mixing his dyes in.

In 1735 Wood made a survey of the city, which was published by J. Leake in the following year. This map shows the connection of the new buildings on the north with the city by way of Trim Bridge and John Street, leading into Wood Street and Queen Square, the latter being also connected with the main London road by means of Quiet Street, which thus joins up Wood Street and Queen Street. Thus far Wood's scheme was intended to be not only complete in itself, but to have proper and definite connections with the older work.

Beyond the West gate another scheme of building was in progress planned by John Strahan, who was the builder of Redland Court in 1730 and Redland Chapel in 1740-43, both in Bristol. It is to be regretted that perhaps through jealousy Strahan comes in for some disparagement from Wood. Strahan's work is chiefly found in Kingsmead Square, Avon Street, Kingsmead Street, and Beaufort Buildings, the best fronts being those on the south side of Kingsmead Square. All this work was going on from 1727-36. Rosewell, or Londonderry House, built for T. Rosewell, whose rebus, a rose and a well, is under the circular pediment with the date 1736, is reputed to be by Strahan, but it is not at all in his manner. Internally it has a wide, handsome staircase, and the rooms were mostly panelled. Not the least interesting of the houses in this neighbourhood is Keene's "Bath Journal" Office, where a newspaper was established in 1742 which flourishes at the present day. Both inside and out this house has suffered scarcely any alteration since the day it was built.

In Avon Street and Beaufort Buildings Strahan adopted a more definitely Classic manner with a Doric entablature, though the houses are quite small two-storey buildings.

Wood's chief work was Prior Park. Ralph Allen, whose country seat this was to be, desired to advertise his stone, and nobly he did it. The scheme, as first designed, placed the house in the centre with a pavilion and groups of offices at intervals on either side, all united by a colonnade. The outbuildings were to have been set at a wide angle with the mansion itself, but in the execution they formed two curved wings. The pavilion on the west gave way in 1844 to a Roman Catholic Chapel (by J. Scoles), and the best part of the stables now remaining is that which is vaulted in stone with small saucer domes. The stables were very large and sumptuous and had a frontage of 170ft., with stabling for twenty-four horses.

The south front of the mansion, which faces up the hill towards Combe Down, is much more simply treated than the other side, which is the principal front. But the work was conceived on a fine scale suitable to the surroundings, and the house measured 147ft. long by 55ft. wide. It was built in 1737. The long façade is relieved by an attached portico of six Ionic columns, and all the openings, ranging to fifteen in number, are kept quite plain.

The north front looking towards the City has dressings round the window openings and a projecting Corinthian portico. The portico has six columns on the front with one full column and one three-quarter column on the return. These are 3ft in diameter and 32ft. high, and the stone is in wonderful preservation, with a beautiful colouring from the growth of lichens upon it. Wood had intended to have flights of steps on each side, but they seem never to have been carried out. The basement of the house is all vaulted and paved in stone.



Photo: E. Dockree.

This is an excellent example of what could be done in the last decade of the eighteenth century. It has the characteristic treatment of Baldwin's work, and was, no doubt, designed by him.

A PORCH IN SUNDERLAND STREET, NEAR PULTENEY STREET, BATH.

("*The Eighteenth Century Architecture of Bath.*")

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The sweeping flights of steps which lead down to the lower ground were the work of Henry E. Goodridge, M.R.I.B.A., for Bishop Baines, and were executed about 1830-36.

I do not think there is much interest in the interior as it at present exists, because there were many alterations after the fire of 1836, but I should mention the plans from Wood's original drawings, which may be compared with those of the house at the present time. The draughtsmanship is very fine, and it seems incredible to us how such drawings could be made with the naked eye. They are finished with a simple monochrone wash, and the ceilings and vaulting are dotted in with fine lines. The balustrades between the columns in the portico were omitted for access to the garden steps. The large hall did not run up through the floor as at present, and at the first storey there was a long gallery leading from Allen's business room to the private pew in the gallery of the chapel.

The sections are also from Wood's original drawings. All the walls were originally finished in stone, including the ornamental parts, though some of these latter were afterwards cut off and the walls of the rooms lined with wood.

At the foot of the slope below the mansion lies the Palladian bridge; it is almost a copy of the one built by Robert Morris at Wilton House in 1736. The architect is not known, since at the time it was built (in 1756) Wood was no longer in Allen's employ. The balusters are of a type scarcely known in Bath. Allen died in 1764, aged seventy-one years, and was buried in Claverton Churchyard.

Up to the year 1714 there was a law entitling the poor of England to travel to Bath and use the baths there. This law then ceased, but as the poor continued to come a scheme was started to find accommodation for them. In 1723 a subscription list was opened, and amongst those who worked hard for the proposed scheme was Richard Nash. Wood was employed to draft plans, and at first a site in the Ambry was proposed for a building to hold sixty beds. This all fell through, however, and it was not till 1737 that definite drawings were made by Wood for a site at the north-east corner of Parsonage Lane. The front extended 99ft. along the borough walls. In the old days, before Union Street was made, the east side faced the stableyard of the Bear Inn, and this was the only thoroughfare between the borough walls and Westgate Street, and was ordinarily used by visitors to and from Queen Square and the baths. The hospital was built to take 108 beds, exclusive of those for the nurses. The building was opened in 1742, and in the following year it was resolved that the inhabitants of Bath should be excluded from admission, but this was rescinded in 1835. Nearly the whole of the cost of management from the commencement to the completion was defrayed gratuitously. Subscriptions amounted to over £8,000, in addition to there being considerable gifts in kind. Ralph Allen gave all the wrought freestone, paving stones, wall stones, and lime, in addition to large sums of money, and Wood gave his plans and supervision free. In 1795 John Palmer added two wards over the north front.

When the thoroughfare on the south side of Queen Square, which had been planned by Wood as 93ft. wide, was reduced to its present width, and the idea of making it into a Grand Parade was abandoned, Wood found a site just outside the City boundary on the south-east that would answer his purpose. He therefore, in 1740, commenced building. Near here on the east of Terrace Walk were Harrison's Rooms, and on the west Lindsay's Assembly Rooms. The Grand Parade is now the North Parade, and the Royal Forum became the South Parade. This thoroughfare is now 70ft. wide. The land originally lay at a low level and was the site of the Abbey Orchard, and so, leaving the triangular piece of ground between Harrison's walks and the river at the old level, he raised the houses to approximately the same height as those on the Terrace Walk, and planned out the piece of waste ground into public gardens called St. James's Triangle, and approached from the Parade by a stone staircase. The retaining wall of the Grand Parade was finished at the top with a stone balustrade, as shown in the aquatint by Malton and Gandon in 1779. The length of the walk was over 500ft. by 42ft. broad. The blocks of houses, as usual with Wood, were placed north and south, and on the extreme east the basement of the houses had an exit on to a lower walk and the riverside. The first stone of this building scheme



ROYAL CRESCENT, BATH. *Photochrom.*

was laid on March 10, 1740, and the whole of the works were completed in about eight years' time. The central block of twenty-seven houses, which formed a square of 210ft. each way, were originally to have been treated with columns and pilasters, but this was afterwards abandoned. An engraving from an old fan shows the treatment of the South Parade as it was completed, and in this may also be seen the balustrading round the areas of the houses. This part of Bath soon became fashionable, and amongst others Edmund Burke, Oliver Goldsmith, William Wilberforce, and Miss Linley resided or stayed there. There are two houses on the Terrace Walk which still retain much of their old character, both of which seem to have been designed for shops or the like purpose. No. 1, Terrace Walk, has three large openings separated by Ionic columns with ornamental spandril pieces, all executed in stone. Almost adjoining this is an Ionic doorway with the original glazing, and this is believed to have been one of the coffee-houses where the upper classes were wont to assemble to read the papers and to discuss the news.

Close to these buildings is a fine court of houses known as North Parade Buildings. Although they adjoin the North Parade they are probably not Wood's work. Nearly all the doorways have Corinthian porticoes, and the houses are well finished internally. The top house on the right was once the residence of John Palmer, Controller of the General Post Office and the introducer of the mailcoach system. But these days are past, and the buildings are now for the most part let out as tenement houses. The last house on the west side has a wide hall vaulted in plaster, a very ample staircase, and many good rooms.

At Bathford in 1748 a house was built by Wood for a Mr. Southwell Pigott, and was called Titan Barrow Loggia. The north front, which stands on the top of a considerable slope, has been treated without a sufficient basement storey, so that it loses considerably in dignity. An interesting comparison may be made between this and the house at Belcombe Brook, the façade of which is treated with flat Ionic pilasters, and which is quite satisfactory in its proportions. There can be no doubt that when columns or three-quarter columns are used, especially if it be with the Corinthian order, they should stand on a storey or sub-base of some height. The front of Titan Barrow was very ornate, and the mouldings were enriched. Unfortunately, the ground-floor windows have been cut down. The elevation and plan are copied from Wood's drawings, and exhibit, together with the contract, the conditions under which the employer, architect, and contractor worked in those days. As usual, there is no scale on the elevation or on the plan, but the dimensions are figured and the specification is written within the walls of each room, the contract containing what else was necessary as to supply of plant, etc., to insure the carrying out of the work. The ground-floor plan has the signature of the employer, Southwell Pigott, together with those of John Ford, the mason, George Hatherell, the carpenter, and Robert Parsons, the carver, the contract alone mentioning the name of John Wood as the architect. The contract states that Ford contracted to dig the foundations, and to do all the mason's, plumber's, tiler's, plasterer's, and painter's work for £396 12s. 2d., with an additional £16 for making two cellars; that Hatherell estimated all the carpenter's, joiner's, glazier's, smith's, and ironmonger's work at £283 18s. 6d.; and Parsons, the carving of the Corinthian capitals, the pineapple ornaments, with the heads and festoons in the west front, the enriching of the mouldings in the same front, in the architrave chimneys, in the Corinthian entablature round the drawing-room and staircase, and in the cornice round the hall, the cutting the trusses for the front-door case, and all the other carver's work necessary, at £55 19s. 4d.; making a total of £752 10s., with a penalty of £100 apiece for each of the three contractors if the work were not finished to the time. A curious method is shown in the payments, where the odd sums are included in the first payment, leaving clear balances to be paid at the end, showing that extras were not considered. The work had to be completed in just over nine months. The cost of such a building to-day would be not less than £2,500.



Photochrom.

THE NORTH PARADE, AS SEEN FROM THE EMPIRE HOTEL.



GREAT PULTENEY STREET, BATH.



Photochrom.

SOUTH PARADE, BATH.

(" *The Eighteenth Century Architecture of Bath.*")

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The plan of Bath, dated 1750-51, shows the condition of the city after Wood and others had been at work upon it, the greater part of the newer schemes having been executed within twenty-five years.

In 1742 Wood had been engaged by the Corporation to prepare plans for a new King Edward Grammar School, which was then being held in a disused school of St. Mary, *intra muros*, in High Street. In the first edition of his book he gives an account of the building, and the money to be spent, but this description is not to be found in the succeeding editions, and the present school is not his work. He says that the site which was first chosen was in the Town Acre. It would have covered about two-thirds of the present site of Edgar Buildings. The present school is on the site of the Black Swan in Broad Street, and was begun ten years later, in 1752. It too has undergone some changes since it was first built.

Gay Street and the Circus were evidently part of the great scheme of the elder Wood, and the whole of the laying-out, from Queen Square to the Crescent, expresses so much the thought of one mind that it seems not unlikely that his son carried it out in conformity with the lines laid down by his father. Gay Street itself rises quickly, the Circus is level, with a slight rise in Brock Street, especially just at the end on entering the Crescent, and the Crescent itself is also level. Gay Street was in building between 1750 and 1760, and here the houses have much smaller frontages. In 1753 Wood had engaged to build a house in the Circus, now No. 7, for the Right Hon. William Pitt, and in the following year, on February 18, 1754, Wood himself laid the first stone of the new buildings, then known as the King's Circus. Just over three months afterwards, however, he died, on May 23, 1754. He had been a busy man, commercially successful, and not forgetful of his interests, but leaving behind such a record of buildings as few could boast of.

Twenty-seven years before he had found Bath emerging from the squalor of a mediæval city, and far from being what it should have been as an important inland watering-place, and during this period he had seen erected some of the most palatial groups of dwelling-houses which any city can boast of. The planning of this part of Bath marks the genius of a man who laid out his schemes with a sense of nobleness and fine effect, adjusting every part to the whole, and the whole to the surroundings—surroundings which had to be considered both in relation to their present aspect and their future development. Masterly and bold in design, he grouped up the façades of his buildings in such a manner as to produce harmony and a feeling of proportion, and he added to the interior that ingenuity of planning and decorative design which has made them so full of interest to ourselves. Wood was a man who took a very capable insight into the turn events might be likely to take, and he tried to persuade others to see with him, but did not succeed far in this respect. Thwarted time after time, he pushed ahead, and insisted on the people of his day accepting what they certainly did not always understand. He was, as was customary, frequently his own contractor, but though the building was speculative it was, at this particular time, at any rate, not shoddy. The method of procedure was this. The builder, who leased the plot on a perpetual fee farm, or ground rent, secured a tenant for the house which he proposed to build, and as the tenants were wealthy or responsible people, and the lease was for a long term of years, it was not difficult for the builder to get his banker to finance him, and in this way most of the houses were built. For much of the good interior detail we are indebted not only to the talent of Wood but to those builders who worked under him, and who seemed to know no detail that was not correct. The Circus was divided into three instead of the more usual four groups, a point which does not seem to have been caused by the exigencies of the levels or other circumstances, as the ground beyond seems to have been nothing but fields. The particular value in this arrangement is evident to anyone who will compare the Circus in Bath with Oxford Circus in London, for from whatever point you enter it an unbroken line of buildings faces you and insures the continuity of the circular form which is lost in the case of the quadrants. The best-planned group of houses is that first built between Gay Street and Brock Street, where the adjustment to the radiating lines is well contrived, with a further diversity of planning to suit the tastes of the prospective tenants. Wood must have fully appreciated that the range of vision in the Circus would be small, and he has therefore with justice elaborated the work in it. The three orders, Doric, Ionic, and Corinthian, are all treated with coupled columns, and the circular lines are admirably sustained by the three unbroken cornices. The height of the façade is about 42ft., and the parapet was originally plain, but elliptical openings and some balusters have been added here and there. The diameter of the Circus from house to house is 318ft., or slightly larger than Queen Square. The buildings were completed in fifteen years.

At the end of Brock Street stands the stately Crescent, with its ample and beautiful surroundings of lawn and park. The work was begun in 1767, and finished in about eight years' time. It was carried out by the younger Wood. The Crescent is elliptical on plan, and is 538ft. across its major axis. The central and two end houses are emphasised by the coupling of the Ionic columns. A plain basement storey supports a large Ionic order 2ft. 6in. in diameter and 22ft. 6in. high, running through two storeys over, with an entablature 5ft. high, the total height from pavement to parapet being 47ft., or 5ft. higher than the Circus. Over this is an open balustrade, and originally the roof was covered with stone tiles, as were all the other houses in Bath. In the elevation I have shown the window openings with the original bars, and it is to be noticed that neither here nor in the Circus are there any mouldings round the openings. The face of the masonry between the columns is worked square, and not to the sweep of the curve, as might be supposed; the effect of the flat face is, however, scarcely noticeable, and an enormous saving of labour is effected. The same principle is applied to the Circus, where it cannot be detected at all.

In the interior the increased height of the rooms produces a much colder and less comfortable appearance, and the window-heads are generally 2ft. below the ceilings, which causes the upper part of the room to be dark. About twenty-seven years before this plasterwork had begun to take the place of wood panelling upon the walls, the panels being generally divided by a cable moulding, and the oak staircases were fast disappearing, giving place to those of iron and stone. The ornament of the internal finishings and decorations became most elaborate, though the cornices occasionally degenerated into meaningless compositions. The ceilings are the most beautiful features, and vary from strictly geometrical patterns to a quite naturalesque treatment.

The fireplaces are often entirely of marble, statuary and Sienna being most frequently used.

About the year 1762 Milsom Street was begun, and soon became the principal shopping centre of the city, and noted for many miles round. The ground floor, especially on the west side, had at first segmental bow windows. The central windows of the first floor have pedimented or other ornamental heads. The most important group of houses, and probably that first built, is on the east side, and was called Somersetshire Buildings. In this group of five houses the centre and two end ones are projected forward from the main line of street sufficiently to take a three-quarter column of the Corinthian order, and the middle house has, in addition, a segmental projection. In this house there is a magnificent ceiling, one of the finest in Bath.

Behind the houses just below this group stood the Octagon Chapel, built by T. Lightholder, or Lightoler, as he is styled on the engraved plans, which are to be seen in the British Museum. It was opened in 1767. The interior is planned as an octagon of about 53ft. in diameter, with four



FROM THE DRAWING BY HAROLD FALKNER.

semicircular recesses, the whole being contained within a square. The gallery was supported on eight stone Ionic columns, some 10ft. high, with finely carved caps, and the cove above the octagon springs at about 29ft. from the floor, with a smaller cove, a drum and a semicircular roof on the top, but the roof was not executed exactly as shown in the original section. The plaster decoration is in the Adams manner. In Old Bond Street, near here, there is another good ceiling.

The younger Wood's chief work was the Assembly Rooms, built in a dignified and simple style, and with the chimneys more carefully designed than in the earlier buildings of the century. They were begun on May 4, 1769, and finished in October, 1771, being built with a capital of seventy shares of the value of £300 apiece on the Tontine principle, the building thus costing over £20,000, which was a large sum for that day. The plan is an admirable one, with an outer portico, an inner hall flanked by retiring-rooms on either side, leading into an octagonal vestibule beyond, from which the large ball-room is entered on one side, the tea-room on the other, and the octagon-room on the third, all these rooms being *en suite*.

The ballroom, 104ft. long by 41ft. wide and 42ft. high, is divided into three parts. The substructure and the order over are hollow behind to allow of the raising and lowering of vertical sliding shutters for darkening the room in the daytime. The great cove is 11ft. 6in. high, and from each of the five flat panels in the ceiling are hung magnificent cut-glass chandeliers. The three divisions of this room are too nearly alike to be satisfactory, and the order is dwarfed by the immense cove at the top.

The tea, or concert, room is 66ft. long, and of the same width and height as the ballroom, with an orchestral gallery at one end, running the whole width of the room, where there is a fine ironwork grille of the period.

Alfred Street was built by Wood about the year 1768, and there is an interesting doorway here known as King Alfred's Doorway, from the bust of the monarch over, who is supposed to have surrounded the city of Bath with walls and gates. The ironwork shows the stand for the oil-lamp at the top, and the extinguishers on either side, in which the link boys might "do out" their torches. The delicate treatment of the stone carving round the doorway shows quite a new departure from what we have seen up to the present.

Pulteney Bridge seems to have been the only work of the famous Robert Adam in Bath. It was erected about 1770 for the purpose of giving access from the city to the Bathwick Estate, which belonged to William Pulteney, and for the laying out of which Robert Adam got out many designs which are now in the Soane Museum. The present Pulteney Street is upon the very line laid down by him. It is probable that political reasons influenced Pulteney in favour of local talent, for he was at this time standing as a member for Bath. The drawings [shown] are from Robert Adam's collection in the Soane Museum. Three segmental arches span the river, and are turned in single rings of stone. The upper part is occupied by a range of shops. The porticoes at the ends, long since taken down, must have formed a fine approach to the bridge. Fortunately, one of Malton's drawings remains to show us what it was like. There have been many alterations, both on the river and street side of this bridge.

About 1765 the Corporation had determined to build a new town hall and markets in High Street in place of Inigo Jones's hall, which stood in the middle of the Market Place, and amongst those who were asked to prepare plans were Lightoler, John Wood, Jones, the City Surveyor, and Thomas Attwood. That Attwood had considerable capacity is shown by a building which he erected in 1772 as a prison in Grove Street, and in which he follows an earlier manner. The building must be judged of as a three-storey building only, for it was intended that a road should lead up to the central opening in the rusticated portion, which was designed not as a window opening but as the main entrance to the building.

Attwood was by trade a plumber, and amongst his other works he carried out the Paragon, Oxford Row, and the City Waterworks. There was considerable discussion about the plans for the Guildhall, but on February 11, 1768, the foundation-stone of the new building, which had been designed by him, was laid by William Chapman, Mayor. The cost was to be £6,500. After this work went on slowly for six or seven years, because some of the tenants on the site were unwilling to give up their leases. In addition to this a question was raised as to the advisability of proceeding with the plans in hand. All this was, however, ended by the unhappy death of Attwood, who was crushed by falling timbers while some of the old houses on the site were being pulled down. Shortly afterwards Thomas Baldwin, who appears to have been a clerk in Attwood's office, offered a new plan. This was accepted, and the building was completed about 1778. Baldwin's work is strongly influenced by that of Robert Adam, but its detail is debased, and it lacks the strength and vigour of that of the two Woods. Still, as a whole it is a distinctly fine building, on almost entirely new lines, and with excellent proportions. The basement is rusticated, with the central portion vermiculated as well, and the order over this part is a blending of the Ionic and Composite styles. A good feature is the recessing of the two outer windows. The figure of Justice at the top is of lead. The width of the façade is 85ft.

Although the mouldings are attenuated and poor, they lend themselves satisfactorily to the internal treatment. Here there is much fine plasterwork, well preserved, and there is a very characteristic iron baluster in the staircase, which is of oak.

The banqueting-hall is treated with a low sub-plinth, 3ft. 5in. high, and the engaged columns, which are of the Corinthian order and exhibit a Greek feeling in the capitals, are set on pedestals which stand forward from the rest of the wall. There are quarter-columns in the four angles, and all the columns are widely spaced, with arched recesses and large plaster discs set alternately in the spaces over. Above is a cove which is ornamented in parts by a group of sunk lines, and the ornamentation in the large circular panels on the ceiling is very elaborate. The proportions of the wall treatment are exceptionally good.

In 1775 Wood rebuilt the Hot Bath at the end of Bath Street, and two years later published a small monograph on it. In 1779 he built Hardenhuish Church, near Chippenham. It is square on plan with an apse at the east end and a steeple at the west end. Neither the elder nor the younger Wood was, however, much employed in ecclesiastical work.

Reverting to the buildings in Bathwick, Argyle Street was in building in 1789, and here there still remain two good shop fronts executed in woodwork, and in one in a fine wooden fireplace, together with an original basket grate. Of the same character is one in Nelson Place East.

Laura Place was begun in 1788, and Pulteney Street about the same time. The former was by Baldwin, and on the latter both he and Eveleigh were engaged. The street is imposing in general effect, but poor in detail. It is 100ft. wide from house to house, and 1,100ft. long, and is terminated at the end by the Sydney Hotel, which was built by Harcourt Masters in 1796, when the Sydney Gardens were also laid out by him.

Among other works by Eveleigh were Grosvenor Hotel and Bailbrook House. The former was built in 1790 and had immense gardens attached. It cost upwards of £10,000, but lay unfinished for many years.

The history of the Pump Room is too long to be given in detail. In 1785 Baldwin erected the northern colonnade at a cost of 130 guineas, and in May, 1788, the foundation-stone of the new private, or King's, baths was laid by the Mayor, and the building begun by Baldwin. The original drawing, which shows the façade facing Stall Street, is done in line, with the masonry tinted in light stone colour and the shadows washed in with blue black. The scale is an arbitrary one, and the drawing is undated, but the name of T. Baldwin appears on the back.

It is not known who designed the west end of the Pump Room. William Reveley, a pupil of Sir William Chambers, gave drawings to the Corporation between 1791 and 1793, and the sum of £27 9s. 6d. was paid to him for these, but he probably did nothing further. It is more than likely that the general scheme is Baldwin's, but that after his dispute with the Corporation John Palmer finished it; and so says a guide of 1823. Palmer almost certainly added the portico on the north side.

The interior of the Pump Room has a Corinthian order with segmental recesses at each end and elliptical lights at the top of the room between the columns. This room would have shown a better proportion had the columns been less heavy and set upon a sub-plinth.

Under the great scheme for rebuilding this portion of the city by the Act of 1789, Bath Street, Cheap Street, and Union Street were all built by Baldwin. Of these Bath Street is the most interesting piece of work, with its Ionic colonnades forming a covered walk from one end of the street to the other.

The Cross Bath at the west end is also by him.

Among some of the latest buildings of the century were Camden Crescent, built on an elevated piece of ground overlooking the London Road, and a great deal of work on the northern slopes above the Royal Crescent, where John Palmer built St. James's Square, Lansdown Crescent, and All Saints' Chapel. He also designed the façade of Kensington Chapel on the London Road. Some years earlier he had, together with his partner Jelly, rebuilt St. James's Church.

The styles of the eighteenth century may be divided into three groups—that of the first twenty-five years, when the houses had gabled roofs and façades, with large sash windows, surrounded by bolection mouldings, and when the interiors were panelled with wood and the rooms small and



FROM THE DRAWING BY HAROLD FALKNER.

comfortable; the next fifty years, when the work was modelled on the Classic Palladian manner, with a rusticated basement, a two-storeyed order, a crowning cornice and parapet, and a mansard or curb roof over, while the interior became spacious and dignified, and plasterwork was brought into general use; and the last twenty-five years, when the free manner of Robert Adam came into vogue, and the strong methods of the earlier times gave way to detailed and abundant decoration.

DISCUSSION.

Mr. Mervyn E. Macartney proposed a vote of thanks, and expressed his indebtedness to Mr. Green for his lecture, which would have been rendered even more interesting, had a contour map of Bath been shown giving the original lay-out of the city, and showing how Wood had taken advantage of the disposition of the town. Wood had obviously planned the work according to the contour of the ground. It would be interesting to know, continued Mr. Macartney, whether Wood had worked out the scheme alone, or by the aid of, and in conjunction with the Corporation. (Mr. Green: "The work was quite speculative, I think.") Continuing, Mr. Macartney asked whether the other portion by the Abbey was also a private scheme, and Mr. Green replied in the affirmative. Mr. Macartney then asked, Did Mr. Green know anything about the old buildings lying behind the Cross Bath? He thought they were older than the examples that had been shown upon the screen.

Mr. Green replied that he would have liked to show the old houses that lay behind St. John's Hospital. One house, in particular, which was located in Broad Street, just beyond St. John's Hospital to the west, was of unusual interest, bearing the date 1709, and appearing exactly as originally built. He did not know the name of the builder. It was difficult to say how the houses situated on the rapidly rising ground in Gay Street should be treated. Wood's solution was by no means happy. Wood had intended to rebuild the whole city, but the Corporation had prevented the realisation of his plans. He had prepared a scheme for laying out the ground to the south-east of the city, but to no effect. He had met with opposition even in the planning of Queen's Square, but being a determined man he had carried through his scheme, and, in addition, had made some caustic remarks about his critics in his book.

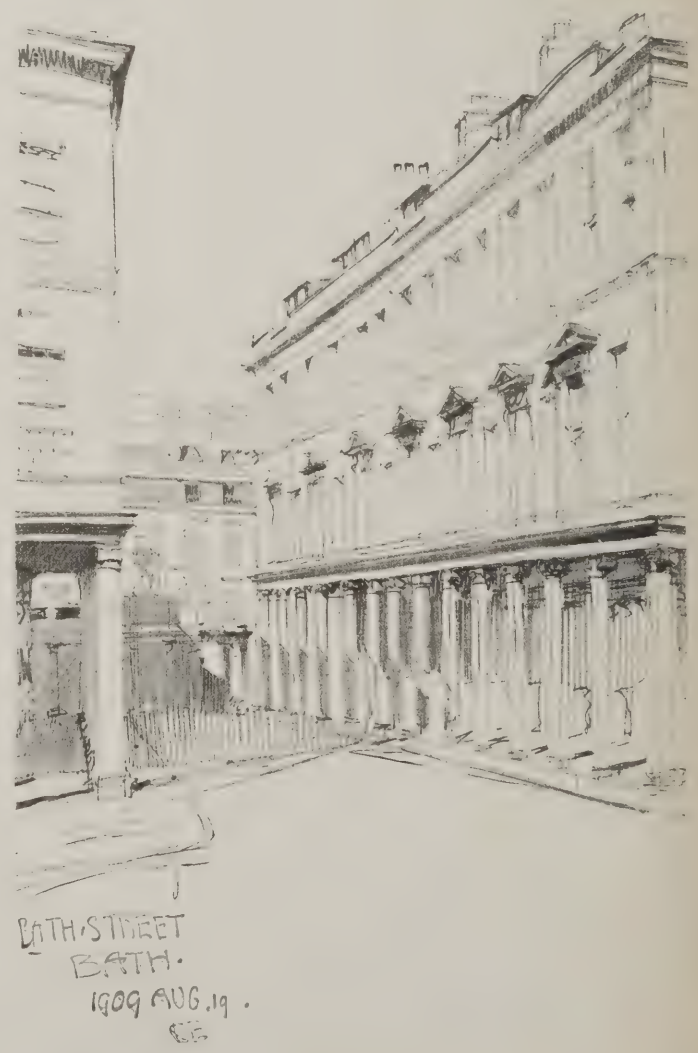
Mr. C. H. B. Quennell seconded the vote of thanks, and observed that no mention had been made of the delightful work of Brydon contained in Bath. He had been with Brydon when the additions to the Pump Room were being made, and the new work harmonised very well with that of Wood. It was well to bear in mind the fact that Bath contained the first houses to be joined together in blocks, and was also notable by its introduction of the method of planning in terraces and crescents. Bath, to him, always recalled the "School for Scandal" set of people. The houses were as unsavoury to him as they possibly could be, and he wondered how people could live in them. Domestics were not considered at all. As a model for the architectural student, Bath was to be seriously and studiously avoided. Wood designed houses for an unquestionably immoral people; and he hoped A.A. students would not follow the example set by Wood, but would design in reinforced concrete.

Mr. H. A. Hall agreed with Mr. Quennell. The outward appearance of the streets was extraordinarily dull, and seemed quite incomplete without Sedan chairs and brilliant costumes. In Bath he felt that life must be very gloomy. He had often been down Grand Parade, and had never seen a single person, unless he had arranged to meet a man there. One felt that something had gone out of life at Bath. As a retrospect it was all very charming; but as a reality it was impossible of appreciation.

The President, Mr. Henry Tanner, said there seemed to be a dull monotony about the street architecture of Bath. He wondered why the Circus was divided into three parts. Was in that Wood found the "jumpy" effect of the house frontages by no means satisfactory when he arrived at the top of Gay Street, and, in order to avoid the continued reproduction of the same features, turned off at a sharp angle? Bath was almost Continental in appearance, and recalled some of the older parts of Paris.

Mr. Mowbray A. Green, in reply, observed that Wood was obliged to design in the characteristic style by the stately manners of the period. They were the days for entertainment, when large rooms were required—not for the purpose of sleeping, for men, for the most part, slept under the table—but for the accommodation of guests. The ingenuity of the man was clearly evidenced by his ability to scheme interiors in accord with the demands of the period. The type of house was necessitated by the manner of the life. He failed to see the dull monotony to which previous speakers had referred. The upper side of Queen's Square was a wonderful composition, and expressed on the outside the internal arrangements. What had given a feeling of dreariness to the rooms was the exigencies of Classic architecture, the window-heads coming down about two feet under the ceiling of the room, and causing a dark patch. He thought they should regard Wood as a man who represented in the houses the manners of the period.

Before the reading of Mr. Green's paper, Mr. F. Dare Clapham proposed a vote of thanks to Mr. Henry Tanner and the retiring members of the Council. Mr. Tanner briefly replied.



FROM THE DRAWING BY HAROLD FALKNER.

TOWN PLANNING NOTES.

The Bradford Garden City Principle.

In the Bradford Corporation Omnibus Bill now before the Select Committee of the House of Commons, the clauses dealing with the laying out of streets for buildings on the garden city principle came in for some criticism. Mr. Jeeves (with Mr. Honoratus Lloyd, K.C.), who appeared for the promoters, explained that at present they in Bradford were required to have streets 36ft. wide, and the Corporation wanted to be able to allow streets in certain cases to be laid out 6ft. in width, so as to make the building of houses in this particular form as cheap as possible. One of the conditions was that there should be a considerable amount of space to each building abutting on the 6-ft. road.

Evidence in support of the proposal was given by Mr. Dawson, the City Surveyor. It would not be possible, he said, to allow estates to be laid out on the garden city principle, unless these additional powers were granted. Producing plans, Mr. Dawson proceeded to explain in detail the actual proposals of the Corporation. The first scheme, said Mr. Dawson, was to lay out terrace houses not more than 72ft. in length, on the garden city plan, with a narrow front street six feet wide, and a back road or street eight yards wide. The object of this was to enable builders to utilise land for gardens that ordinarily would be required for the formation of the street, and it would also save the cost of the formation and paving of a wider front street. Provision was to be made for the laying out of two streets fourteen yards wide at the ends of the short front street. The second proposal related to the intended construction of grouped cottages or houses erected in blocks of four. Houses fronting the street would be set back five yards from the street line, and an open space would be provided at the side of the houses, and the space behind the rear houses would be used as gardens, with the necessary footpaths leading to each house from the front street.

After the Committee had deliberated for some time in private, the Chairman referred to the report by the Local Government Board and criticism by Mr. Boyce of the Local Government Board, and said they thought that criticism held good. These were practically groups of four back-to-back houses, and consequently the scheme infringed the Housing and Town Planning Act.

Mr. Jeeves: But you have two doors, back and front. Certainly the rear entrance is at one side, but with an ordinary back-to-back house that could not happen.

The Chairman: The whole point is that there is no through ventilation.

Mr. Jeeves: I can scarcely agree in that view.

The Chairman: Well, it is a very circular ventilation.

Mr. Jeeves: But you are able to get a through current.

The Chairman: The Committee have considered the matter very carefully. We are very sorry to upset these plans, but we feel we cannot let the clauses go through in their present form.

The Rosyth Garden City.

In connection with their town-planning scheme for the district at Rosyth the Local Government Board have, it is understood, communicated with the Glasgow syndicate who recently acquired for building purposes a piece of land at the hamlet of Pattiesmuir from Provost Husband, Dunfermline, with a view to ascertaining how they intend to lay out the ground.

A New Garden City in Essex.

The building of a new station on the G.E.R. between Romford and Harold Wood has been promptly followed by the announcement that the Gidea Hall Estate, Romford, will shortly become the site of a new garden city. Gidea Hall stands a little way back from the high road between London and Brentwood, near Romford. It was originally built by Sir Thos. Cooke, in 1467, and the rear portion was added 100 years later. In the eighteenth century the old house was demolished, and the present structure was built by Sir John Eyles. It is a fine mansion, but probably derives its principal picturesqueness from the splendid park land by which it is surrounded. These six hundred acres or so are to be utilised as the site for a garden city of some 3,600 houses of attractive style, each standing separate and detached. The mansion, which is not so old as mansions go, will be left standing, and may in time, following the example proposed in connection with Valentines at Ilford, become a club, museum, and social centre for the new community. The prospect is an attractive one for progress of the best kind for the Romford district.

By-law Reform.

At the Worcester Provincial sessional meeting of the Royal Sanitary Institute, Mr. William Ransom, lecturing on "Building By-laws Reform," said that the development of building estates was, as a rule, hampered by the cost of new streets, and the landowner naturally endeavoured to recoup himself by splitting his land into as many marketable lots as possible. Mr. J. S. Nettlefold, in his book on "Practical Housing," explained how it was possible to comply with the by-laws and yet build fifty-six houses to the acre. Streets were, of course, necessary for the community at large, as well as for the estate owners, and where a town-planning scheme had been adopted and the landowners worked in conformity thereto, it would seem reasonable that the community should share in the cost of making the necessary new streets. This would then justify more stringent regulations limiting the number of houses to an acre. The building by-laws could be so regulated as to safeguard the community against jerry-building, while allowing dwellings to be erected more economically upon garden city lines.

The Port Sunlight Competition.

Mr. W. H. Lever, M.P., has paid £100 to Mr. E. Prestwich, a third-year student of the School of Architecture, for the right to use his scheme for laying out the central portion of the village round the church at Port Sunlight. Mr. Prestwich's design was placed first in the recent competition held in the school for the prizes Mr. Lever offered for this subject. Mr. Prestwich, therefore, in addition to his prize of £20, gets a further £100, and has the pleasure of seeing his work actually carried out. Mr. Prestwich is the son of Mr. J. C. Prestwich, architect, of Leigh, Lancashire.

Greater London Town Planning.

Representatives of local bodies in Greater London and distinguished architects and surveyors attended a conference held at Caxton Hall, Westminster, last Friday, to consider town planning in Greater London. In urging the need for co-operation between the local authorities concerned and the landowners, the chairman, Alderman Thompson, of Richmond, suggested the linking up of the great parks and open spaces by a system of park ways, like those of Vienna, and also the formation of a ring of open spaces round London to protect the outer areas from the expansion of bricks and mortar without intervening spaces. Professor S. D. Adshead, of Liverpool University Chair of Civic Design, said that the first things to be tackled were the "disease spots," which were being treated on wrong lines. Mr. Percy Harris, L.C.C., spoke in favour of co-operation with the authorities outside the county of London. In the county itself there was not much scope for town planning. Mr. H R. Aldridge, secretary of the conference, said that there were ninety local authorities within fifteen miles of Charing Cross which possessed powers under the Act. It was imperative that all should appoint committees and try to understand the Act and the regulations. It would take a town-planning committee six months to understand the powers. Resolutions were passed urging all the authorities affected to appoint committees, and suggesting a later conference to consider joint action in regard to features of town planning which affect the development and amenities of Greater London.

NOTES AND NEWS.

The New Government Buildings.

In the House of Commons Mr. Lewis Harcourt, in reply to Mr. Vincent Kennedy, stated that the actual cost to date of the new Government buildings for the Education Department and the Local Government Board in Whitehall is as follows:—Purchase of site £556,015, redemption of land tax £2,221, erection of buildings and works connected therewith £656,790—total £1,215,027. The above figures do not include any further sums which may be due to the contractors in respect of the balance due to the builders on their contract. No further expenditure is contemplated. A claim of £106,112 has been put forward by the contractors, and is now under consideration.

The Late John Quincey Adams Ward.

By the death of Mr. Ward, of New York, the United States loses one of her foremost sculptors. Born in 1830, he studied under H. K. Browne, and afterwards visited the Indian country, ultimately settling in New York. He was elected a member of the National Academy of Design in 1863, and was President of the National Sculpture Society from its incorporation in 1896. Among his principal works are "The Indian Hunter," "Shakespeare," and "The Pilgrim," all in Central Park, New York. He also executed the statue of Washington in Wall Street, that of Henry Ward Beecher in the City Hall, Brooklyn, and the crowning group of "Victory" on the Naval Arch for the Dewey reception in New York. He likewise produced statues of Generals Sheridan and Hancock.

The Reconstruction of the Erechtheion.

Within the last few years a partial reconstruction of the Erechtheion, on the Acropolis at Athens, has been in progress. An elaborate study of the stones strewn around the building, a sorting-out of them, and the replacement of them, one by one, in the walls of the fabric, has produced an astonishing result, as may be seen from the unique series of photographs reproduced in the May issue of "The Architectural Review." Mr. Lionel B. Budden, B.A., who contributes the valuable article on this subject, says that the investigations of Professor Dörpfeld, Dr. T. W. Heermance late Director of the American School at Athens), and Mr. G. P. Stevens (former Fellow in Architecture of the School) have rendered necessary a considerable readjustment of previous conceptions with regard to the original form and character of the Erechtheion.

The technical direction of the reconstruction has been in the hands of M. Balanos, the architect and engineer attached to the Ministry of Education. The north portico has been restored, the west wall built up, and the celebrated caryatid porch on the south front renovated. Photographs are given in the "Review" showing the condition of the several parts before and after the reconstruction. Among these it is to be noted that the original cornice and architrave blocks of the south porch have been restored, as well as fragments of the podium, while, of the caryatid figures, the one next the entrance is chiefly a restoration, in marble, made in 1846, when the portico was in danger of falling, and another is a terra-cotta copy intended to replace the one removed by Lord Elgin in 1804. Mr. Budden's article is a valuable contribution to an important subject, and the concluding portion of it, which is to be published in the June issue of the "Review," will be awaited with interest.

Other features of the May issue are some notes on the gates, gate-piers, bridges, and arcades of the Cambridge colleges, abundantly illustrated; a continuation of the "Historical Town Houses," the subject this month being No. 15, St. James's Square—one of James Stuart's houses, dating from the latter part of the eighteenth century; Old English and French furniture, fully illustrated; the "Exemplar"—devoted to a sixteenth-century chimneypiece and a fragment of ironwork probably taken from one of Wren's City churches; "Current Architecture," which includes some good illustrations of Mr. Alexander N. Paterson's National Bank of Scotland, St. Enoch Square, Glasgow; and, in the Town Planning and Housing Supplement, an authoritative article on the plan of Edinburgh, which shows what an excellent scheme was left to the city by the architect, James Craig, and how haphazard has been the development in latter days. "To those who would belittle the important position which the architect should take in the consideration of town-planning problems it may be sufficient answer that the only examples of planning in Britain regarding which we can feel proper pride or satisfaction are those which have been controlled under architectural initiative and advice."

Business Representation in the Lords.

Lord Wemyss's resolution that it would be for the public good that important trading and other representative societies should each name three members of the existing peerage in the current and each succeeding Parliament to speak and act on behalf of such societies on all questions in which they are interested, met with small sympathy when it came up before that House. Among the bodies approving were the Royal Institute of British Architects, Royal Academy of Arts, Society of Authors, Building Trades Federation of the United Kingdom, Society of Engineers, Junior Institute of Engineers, Gas Companies Protection Association, Imperial Merchant Service Guild, Land Agents' Society, London Chamber of Commerce, Machinery Users' Association, Manchester Oddfellows' Friendly Society, Royal College of Physicians, Railway Companies' Association, Royal Sanitary Association, Chamber of Shipping of the United Kingdom, the Shipping Federation, the Surveyors' Institute, Society of British Gas Industries, Society of British Sculptors, Employers' Parliamentary Council (representing thirty central associations connected with the chief industries of the United Kingdom).

In the course of the discussion, Viscount Morley ridiculed the suggestion on the ground that Lord Wemyss's list included only thirty out of probably two to three hundred bodies who could claim the right of nomination, and that the peers would not be independent, and would not speak their own minds. Lord Lansdowne, who followed, thought the idea an admirable one in principle, on the ground, defined by Lord Morley, that special interests should have special representation. He discerned very considerable difficulties, however, in giving legislative effect to the suggestion, and hoped the noble earl would be satisfied with the discussion that had ensued, and not ask them to commit themselves indefinitely to the proposal made. The matter then terminated.

The Effect of the Land Taxes.

The probable effect of the land taxes is the subject of an article in a recent issue of the "Pall Mall Gazette," in which the writer expresses the opinion that the ultimate effect will be heavy appreciation in rent. He argues that though the increment duty and the undeveloped land duty may be payable by the owner, it is inevitable that their burden will eventually be included in the price at which the land is sold. "What," he asks, "will be the effect of this? It will add an additional burden to the poor and lower-middle classes, for, as the price of land advances, ground rents will increase, and rack rents correspondingly be raised. A tenant formerly occupying an eight-roomed house will consequently find himself compelled to seek a six-roomed house, and dwellers in tenements who have been able to afford three rooms will have to content themselves with two. Unless the State commits itself to the institution of compulsory measures, either confiscating property entirely or confiscating it in part by forcing owners to sell at stated prices, the more land is taxed the more it will cost, the higher rents will become, and the more difficult will life be found for those classes which the Budget pretends to serve. . . . A high tax upon spirit would render that article the luxury of the few, and a high tax upon land would place the purchase of it beyond the

powers of the many; for, in the one case as in the other, the tax would go to swell the price. It is lamentable, but none the less a fact, that now the Budget is passed into law we are face to face with an increase in price of the one item in our cost of living that has remained low, and that is house-rent. The cost of food has of late years advanced by leaps and bounds, but rents have not followed the general tendency. Unless the Land Taxes have a far different effect from what we are justified in expecting, this will no longer be the case."

The Geffery Almshouses.

We learn that the statement recently published that a virtual agreement has been arrived at between the London County Council and the Ironmongers' Company for the sale to the Council of the latter's almshouses, and the site, is premature, and that up to the present no decision has been come to. The matter has for some time past been under the consideration of the Parks and Open Spaces Committee of the Council, but they have not yet presented a report on the subject to the full body. The question, however, has been again considered at length at a special meeting of the committee, at the close of which Mr. Walter Reynolds, the chairman, stated that matters were proceeding quite smoothly, and that the committee, acting in conjunction with the Shoreditch Borough Council, were making every effort to acquire the site as an open space for the use of the public. The almshouses were erected in 1716, under the will of Sir Robert Geffery, and consist of 14 houses and a chapel, the area of the site being about 1¾ acres, chiefly open space. The buildings have many of the characteristics of good 18th century architecture, and are decidedly worth preserving.

Obituary.

We regret to announce the death, at the age of 71, of Mr. T. H. Healey, senior partner in the firm of Messrs. T. H. and F. Healey, of Bradford, who have designed a large number of churches and chapels in Bradford and district. Among them may be mentioned All Saints', Horton Green; the Bardsley memorial extension and restoration of the Parish Church, and work in St. Columba's and St. Oswald's; St. John's, Great Horton; St. Luke's, Victor Road; St. Michael's, City Road; St. Barnabas's, Heaton; St. Bartholomew's, Bowling; and St. Augustine's, Otley Road. The Synagogue in Bowland Street was built from their plans, and they designed the Eccleshill Congregational Chapel, the new St. Peter's Church, Shipley; Thornton Church, St. Luke's, Harrogate; Tockwith Church, near York; Worsborough Church, near Barnsley; Otley Congregational Chapel, Matlock Bank Church, Haworth Church, Steeton Church, Milton Chapel, Huddersfield; St. Andrew's, Yeadon; and Harden Church.

The A.A. Dinner.

The annual dinner of the Architectural Association took place on Thursday evening last in the Balmoral Room of the Trocadero Restaurant, Mr. Henry Tanner, the President, in the chair.

Mr. John W. Simpson, in proposing the toast of the Architectural Association, said he was sheltered by the President's licence to say what he liked, and in view of this free speech he was glad it was not the custom in England to bring fire-arms to the dinner-table. We were all getting too "arty"—they would observe that he did not say "artistic." On the notepaper of the Association was their device; two athletes, clothed in what were known technically, he believed, as "shorts," doing a double trestle act. He assumed them to be the President and Mr. Allen Potter. Under this they found the irrevelant words about Designing in beauty and building in truth. Architects must have a double qualification—a twin purpose. An architect must be not only an artist, but also a man of affairs. He drew their attention to the tale—not, he believed, in the Arabian Nights—of the History of the two Butchers and the Naked Truth. Once upon a time there were two butchers. The first butcher, who was a common man, chose one Smith, a Licentiate, to build his shop. And that butcher sold tons and tons of meat, wherefore he said, "Smith is a great architect." The second butcher was a man of art, and he commissioned Percy to design him a shop. And Percy gave him a study, all in white, of the year 1750—with swags. The butcher had read in a book that Art should colour our daily life—and he despised his neighbours. When the bailiffs took possession he approached Percy, and remonstrated with him; but Percy said the design was Georgian—he did not refer to his friend, Mr. George, who sat beside him—and that the small panes gave such character to the meat. The moral—and this was the only part where the naked truth appeared—was that St. Paul was a good cathedral but a bad master. The truth was not to build palaces for their own edification; but to give their clients what they wanted so that they might keep a home and defy a budget. It was not to solve problems in the easiest manner, but to so study their difficulties that they could clothe their buildings with beauty. With the toast he associated the name of Mr. Henry Tanner, their President.

Mr. Tanner said he was sorry they had entrusted the toast to Mr. Simpson—he spoke too well. But he agreed that they were bound to give their clients what they wanted, and he thought they must take advantage of every modern system of construction. They had to be both artists and scientists. In their training they should be both, and in the A.A. schools, under their able Headmaster Mr. Maule, they aimed to teach our young idea to shoot in both directions at once. He had been accused of undue pessimism because in his presidential address he had drawn attention to one or two points that he thought demanded consideration. But their men had not been depressed or dismayed. They had taken up and remedied the very matters to which he had referred. One was finance. They had had a very prosperous time at the A.A., and they had been a little bit inclined to finance for good times instead of suiting themselves to the present bad times. This had received consideration, and in consequence he predicted that they would come out for the year on the right side. They had also dealt with the by-laws and constitution. Another point was the poor attendance last year at the ordinary meetings, and this year the attendance had been very good An innovation in regard to meetings next year would be the invitation of the Camera Club and Discussion Section to alternate ordinary meetings. The Athletic Section was going strong, and he had been asked to announce that the sports would take place at Bickley on June 11. He hoped they would soon possess a ground of their own. In conclusion, he thanked the Council for their support, especially Mr. Clapham, who had been more than a right-hand man to him, Mr. Keen, who was succeeding him as President, and Mr. Elkington, the Editor of the Journal.

Mr. Arthur Keen proposed "The Royal Institute of British Architects," coupled with the name of Mr. Ernest George, concerning whom he made some eulogistic remarks, congratulating him on his remarkable address to the students. Mr. George, in reply, referred to the energy and life of the A.A., which he said supplied the Institute with some of its best elements.

Mr. Maurice Webb occasioned a remarkable outburst by suddenly rising and exclaiming that he wouldn't give sixpence for an Association that didn't drink Tanner's health, the best President they ever had! The toast was drunk with musical honours, amid great enthusiasm.

Mr. Walter Cave proposed the toast of "The Visitors," to which Mr. David Murray, R.A., and Mr. W. D. Scott-Moncrieff responded. The latter created considerable amusement by referring to his old friend Mr. Murray's condition of bachelordom, which he said would bring him under the ban of ex-President Roosevelt. He thought there was yet time for Mr. Murray to reconsider his position. As the father of a student in the A.A. Schools, he could testify to the great value of the work done there, and to the beneficent influence of Mr. Maule, the Headmaster.

ART NOTES.

[*Note.—Our article on the pictures of the year at the Royal Academy and the Paris Salon is unavoidably held over until next week owing to pressure on our space.*]

Wright of Derby. A loan exhibition of works by Joseph Wright of Derby, got together by Messrs. Henry Graves and Co., in Pall Mall, affords an unexampled and a very welcome opportunity of studying almost all the characteristics of that "sturdy and downright English painter; who, however, apparently owed much to his emulation of certain of the Dutch masters of the seventeenth century. The collection includes such popular favourites as "The Orrery," the "Farrier's Shop," and the Arkwright portraits.

The Coope Majolica and Enamels. The sale of the collection formed by the late Mr. Octavius E. Coope occupied a whole week at Messrs. Christie's, and realised some high prices. An old Italian Siena dish, elaborately decorated, and 10¼ ins. in diameter, was bought by Messrs. Duveen at £3,700, and Mr. Harding gave £1,200 for a Gubbio dish, decorated and signed by Maestro Georgio, and dated 1527. Among the enamels a tazza, 10in. in diameter and 4in. high, painted with figures of Melchizedek blessing Abraham, by Susanne Court, went to Herr Goldschmidt at £2,050. The prices realised represented generally a huge advance on those paid by the collector, and are said to have gone far beyond anticipation.

Artists' Benevolent Institution. Earl Carrington presided at the ninety-fifth anniversary dinner of the Artists' General Benevolent Institution, held in the Whitehall Rooms last week, and the speakers included Sir Hubert von Herkomer and Sir Charles Holroyd. Sir Aston Webb, R.A., was present as treasurer, and to him the chairman made a graceful reference, saying "He (Earl Carrington) took special interest in the fund because he knew what good service had been put into it by Mr. Cope (the hon. secretary) and Sir Aston Webb." Last year there were 220 applicants, who received a total of £4,426. The subscription lists on the present occasion showed a total of £2,444.

Minor Exhibitions. The ninety-seventh exhibition at the French Gallery includes works by the Dutchman Anton Mauve and James Maris, and some flower pieces by Fantin Latour, as well as his portrait of the artist. Both the Dutchmen show mastery of the forms and effects created by light. At the Maclean Gallery, Haymarket, Venetian paintings by Felix Zeim should tend to a higher appreciation in this country of a painter who is better known on the Continent.

The Rokeby Venus. The committee invited by the Editor of the "Morning Post" to investigate the supposed signatures on the Rokeby Venus, having met twice to examine photographs and lantern slides submitted by Mr. Greig and Mr. Barber, and having heard those gentlemen's explanation of their views, and having examined the picture itself on two separate days, have issued their report. The committee consisted of ten gentlemen—namely, Messrs. F. G. Kenyon, Sidney Colvin, Hugh Lane, Solomon J. Solomon, J. McLure Hamilton, Walter Sickert, A. J. Finberg, William McKay W. G. Rawlinson, and Fabian Ware—and six are of opinion that the markings indicated by Mr. Greig are not deliberate and do not form a signature. As to the alleged date, the majority of the committee believe that there are deliberate markings present, but they differ as to the reading of them.

Mezzotints. At the sale by Messrs. Christie of Mr. H. S. Theobald's engravings, one day's sale of mezzotints realised a total of £5,867, and there were many "record" prices. The highest price of the day was paid for a specimen of the first state of W. Dickinson's engraving of Romney's portrait of Miss Benedetta Ramus, which fetched 640 guineas. A loan exhibition of mezzotint engravings of exceptional interest, which has been opened at the Whitworth Institute, Manchester, includes Von Siegen's portrait of the Landgravine Amelia Elizabeth, reputedly the first work produced by the process, and some examples by Prince Rupert.

Whitechapel Art Gallery. The summer exhibition of the Whitechapel Art Gallery was opened last Monday by Sir Charles Holroyd, Director of the National Gallery. It represents Twenty Years of British Art (1890-1910), and contains the nucleus of the collection of works of modern art selected by Sir Hugh Lane for the Johannesburg Art Gallery. The trustees report that while, in response to their suggestion, 200 friends have promised to give 10s. a year, thus assuring an income of £100, this is not enough, and they ask for further support. About three million persons have visited the gallery during the last ten years, and every year there has been a deficit.

Early Italian Masters. The Medici Society, Ltd., is arranging an exhibition of 93 facsimile reproductions after drawings by the early Italian Masters at its Galleries from May 7th until June 4th. The drawings, which are from the Royal Print Cabinet, Munich, and the Uffizi Gallery, Florence, are reproduced in the exact tones and dimensions of the orginals and on paper matching that originally used.

The Drucker Collection. The First Chamber of the Parliament at the Hague has passed the Bill sanctioning the acceptance by the State of the art gallery of Mr. and Mrs. Drucker, of London. The collection consists largely of paintings of the modern French and Dutch schools. Some of these are on loan at the National Gallery.

The Trapnell Glasses. At the sale, at Sotheby's, of the Trapnell Goblets, from Bournemouth, high prices were bid for Jacobite glasses. A glass that Mr. Trapnell had bought for £45 from a Derbyshire Jacobite family is 7½in. high, and shows the Stuart Rose with seven petals, and Prince Charlie's motto, "Audentior ibo." This fetched £53 at the sale, and others ranged from £9 10s. to £37. A pair of tall cups of the eighteenth century, with baluster stems and sporting and musical emblems, went for £21 10s., and old beer glasses and tumblers were sold for about a guinea a piece. The sale realised £720.

OBITER DICTA.

Sir Hubert von Herkomer's Dream. He hoped that the Royal Academy would always be strong enough to hold the balance between wholesome and rational art and the unwholesome and irrational art which they saw on the Continent. But they were choking for breathing room in the backyard off Piccadilly. His dream was of a noble building of vast dimensions placed in the middle of Hyde Park surrounded by trees. That would be a worthy setting for the yearly output of British art, and it only needed the co-operation of the nation with individual artists to make his dream realised.—*Sir Hubert von Herkomer at the Annual Meeting of the Artists' Benevolent Institution.*

"Condemnation in Advance." The letter sent to the "Times" by a number of eminent artists and architects in reference to St. Paul's Bridge is somewhat uncalled for. It presupposes the idea that the Corporation will accept the first design submitted to them, regardless altogether of its artistic merit. What possible justification is there for any such condemnation in advance?—"*City Press.*"

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A "Letch for Vistas"? It appears that much more lies behind the appeal in the "Times" by Sir Aston Webb and his fellow-artists than the mere question of a good design for the new bridge near St. Paul's. The central idea is the provision of a fine new vista, with the Cathedral as its terminal.—"*Daily News.*"

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Art and Price. There seems to be confusion in the minds of many as between the value and price of works of art; so that a man may have a Matthew Maris, and only see the frame hanging on his wall, with £5,000 in large figures covering the canvas. He regards the picture like an investment in oil shares. If the figures change to £4,000 it hurts him, but if they rise to £6,000 he rubs his hands and says, "This is a magnificent work of art." The architect, like other artists, is compelled very often to do things he would much rather not do. If he does what he would choose to do he would starve. The defence of pot-boiling is that in its absence there may be no way of living. But many men have to go on at the practice till the pot boils over and extinguishes the fire of art within them.—*Mr. James Salmon, F.R.I.B.A., to the Glasgow School of Art.*

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The Main Entrance to Erechtheion. As to whether the north door was the main entrance to the temple, there is still too much ground for controversy for a final decision to be pronounced. Fürtwaengler is disposed to regard the main entrance as being on the north side. Professor Dörpfeld, interpreting Pausanias differently, takes the east end as the most probable. In any case, the south porch may be eliminated from the question. The stairs leading down from it into the west chamber were only intended for occasional and special use, and the whole feature was designed rather as a mass necessary to the composition of the south façade than as a means of access to the building. The same uncertainty may be said to exist with regard to the question of internal communication between the east and west cellæ.—*Mr. Lionel B. Budden, in the "Architectural Review" for May.*

STOKE-UPON-TRENT TOWN HALL EXTENSION.

The contract for this group of buildings in the extension of the existing municipal premises has been placed with Messrs. Wilcock and Co., of Wolverhampton, for the sum of £25,791, which is equal to 5d. per foot cube, and the work is being carried out from the designs of Mr. J. A. Bowden and Mr. T. Wallis (the joint architects). The new buildings will contain a large hall, to seat 3,200 persons, and the principal entrances are in Tower Street. The balcony will be approached from the central entrance, and two staircases lead direct to a large foyer on the balcony level. Adjoining the foyer are the cloak-rooms, with lavatory accommodation. Above the balcony, at the south-west end of the hall, a gallery has been placed to seat 400 persons, and this gallery has a separate staircase of its own. The orchestra has been placed at the north-east end of the hall, the lower and upper tiers being approached from the rear by corridors communicating with the artists' rooms. The existing staircase of the Town Hall will be entirely remodelled to allow of a principal entrance to the new banqueting-room, and also to provide a better approach to the existing assembly hall. The court room is at the rear of the existing county court offices, and is approached from Aqueduct Street. The judge and the registrar are in direct communication with the bench, and have separate lavatory accommodation. The lecture hall has its entrance from Tower Street The heating of the building will be by low-pressure hot water. The construction throughout is in reinforced concrete, and the frontage to Tower Street will be faced with white Hollington stone.

LETTER FROM PARIS.

The thirty-eighth Congress of French Architects, which is to be held this year in Paris, will open on June 20th by visits to the Hôtel Populaire in the Rue de Charonne, and to the foundations of the new buildings at the Palais de Justice, carried out under M. Tournaire. On the 21st there will be a visit to the Palais Royal, the Théâtre Français and the Bibliothèque Nationale. On the 22nd there will be visits to the "galerie dorée" of the Bank of France, the work of Mansard, and to the new gas factory near St. Denis. The 23rd is to be devoted to a visit to Fontainebleau, including a walk in the forest and lunch at Barbizon. On the 24th, at the Ecole des Beaux-Arts, M. Paul Wallon will read a memoir on the late M. Raulin, and MM. Hulot and Gustave Fougères will lecture on Selinonte, with illustrations. On the 25th will be held the closing sitting and the distribution of awards by M Dujardin-Beaumetz, the Secretary of Fine Art.

The Minister of Public Instruction has just inaugurated a "Maison des Etudiants," a kind of students' club, installed in an old house in the Rue de la Bûcherie, behind Notre Dame, formerly occupied by the Faculté de Médicine. This house, now classed as a "Monument Historique," was very near being destroyed, and has only been saved by the persistent efforts of the "Commission de Vieux Paris," which has now extracted a promise that nothing in the building shall be altered. It is surmounted by a curious rotunda built by Winslow, and contains a large gallery of fifteenth-century date, known formerly as the "Salle des Actes."

The state of the Paris Metropolitan Railway since the floods has necessitated the expenditure of some two million francs in repairs.

An interesting collection of medals has been arranged in one of the rooms in the Petit Palais at Paris, which will represent a complete history of the art in France from the beginning of the Renaissance to the present day.

M. Nénot, the eminent architect, is to undertake shortly the construction of a large annexe to the Sorbonne, between the Rue Gay-Lussac and Rue St. Jacques, with a façade to the latter street. This new building will be devoted to the chemical classes of the Faculté de Science, and to the Radium Institute.

M. Girault, the architect to the Louvre, is to commence shortly the rearrangement of the Pavillon de Flore, which the Colonial Minister and his staff have now at last abandoned. The works of great decorative artists and sculptors will occupy the ground floor, and on the first floor about twenty rooms will be devoted to the works of Delacroix, Ingres, Courbet, and others, as well as to works of the Impressionist school. The second floor will be reserved for works recently left by legacy to the Louvre.

The committee appointed by the Government to consider the means of guarding against another flood have had under consideration a scheme proposed by M. Eyerre, architect-engineer, and M. Guillotin, formerly a large contractor for public works. This includes the formation of three canals, partly open to the air and partly in tunnels, starting from the Colline de Charenton and ending opposite the Ile Saint-Ouen. The cost is estimated at 240,000 francs—a large sum certainly, but not as great as the loss of property that a second flood would cause. The establishment of these canals, for a distance of 19 kilometres, besides helping to carry away flood water, would greatly assist the river navigation.



The new building contains a large public hall to seat 3,200 persons, lecture hall, concert room, and an assembly room. The building is faced with white Hollington stone.

STOKE-ON-TRENT TOWN HALL EXTENSION: TOWER STREET ELEVATION. WALLIS AND BOWDEN, ARCHITECTS.

The Municipal Council of Paris has once more under consideration a scheme for suppressing the fortifications and utilising the ground for the formation of a chain of parks and gardens. If the proposal is adopted by the municipality and the Government, a very large amount of open space will be secured to Paris in perpetuity.

The death is announced, at the age of seventy-seven of François Ehrmann, a pupil of Gleyre, who had devoted himself entirely to decorative and architectural painting. He has executed numbers of wall-paintings, ceiling paintings, and cartoons for Gobelins tapestries and obtained various official honours and medals for his work.

NEWS IN BRIEF.

The site of the Duke of York's School at Chelsea is to be sold, it is said, for about £320,000, if the Government can find a purchaser for it. At a public meeting held on April 22nd, at Chelsea Town Hall, under the presidency of the Mayor (Mr. Christopher Head), a resolution was proposed by General A. Turner protesting against the sale and supporting the proposal that the site and building should be utilised as the headquarters of the London Territorial forces. This resolution was passed in face of an amendment moved and supported by representatives of the local tradesmen's association, who were against the maintenance of the site as an open space.

* * *

Mr. Walter Runicman, President of the Board of Education, has appointed a Departmental Committee to consider and report upon the functions and constitution of the Royal College of Art and its relations to the schools of art in London and throughout the country. The committee is constituted as follows: Mr. E. K. Chambers, one of the principal assistant secretaries of the Board of Education (chairman); Sir Kenneth S. Anderson, K.C.M.G.; Professor Frederick Brown; William Burton, M.A., F.C.S.; Douglas Cockerell; Sir George J. Frampton, R.A.; Sir Charles Holroyd, Hon. Litt.D.; Halsey Ralph Ricardo, F.R.I.B.A.; and Frank Warner; with Mr. A. H. Sidgwick, a Junior Examiner of the Board of Education, as secretary.

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It was estimated that while Berlin was still outside the conflict, the number of men locked out was quite 200,000. The employers do not conceal their desire for a trial of strength. There is some probability that the lock-out will extend to industries associated with the building industry, especially the cement industry. The employers are completing a ring of cartel treaties, which will prevent German workmen from finding employment in neighbouring countries, and will ensure for German employers all possible support from abroad. It is said that Switzerland and Austria were to conclude treaties yesterday on the same conditions as Sweden, Norway, Denmark, Holland, and France, and that Belgium and Italy will come in, so that there will be complete co-operation on the part of all Germany's neighbours except Russia The employers have long been preparing for "a trial of strength." The official organ of the employers says in so many words that any intervention is useless until "the forces have been measured in open battle."

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Owing to the increase of their business, the Easton Lift Company, Ltd., have vacated their workshops at College Street, Lambeth, and their offices at Broad Sanctuary Chambers, Westminster, and have taken new premises for both offices and workshops at "Express" Works, Short Street, Southwark, S.E., five minutes from Waterloo Station. Telephone, Hop 4050 (two lines). Telegrams: "Glidingly, London."

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Under the illustrations of two reinforced concrete water towers for the North-Eastern Railway Company at York, given in our issue of April 27th, it was mentioned that these towers were constructed by the Trussed Concrete Steel Co. It should have been stated that these towers were constructed with Kahn reinforcement by Messrs. William Moss and Sons, Ltd., of Queen Anne's Chambers, Westminster, S.W.

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According to Professor Gustave Klitscher, an art expert, the excellent old picture of the Madonna in the little Alpine church of Acletta, situated at a height of 4,236ft. in the Grisons Oberland, is a Murillo. The painting, which is in an excellent state of preservation, has long attracted the attention of tourists and experts. Recently a foreign museum offered £1,200 for it, but the offer was refused by the church authorities, who requested Professor Klitscher to make an examination.

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The Council of the Institution of Civil Engineers have made the following awards for papers during the session 1909-10:—A Telford gold medal to Mr. C. M. Jacobs (New York); a Watt gold medal to Mr. J. D. Watson (Birmingham); a George Stephenson gold medal to Mr. D. A. Matheson (Glasgow); and Telford premiums to Messrs. F. C. Buscarlet (Sunderland), A. Hunter (Glasgow), I. C. Barling (Tynemouth), J. Dalziel and J. Sayers (Derby); and J. Shaw (Birkenhead). The thanks of the Council have been conveyed to their colleague, Dr. C. A. Harrison, for the paper contributed by him. The awards for papers published in the proceedings without discussion and for students' papers will be announced later.

THE R.I.B.A. PARLIAMENTARY BILL.

By order of the Council, a circular in the following terms was issued from the Institute to all members residing in the United Kingdom:—

The new by-laws having just received the approval of the Privy Council, it is thought desirable by the Council of the Royal Institute to take this opportunity of stating the progress already made with regard to the new Bill. The Special Parliamentary Bill Committee has reached the final stages of its work, and the Institute Solicitors are now drafting the Bill. After it has been considered by the Council it will be laid before the General Body for their approval. Its objects, as defined by the resolution of the general meeting of 4th March, 1907, are as follows:—

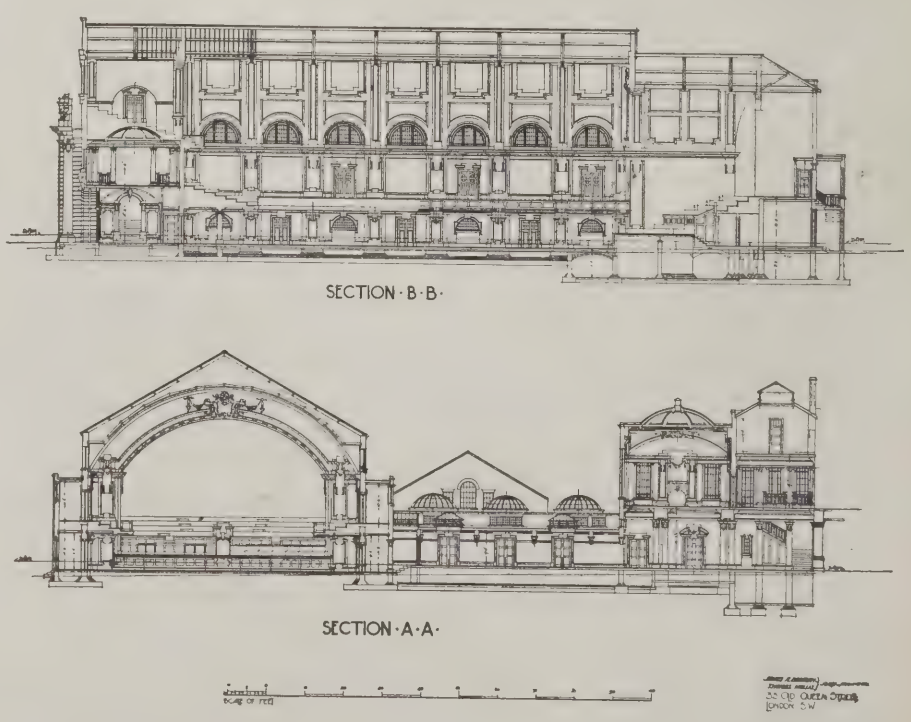
(1) To declare that it is in the public interest to enable the public to distinguish architects recognised as qualified by a competent authority from those not so recognised.

(2) To extend the present chartered privileges of the R.I.B.A., making it the statutory authority for the education and examination of architects for admission to the Institute.

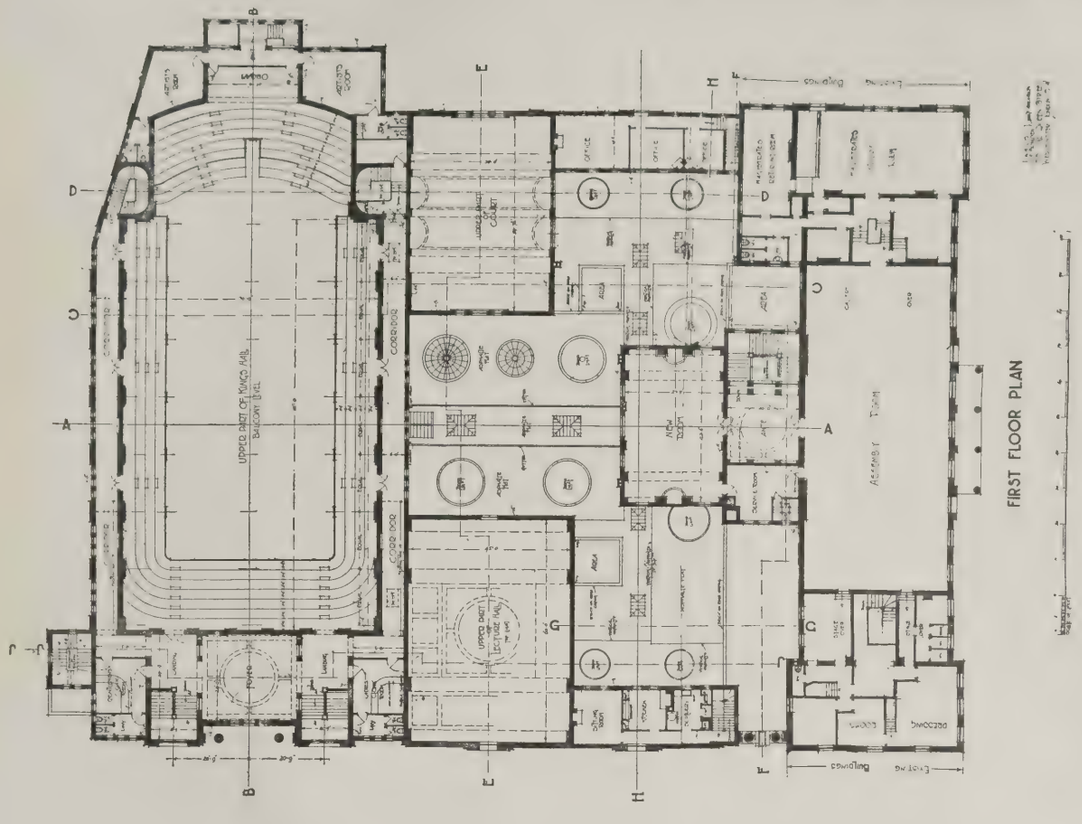
(3) To legalise a scale of charges.

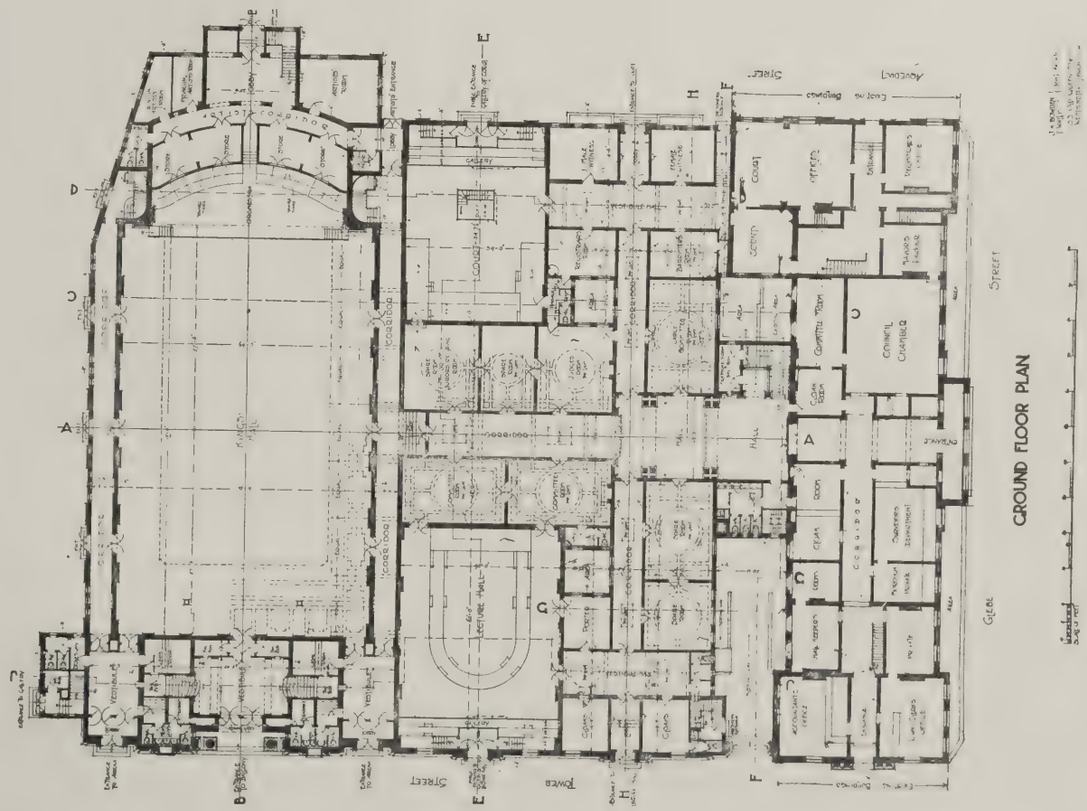
The Council desire to point out that it is now prepared to receive applications from those architects desirous of becoming Licentiates, and that, as the period for their admission expires within twelve months from 23rd March, it is essential that the earliest opportunity should be taken to secure the advantages offered.

Up to this point the response to the invitation to apply for the Licentiateship has been most gratifying. The numerous applications that are being received daily show that the action of the Royal Institute in this matter has been found acceptable by the general body of architects throughout the country.



[STOKE-ON-TRENT TOWN HALL EXTENSION: SECTIONS. WALLIS AND BOWDEN, ARCHITECTS.





STOKE-ON-TRENT TOWN HALL EXTENSION: PLANS. WALLIS AND BOWDEN, ARCHITECTS.

THREE POINTS OF FIREPROOF CONSTRUCTION.

The Architect and the Engineer.

Fireproof construction can properly be divided into three portions. The first will be that dealing with marble, terra-cotta, and other materials which are handled primarily by the architect, and which only concern the structural engineer indirectly as they add to the loads with which he has to deal. The second will consist of such matters as are finally decided by the insurance companies or by the building code without the allowance of discretion on the part of the structural engineer. Such, for example, would be the arrangement of fire doors, construction of partitions around elevators, and the use of metal frame and wire glass windows. The third general head in which fireproof construction might be divided will be that which concerns fireproofing engineers in ordinary practice. This consists of the construction of the framework of the building, and the construction of partitions.

Mr. Clarence W. Noble, of Toronto, in the course of a sketch of the history of modern fireproof construction, starting with office buildings of the present type as first constructed in Chicago, explained that south of Chicago there is an endless deposit of most excellent fire clay to which engineers and architects naturally turn for the solution of their fireproofing problems. Tile made from this clay was therefore used for floor construction, for the fireproofing of beams and columns, and for partitions.

Tests of Various Types of Construction.

The speaker then reviewed briefly the excellent tests made by the New York building commissioners on various types of modern fireproof construction. He pointed out that these tests, which consisted of applications of intense fire to small isolated structures about nine feet on the side, was a first-rate test of the fireproof qualities of the materials thus used, but an inadequate test of the type of construction. The failure of fireproof construction when used in actual buildings is not due so much to the heat as to the expansion stresses generated by the heat. In a small isolated structure these expansion stresses are necessarily slight or absent, as the structure has ample room to expand in every direction. When, however, the fireproofing material surrounds a steel frame, and thus protects the frame from expansion, the conditions are markedly different from those under which the tests were made. The speaker reviewed several of the great fires which have occurred testing modern fireproof construction, and pointed out that in every instance the failure of the type of construction used showed characteristic features which indicate failure by reason of expansion stresses. The destruction of partitions in tile or plaster blocks is the result of their crushing against the ceiling. The failure of terra-cotta floors is due to the spalling off of the bottom webs in the blocks.

Fireproof Partitions.

The use of metal lath and metal stud fireproof partitions was then discussed by Mr. Noble, who explained that these partitions are not subject to the usual difficulty, as they buckle when they expand, instead of crushing. Their failure is due to the failure of the plaster, which disintegrates in the heat and is apt to be washed out by a stream of water thrown on it. Mr. Noble suggested that something better than any of the present types of fireproof partitions would result if metal lath and metal stud frames were to be plastered with Portland cement plaster. Partitions thus constructed would not crush, and the plaster used would not be washed out by a hose stream.

Reinforced Concrete Design.

The speaker then took up several much-discussed points connected with reinforced concrete designs. Relative to the often-used specification regarding the straight line formula for obtaining the moment of resistance of a concrete beam, he explained that both the straight line and parbolic formulæ have much to be said in their favour. Under actual working stresses the straight line formula used very closely approximates the facts, while at the point of failure of the beam the parabolic formula very closely represents the facts. If the factor of safety is considered as representing a relationship to the actual stresses in the beam under working conditions, the straight formula should be used, while if it is regarded as a relationship between the point of failure of the beam and its working load, the parabolic formula should be used. Mr. Noble expressed a personal preference for the parabolic formula, but stated that it made very little difference which was used. He explained, somewhat humorously, the specification in favour of the straight line formula by stating that there is a general tendency on the part of people who have to decide these matters to avoid a careful technical investigation of such points by accepting the most expensive alternative, on the assumption that it is the best.

Bending Moment Formula.

Two other open questions in reinforced concrete illustrate this tendency. One was the denominator to be used in the bending moment formula. Mr. Noble explained that while $\frac{wl^2}{10}$ was the formula first advanced, it is not by any means the only one which can be used. The denominator in the formula for a moment at the centre of the span depends entirely on what denominator is used for the moment over the point of support. The sum of these two must always equal $\frac{wl^2}{8}$. $\frac{wl^2}{10}$ implies a bending moment so small for the points of support that the material necessary to resist it will, on account of the sharp curvature at this point, be stretched beyond its elastic limit. When this occurs the bending moment on the centre of the span will necessarily reduce to $\frac{wl^2}{8}$. Mr. Noble therefore strongly urged the use of a greater amount of material over the points of support, and explained that when such material is used the use of $\frac{wl^2}{10}$ at the centre of the span is excessive.

The continuance of the use of $\frac{wl^2}{10}$ in the face of the fact that better practice would indicate a different arrangement, Mr. Noble attributes to the general tendency to take the most expensive alternative rather than to make a careful technical investigation.

Medium and High Carbon Steel for Reinforcement.

Mr. Noble also discussed the relative advantages of the use of medium and high carbon steel for concrete reinforcement. He pointed out that medium steel is generally used in the construction of the steel framework of buildings owing to the fact that material so used has to be punched, sheared, and riveted during the process of fabrication.

High carbon steel, if used for such purposes, would have a cost for shop work so high as to make it more expensive than medium steel. Bars used for concrete reinforcement are not subject to this limitation. Yet as the majority of engineers now engaged in reinforced concrete designs gained their experience in structural steel, they continue the habits which they acquired while designing steel structures, and still use medium steel as the standard concrete reinforcement. The speaker pointed out that the elastic limit is now universally regarded as the criterion for the factor of safety of a reinforced concrete beam, and therefore the question to be decided as between medium or high carbon steel is merely one of the cost of a given amount of elastic limit in the two kinds of material.

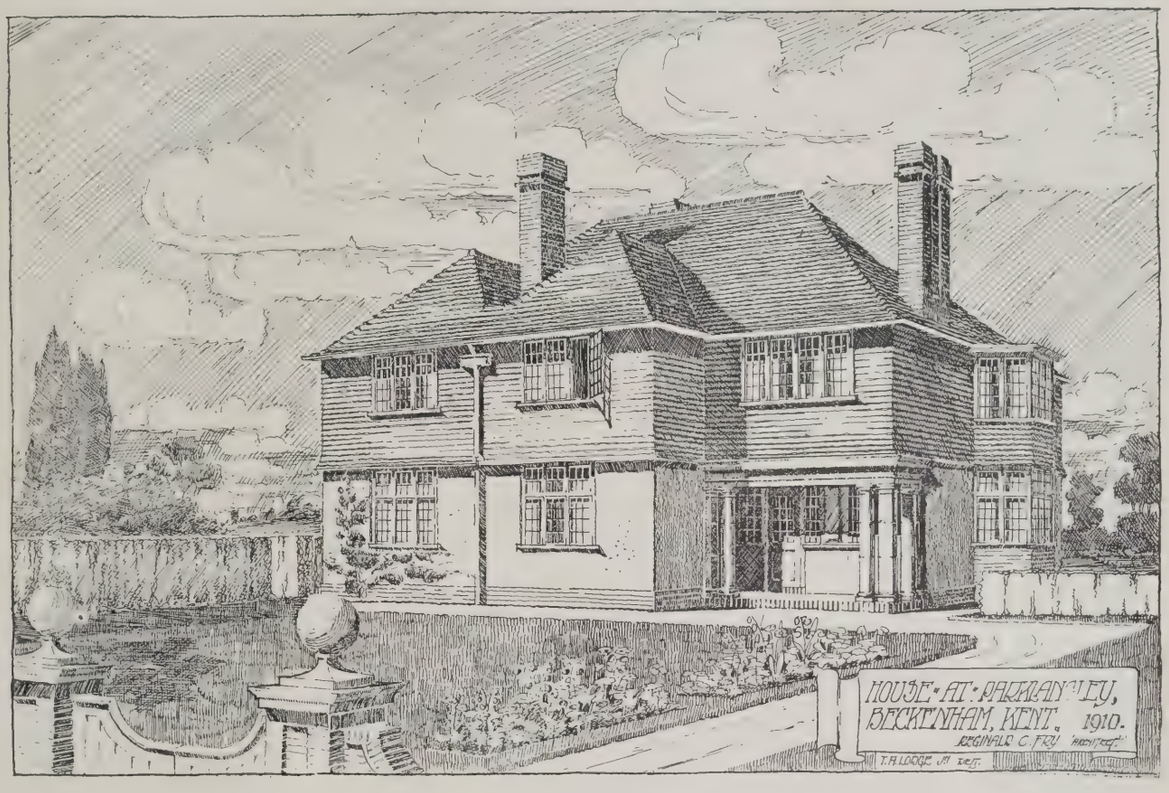
Factor of Safety.

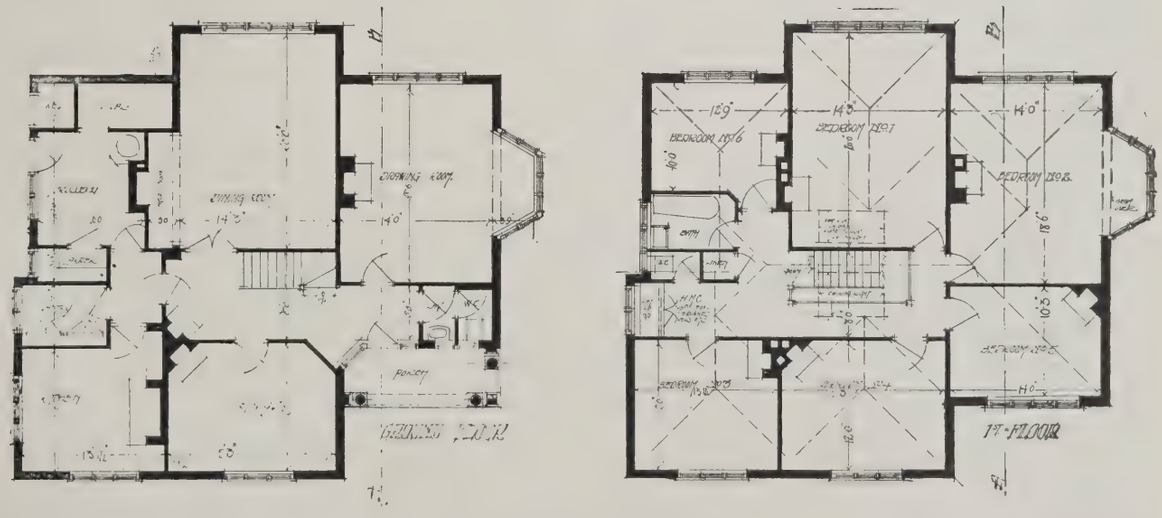
The usual working stresses used with medium steel give a factor of safety in a reinforced concrete beam not greatly in excess of two for live and dead load. A factor of safety of three, if high carbon steel is used, can be obtained at a less cost than a factor of safety of two, with medium steel. While it is true that the variation in the elastic limit is high, carbon steel covers a wider range than with medium steel, the statement made implies discount of this variation, as it is true even if the assumed elastic limit of high carbon steel is placed at the minimum value, while the assumed elastic limit of medium steel is placed on the average value.

Hair Cracks.

After the speaker had concluded his talk, there was an informal discussion on the part of the members. Mr. Young inquired if the speaker regarded the formation of hair cracks due to the higher working stresses he proposed for his high carbon steel, as affecting the reliability of the structure owing to the possibility of the steel rusting out.

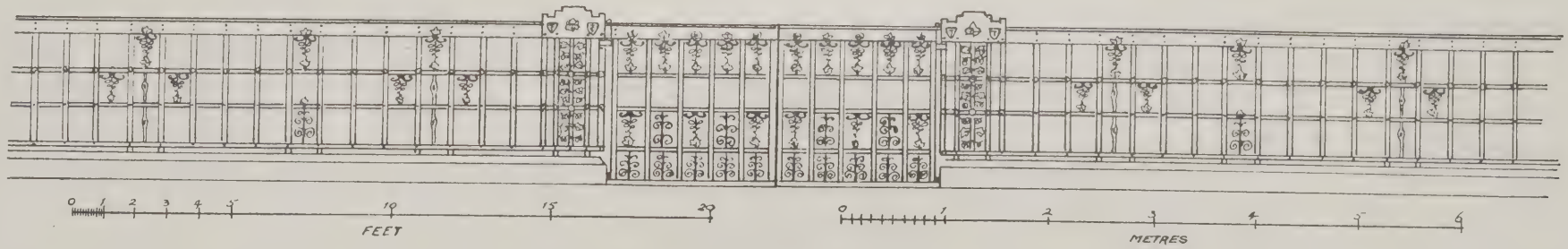
Mr. Noble answered by explaining that these hair cracks are so minute that they had never yet been seen, even by the use of a magnifying glass. The tests which discovered them also showed that they are extremely irregular in their shape. The elements causing rust are air, moisture, and carbon dioxide gas, all of which must be present at the same time. The carbon dioxide, together with the water, forms a very weak acid, which attacks the steel. In beams, the steel is at least two inches away from the surface of the concrete. The concrete is always impregnated with an excess of free lime, which is liberated during the setting up of the cement. This lime is frequently visible on the surface of concrete construction and continues to effloresce for an indefinite period after the concrete is set up. It is reasonable to suppose that this tendency of the free lime to work to the surface extends along the interior surface of the minute hair cracks as well as along the external surface of the construction. The speaker claimed that it is practically impossible for the weak carbonic acid to work into the hair cracks in such quantities as to neutralise the ever-renewing supply of free lime and reach the steel. He pointed out that even should this be the case, the steel will be found to be coated with a protective covering resulting from the chemical action of the cement on the steel surface.

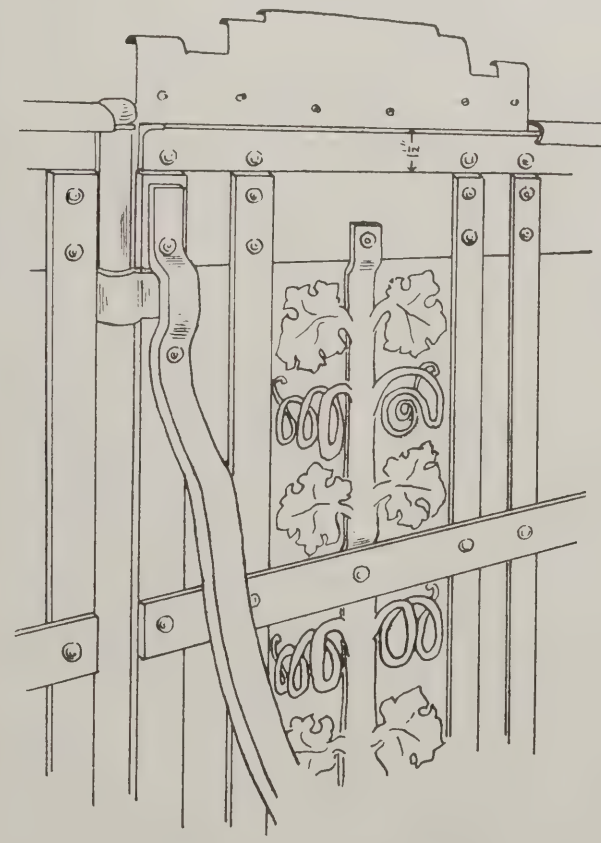


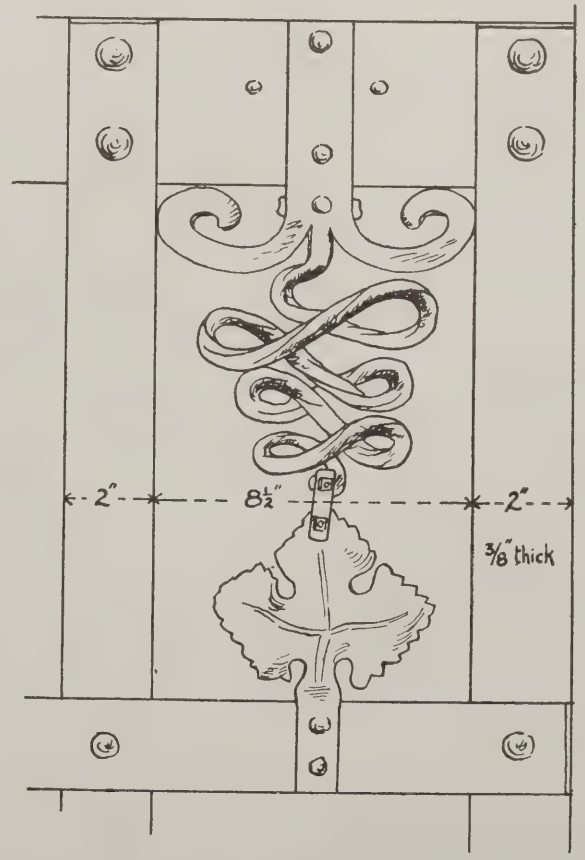


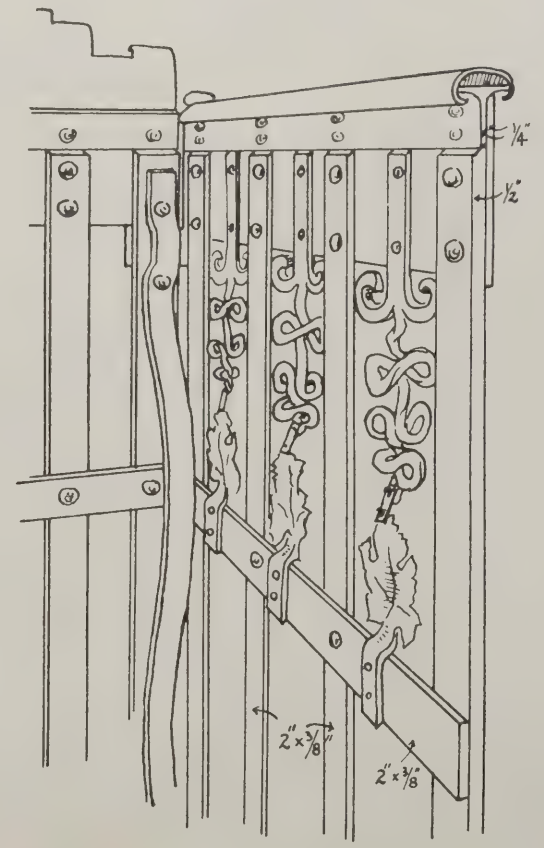
This house is one designed for the new garden suburb of Parklangley, Beckenham, Kent. The design is in modern Georgian style. Plan, views of other houses and plan and view of the shopping centre have already been published in "The Architects' and Builders' Journal."

HOUSE AT PARKLANGLEY, BECKENHAM, KENT. REGINALD C. FRY, ARCHITECT.



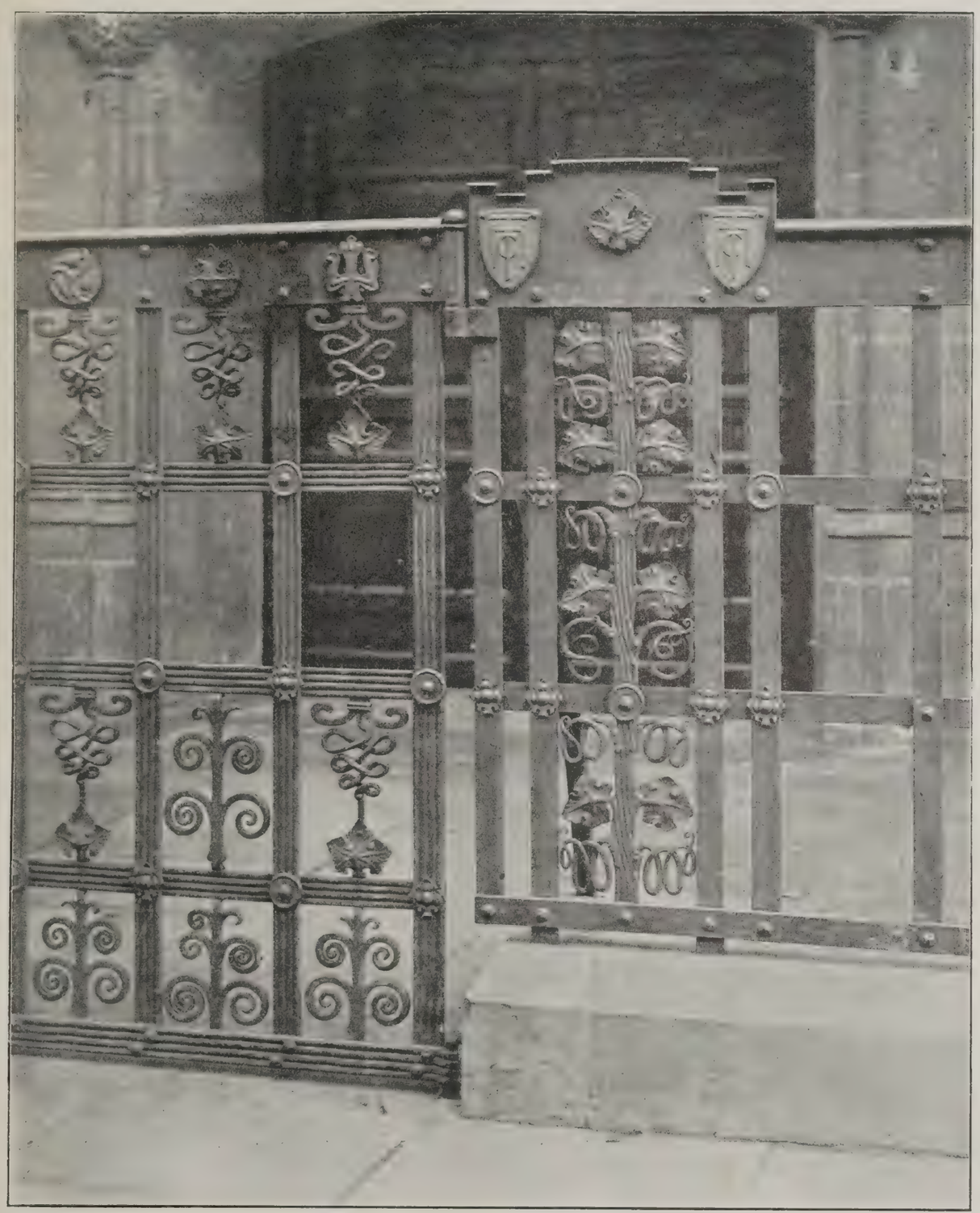






The manner in which the railing is built up from flat bars is clearly shown by this drawing. The vine ornament, it will be seen, is fixed from the back, the eaves being attached to the scroll by small nuts and bolts. The railing is about 4 ft. high, supported at the back by stays at intervals of 9 ft.

DETAILS OF GATES AND RAILING, HOLY TRINITY CHURCH. SLOANE STREET, CHELSEA. (THE LATE J. D. SEDDING ARCHITECT). By H. WILSON.



Holy Trinity is one of the finest works of the late John D. Sedding. Many famous artists and craftsmen—Burne-Jones, Morris, Armstead, Thornycroft, and Whall—contributed to the decoration of the interior. The beautiful metalwork, both interior and exterior, was the work of Mr. H. Wilson. These exterior railings are built up entirely of iron, wrought in the flat, and ingeniously put together. The enrichments, following a vine motive, are also wrought in iron, and gilded to give the necessary relief.

DETAIL OF GATE AND RAILING, HOLY TRINITY CHURCH, SLOANE STREET, CHELSEA (THE LATE J. D. SEDDING, ARCHITECT). BY H. WILSON.

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CORRESPONDENCE.

[The Editor declines responsibility for the statements made or opinions expressed by correspondents.]

The L.G.B. and Reinforced Concrete.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In the concrete and steel section of the Journal for April 16th, attention is called to the rule of the Local Government Board allowing only 10 years for the repayment of loans for the erection of concrete buildings, and it is suggested that Mr. John Burns should take evidence as to its suitability and durability with regard to many buildings that have been erected of that material a sufficient length of time to afford conclusive evidence on those points.

The Enclosure Commissioners refused to advance a large sum of money on loan for concrete buildings on a landed estate in 1868, but eventually agreed to refer the matter to Mr. George Godwin, at that time Editor of the "Builder," whose opinion resulted in the refusal being withdrawn by the Commissioners, and advances made for the full term allowed. Since that time, I believe, advances for the erection of concrete buildings have always been sanctioned. The buildings referred to, although erected over 40 years since, have, I understand, so far as the concrete is concerned, cost nothing for repairs or renewals, and are practically in as good condition now as when erected.

When concrete first came into use in modern times for walls, floors, etc., many failures took place through want of experience and the extravagant statements made by patentees and other interested parties as to its capabilities and cheapness.

Possibly Mr. Burns has these in mind, but they should not stand in the way of a full inquiry being made and evidence obtained as to the advantages and value of concrete at the present time for the many purposes the Local Government Board have to deal with.

THOMAS POTTER.

Licentiate R.I.B.A.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—With reference to the letter from A.R.I.B.A. on the above subject, may I say that I cordially agree with every word of your correspondent. The practical result of this alleged reform is to place upon a level with, and at the expense of, associates those unqualified and unprofessional competitors who for many years past have been the most unscrupulous poachers.

As your correspondent rightly says, the general public cannot, even if they would, discriminate between A.R.I.B.A. and L.R.I.B.A.

Do the members of the Institute really believe that the best means of closing the profession is by opening the door to all comers? The remedy for such a Gilbertian situation lies in the hands, to a very large extent, of the associates themselves.

I, for my part, have refused, and in future intend to refuse, to nominate persons who desire to become Licentiates, because from my own knowledge they are those who, having had the opportunity to take the examinations of the Institute, have been too incompetent to succeed.

I sincerely trust that this policy is being adopted by every associate who has the welfare of his profession at heart.

ASSOCIATE.

"Percentages off Quantities."

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In your issue for April 27th, under "Enquiries Answered," there is a reply to E. H. D. with reference to percentages off quantities, which does not agree with what I believe to be the correct method of dealing with the matter.

The correct way (which I think is most generally followed) is to deduct the total net value of provisions in the quantities from the total before the percentage is deducted, and then to find the correct percentage which the amount deducted by the contractors bears to the total value of work less the provisions. Thus, if the contractor deducts 10 per cent. (£500) from a total of £5,000, in which is included net provisions to the value of £2,000, he, in fact, deducts £500 from £3,000, which is equal to 16⅔ per cent.

It is not competent for any contractor to reduce provisional sums by deducting a percentage, as these are expressly provided to be expended in any way the architect may direct, and deducted in whole or part if not used; but, of course, the percentage will come off any profit he may add to these net sums.

Yours truly,
W. W. D.

NOTES ON COMPETITIONS.

New Elementary School, Bloxwich.

The result of this competition has been announced. The first premium has been awarded to Mr. G. Thomas, of Handsworth, and the second to Messrs. Ewen Harper and Brother, Birmingham.

Walton and Fazakerley Branch Library.

Mr. W. E. Willink, the assessor in the above competition for the above Carnegie Branch Library at Liverpool, selected three designs by local competing architects for a final selection of the Libraries Committee, the three being by Messrs. Briggs, Wolstenholme, and Thornely, Mr. R. Wynn Owen, and Mr. T. Taliesin Rees. The committee selected the design of the first-named.

New Premises for the Leeds Industrial Co-operative Society.

Mr. F. E. L. Harris, A.R.I.B.A., of Manchester (architect to the Co-operative Wholesale Society, Ltd.), the assessor appointed in the above competition for new premises in Albion Street, Leeds, has delivered his award as follows:—

1st premium (£100), Messrs. Bradshaw and Gass, Bolton.

2nd premium (£50), Messrs. Latrobe and Weston, Bristol.

3rd premium (£25), Messrs. Thomas Newby and Son, Manchester.

LIST OF COMPETITIONS OPEN.

MAY 31. MUNICIPAL OFFICES, KARACHI. Particulars given in our issue March 16th.

JUNE 11. COVENTRY. ENLARGEMENT OF SCHOOL at STOKE. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

JUNE 15. ELEMENTARY SCHOOLS, ACTON. Particulars given in our issue of March 16th. The Royal Institute of British Architects has requested architects not to compete.

JUNE 20, YSTRADGYNLAIS SEWERAGE SCHEME. The Rural District Council will pay £20 for the most suitable scheme for sewering Ystradgynlais Lower. Competitors to state terms for full detailed plans and specifications, and for carrying out the scheme they submit. Particulars from Mr. T. Watkins, surveyor to the Council Ystradgynlais.

JULY 9. PROPOSED USHER HALL, EDINBURGH. Particulars given in our issue of April 20th. Inquiries to be addressed to Thomas Hunter, Town Clerk, City Chambers, Edinburgh.

AUGUST 31. COVENTRY. NEW ELEMENTARY SCHOOL in Centaur Road. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

THE QUANTITY SURVEYORS' DINNER.

The annual dinner of the Quantity Surveyors' Association was held on Tuesday, the 3rd inst., at Connaught Rooms, Great Queen Street, W.C.

Mr. G. A. Dutfield (Mayor of Stepney) proposed the toast "The Quantity Surveyors' Association," and said he was delighted to make the acquaintance of the quantity surveyors, but he could not speak from the professional point of view. He understood that the majority of buildings depended as largely upon their ability as upon that of the architect and the builder. He was pleased to know that the quantity surveyors were getting into more intimate touch with the municipal authorities than had hitherto been the case. Stepney was certainly indebted to their President (Mr. Chidgey) for his services upon the Council.

Mr. H. T. A. Chidgey responded, and said although the Quantity Surveyors' Association had been but six years in existence its weight was being largely felt. They had endeavoured to include in their ranks only those men of real ability and experience. The Association had, during the course of the year, formulated a system of uniformity of measurement which would unquestionably be of immense value to the profession. Profitable negotiations had also been conducted with the builders and with the R.I.B.A., and with several municipal authorities. Mr. Chidgey dwelt at some length upon the question of specialist work in buildings, and upon the matter of professional tendering, which he deplored. The Association, he concluded, had undoubtedly justified its existence.

Mr. S. A. Stanger, F.S.I., proposed the toast "The Architects," and spoke eloquently of the impressive appearance of London when approached by the railways from the south. The very fine effects obtained were due to British architects. The speaker, continuing, paid a eulogistic tribute to the Architectural Association and its curriculum; and, referring to the R.I.B.A., hoped that this latter body would never get out of sympathy with the profession it represented. The quantity surveyors were always ready to render service to the architects, that they might be able to concentrate upon the higher aspects of their art. Mr. George Hubbard responded, and observed that architects fully realised they were incompetent to carry out a work without the assistance of the quantity surveyor. The speaker then referred to the lately-constituted Licentiate R.I.B.A., and mentioned that Mr. Ernest George intended his son to qualify as much. The halfpenny tax upon undeveloped land, he continued, although it had not been generally realised, actually depreciated the value of land by one-sixteenth.

Mr. W. R. Hood, F.S.I., in proposing the toast "The Contractors," said the gathering was thoroughly representative. The functions of the builder and the quantity surveyor were essentially practical; and having alluded to the Quantity Surveyors' Association examinations, which were now held in places so distantly situated as Newcastle and South Africa, commended the L.C.C. upon their action in permitting the quantities for the new County Hall to be taken by percentage.

Mr. F. Higgs responded, and complained of the name contractor being applied to the builder. It was a regrettable necessity that they had to contract, but it seemed to lower the dignity of the builder to refer to him in this way.

ENQUIRIES ANSWERED.

Correspondents are particularly requested to be as brief as possible. The querist's name and address must always be given not necessarily for publication.

The Editor is willing to answer enquiries from readers who require information on architectural, constructional, or legal matters. Such information must be regarded as the gratuitous advice or information of a friend, and not as the professional opinion of one who holds himself out as possessing expert knowledge on the subject in question. The Editor will, however, avail himself of the assistance of a large staff of experts in the matters above mentioned. but the enquiries sent must be on the express understanding that he is not to be held responsible for any delays, mistakes, inaccuracies, or negligences which may occur.

Enquirers whose questions involve possible legal proceedings are strongly urged to consult their solicitors before taking definite steps in regard thereto.

Answers by post will be sent if the enquiry is accompanied by a postal order for 1s. made payable to Technical Journals, Ltd. and crossed, and stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

This fee of 1s. required for answers by post is in no case to be regarded as payment for the answer given, but merely as a registration fee to meet the extra clerical and other expenses incurred in dealing with these special replies.

The Editor also reserves the right of refusing to reply to any question that he may deem to be unreasonable or unsuitable, and it must be understood that both question and reply will, as a rule, be published in these columns.

Card Index Systems, etc.

C. L. writes: "Would some correspondent who has had experience recommend a system of book-keeping for a small practice in architecture, or give the title of a suitable publication thereon? I should be grateful for full information upon the card index systems, or should be pleased to know of some publication that gives the required information. I propose to use it for indexing notes or points connected with architectural practice, and also for cataloguing trade circulars, price lists, etc."

[Will the enquirer kindly forward his name and address to the Editor?]

Right of Drainage.

T. S. (Ilkeston) writes: "Could you give me any information as to the right of drainage, as shown on the enclosed plan [not reproduced]? In the first instance the whole of the estate was purchased about four years ago by A. Afterwards A sold the portion coloured brown to B, and later sold residence and garden coloured red and blue to D, and D afterwards sold the part coloured blue to C, and converted the residence into two houses, occupying one himself and letting the other. Has D a right of drainage into the existing cesspit, as shown on B's land, the drain crossing C's land, and also has D a right to overflow from cesspit passing over B and A's land? I am informed the drainage has been as the plan shows for fifteen years. Nothing has been mentioned in the agreements of conveyance of land from A to B, A to D, or D to C, with reference to the drainage, and I understand B is going to ask for an acknowledgement for sewer to cesspit on his land, also A will shortly raise objection to the overflow crossing his land, as he is about to develop it for building. Can A and B get their claim?"

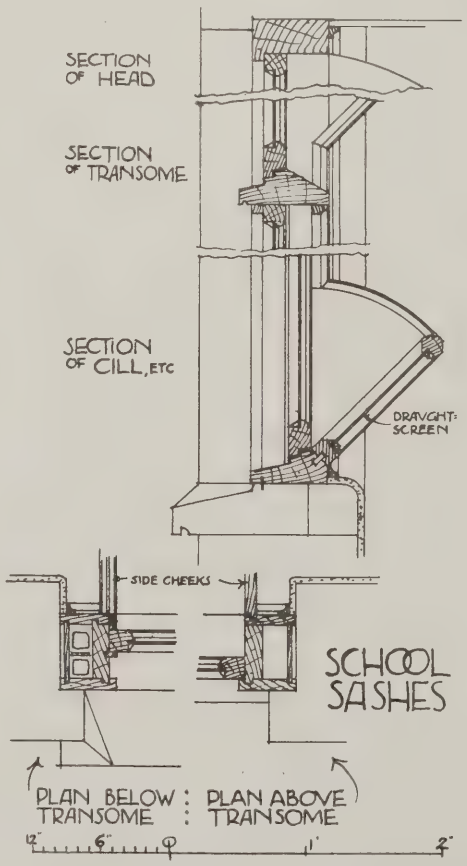
—It has been decided that where an owner of two or more adjoining houses sells one of them, the purchaser of such house is, without any express reservation or grant, entitled to the benefit of all drains from his house; and is, on the other hand, subject to all the drains necessary for the enjoyment of the adjoining house. Such necessity is to be considered with reference to the time of the conveyance, as matters then stood, without alteration and without reference to whether any other outlet could be made for the drainage (*Pyer* v. *Carter*, I.H. and N., 916). The origin of this very just rule appears to be that an easement of drain or sewer is, in reality, an easement of necessity. In these circumstances it would seem that B is not entitled to ask for an acknowledgement for sewer to cesspit in the manner alleged. Nor can A object to the overflow crossing his land on the authority above cited. The only further point is: Was D entitled to increase the use of the sewer as against B, by turning what was one house into two? That may have a distinct bearing on the matter. Before any acknowledgement is given, however, a solicitor should be consulted. B.

House Heating by Hot Water; Sash and Casement Window.

"Constant Reader" (Dudley) writes: "Please inform me (1) how to calculate the length of piping, radiators, etc., required in the heating of schools and houses, and say, also, the method usually employed; (2) kindly illustrate the details of a sash and casement window as frequently used in new schools, the sashes being at the bottom and the casements at the top."

—(1) We recommend our correspondent to read the special articles on heating and on ventilation in "Specification"; these will enable him to grasp the subject fully. For his present need, a good rule is to allow 1 square yard of outer surface of pipes and radiators to each 36 cubic yards of air space in the room, and one square yard of pipe or radiator to each six square yards of glass in windows. When the main pipes go plumb up the walls to the rooms, these allowances can be increased to 38 cubic yards and 6½ square yards; but when the main pipes are chiefly horizontal, the allowances should be 33 cubic yards and 5 square yards. When selecting a boiler, it is necessary to assess its power on the weight of iron and of water in the pipes, in addition to the amount of outside surface of the pipes. When selecting a radiator, pass a piece of string round one of its columns, tubes, or pipes, as its maker may term them; this length multiplied by the height will give you the nett heating surface of each pipe. Ingenior.

—(2) Our correspondent presumably requires a section of sash windows with hopper light above the transome and a glazed draught-screen at the cill.



ILLUSTRATING REPLY TO "CONSTANT READER," DUDLEY.

The draught-screen at the cill allows the bottom sash to be raised for ventilation without incurring down-draught. The light above the transome is hung at the bottom to fall inward between solid cheeks. Ventilation without down-draught is thus possible at three points—at the cill, at the meeting rail (both by raising the bottom sash), and from the hopper light. G.

Hammerbeam Roof Truss,

"Constant Reader" (Matlock) writes: "Please say if the roof as shown [sketch not reproduced] would be strong enough for a 34ft. span. If not, please state the scantlings required."

—The scantlings provided are rather small for a truss of 34ft. span, but they may be sufficient if the building is in a fairly sheltered position. The designing of the joints is almost of more importance than the scantling of the members, and the very rough sketch that is submitted conveys no idea as to the capability of the correspondent in this respect. Henry Adams.

Book on Paint and Colour Mixing.

H. H. W. (Tunbridge Wells) writes: "Please refer me to a book dealing with the mixing of paint, and instructing what staining it is necessary to put into white lead paint to obtain a stone colour, for instance."

—"Paint and Colour Mixing," by A. S. Jennings, published by Mr. B. T. Batsford, 94, High Holborn, W.C., at 5s., would supply our correspondent with all the information he requires. B.

Book on Stresses and Strains for R.I.B.A. Intermediate Examination.

"Strains" (Falkirk) writes: "Please advise me as to the best book to study for 'Stresses, strains, and strength of materials,' as required by the intermediate examination of the R.I.B.A. Is Middleton's 'Stresses and Thrusts' a good one, or is volume 4 on steel construction in the same author's book on 'Modern Buildings' better?"

—Middleton's "Stresses and Thrusts" is a concise textbook of the elementary principles of theoretical construction, but is not alone sufficient to enable an average student to undertake subject V. of the R.I.B.A. Intermediate. In addition, it would certainly be well for querist to become familiar with the R.I.B.A. Report on Brickwork Tests (6s.), and on Reinforced Concrete (1s.), or with textbooks giving a digest of the conclusions therein given. Books on structural ironwork, shoring, and underpinning, and strength of materials are also necessary. The list of books given in the current R.I.B.A. Calendar should be consulted. G.

Textbooks for P.A.S.I. Examination.

"Survey" (London, N.W.) writes: "I am about to read for the P.A.S.I. examination. Please advise me as to textbooks to cover the subjects in the building sub-division, as follows:—(1) Surveying, (2) levelling, (3) trigonometry, (4) quantities, (5) house drainage and plumbers' work, (6) mensuration, (7) dilapidations. I am taking 'constructive and working drawings as my typical subject. I have had the ordinary architectural training. Please indicate also whether the books recommended cover more ground of the subjects in question than the examination demands."

—The following is a list of textbooks which we recommend our correspondent to read:—"Practical Surveying," G. W. Usill (Crosby Lockwood), 7s. 6d.; "Trigonometry" (any elementary textbook); "Mathematical Tables," J. Pryde (Chambers), 4s. 6d.; "Quantity Surveying," Leaning (Spon), 25s.; or "Quantities and Quantity Taking," Davis (Whittaker and Co.), 3s. 6d.; "Building Construction" (elementary and advanced), Mitchell (Batsford), 3s. 6d.; "Mensuration," Baker (Weales Series) (Crosby Lockwood), 1s. 6d.; "Dilapidations," Macer (Estates Gazette), 5s. There is, of course, a certain amount of matter in any book that need not be studied for the purposes of the examination in question; but it is impossible to go fully into the matter here. We would advise our correspondent to seek the assistance of one of the recognised coaches, as the examination is one of extreme difficultly to pass without such help. P. B. P.

Hot Water Supply to Two Bath-rooms.

H. A. R. (BAKEWELL) writes: "Can you help me with the enclosed sketch (not reproduced)? The part in black was from the kitchen boiler with a return as shown. It was later extended, as shown in red, the bend being taken out. The lower cylinder thumps and boils, but the upper cylinder scarcely gets warm. I have been advised to have the new cylinder connections altered, and A returned into flow, and not into return as at present. I give rough plan of new bath-room [not reproduced]."

—The proper way to connect the two reservoirs of hot water and to draw off hot water from them is to connect the top outlet of the lower reservoir to the lowest but one opening in the upper reservoir, and the lowest

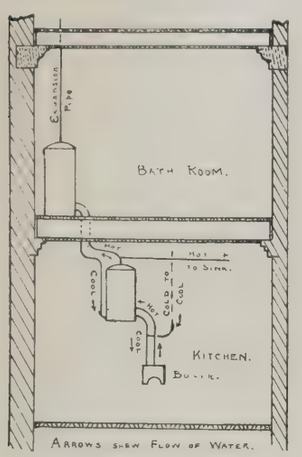


Fig. 1.

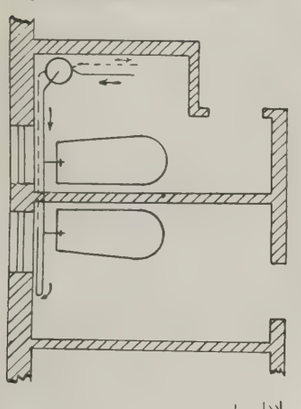


Fig. 2.

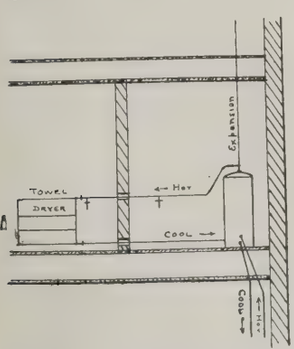


Fig. 3.

opening in the upper reservoir to the lower part of the lower reservoir, and to draw all hot water from the top of the upper reservoir. This sketch shows the arrangement. To get the best results in your case needs a different arrangement of the same principle. This arrangement gives a continuous flow of water through the towel drier, and a quicker supply of hot water to the sink, unless the hot water to the sink be drawn direct from the kitchen cylinder, as it should be. The air vent at the bath taps is not needed. If both dryer and reservoir be in one room, it will be too hot, and the other bath-room too cold. INGENIOR.

Lime Required for Mortar.

H. E. I. (LEEDS) writes: "In a building containing approximately 58,000 bricks, what would be a reasonable amount—in loads—of unslacked lime required to make mortar in proportion of 3 to 1? The mortar is mixed on site by hand, with sand got out of the adjoining land, so there is no means of checking the amount of sand delivered. I am suspicious the contractor is not putting sufficient lime into it. All above base is common brick work. I therefore want to know what number of loads of lime should be necessary."

—About 14 cubic yards of stone lime or 20 cubic yards chalk lime will be needed, on the ordinary basis of one cubic yard of stone lime to each rod of standard brickwork. A. B. S.

Lighting of Small Towns and Villages.

D. L. H. (ABERDOVEY) writes "Please answer the following questions: (1) What is the best and cheapest method of lighting a small village of, say, 1,000 inhabitants, the gas utilised to be such as can be used for cooking purposes? (2) What is the best method of lighting chapels with, say, 15 to 35 lights? (3) Is what is known as 'oil-gas' suitable for lighting small villages?"

—The answer to (1) depends very largely on the local conditions. As a rule it would not be possible to manufacture cheaply gas or electricity for so small a village as having only 1,000 inhabitants. But if there happens to be also a local demand for power purposes during the day-time it is conceivable that both might be profitably used. In the case of electricity this is specially true since the success of an electric supply company depends largely on its securing a steady load both during the day and the evening. If, in addition, the district is a condensed one, so that no large outlay for mains is necessary, the prospects of the successful use of electricity are also rendered more favourable. In this connection it is interesting to note that the advent of small candle-power metallic filament lamps has materially influenced the situation and a new concern, the Rural Electricity Supply Co. has already been formed to deal with the lighting of small communities. Only under very exceptional conditions it will be possible to use electricity cheaply, also for heating and cooking purposes.

The system of "petrol-air gas," in which a mixture of about 98½ per cent. of air and 1½ per cent. petrol is led through the pipes, has been used for lighting parks, and can be applied to small villages effectually. The plant in this case is automatic, and requires less attention than electric or gas installations. It would be an easy matter to arrange a number of properly located substations, from which the gas could be distributed to the consumer. This system answers best when constantly in use. Acetylene gas has been used for village lighting in France and other countries, but great care must be taken in the installation to avoid the possibility of escaping gas which has an objectionable smell. Neither of these systems mentioned has been largely used for cooking and heating purposes, although it is hoped that they will be adapted for this purpose in the future. It is difficult to decide without knowing the local circumstances, whether acetylene or petrol-air gas would be preferable. It may be pointed out, however, that quite apart from a general system of supply, a number of different kinds of portable and self-contained lamps, yielding a much more powerful light than the old oil lamps and candles, are now available. Recently incandescent lamps burning paraffin vapour with a mantle such as those of the Blanchard type, alcohol and other incandescent lamps burning the lighter varieties of petroleum have been introduced. These can be quite portable and enable a much more powerful light to be secured than when the oil is burnt through the wick. Lights of a more powerful kind have also been utilised for outdoor lighting, for example by travelling showmen, while in Russia towns in the petroleum districts have also been lighted by individual incandescent oil-lamps of this kind.

(2) Both electric lighting and gas lighting can be applied successfully to the lighting of chapels. Light for light with gas at 2s. 6d. per 1,000 cubic feet, and electricity at 6d. per unit, gas is usually the cheaper.

If, as assumed in question (1), the chapel is located in a small village where gas or electricity is not available, petrol-air gas and acetylene will be found serviceable. One advantage of the use of acetylene gas is that it can also be purchased in solution in small cylinders. All that the consumer has to do is to attach as per instructions given by the manufacturers such a cylinder containing the acetylene compressed to his main and, when the acetylene is used up, the vessel can be replaced and the empty cylinder sent away to be refilled.

(3) As explained in reply to question (1), oil-gas, or as it is more generally termed petrol-air gas, can be applied to the lighting of small villages. G. L.

Failure of Church Roof Truss.

"TRUSTEE" (LYTHAM) writes: "Please express an opinion on the design and stability of the roof truss as shown on the enclosed sketch (not reproduced). The truss is constructed of pitchpine, and has exerted considerable thrust since its erection some five or 6 years ago, the upright members marked X being 3 to 4 inches out of plumb, and most of the joints have opened, particularly those at A. The eaves gutter is also being pushed off the wall in places, and the wall itself has given somewhat, having large cracks in many places, chiefly in the arches of the windows. The purlins 11×3 spruce, which are *not* placed square off the pitch, have sagged inwards, and several of the bolts to the iron straps have been omitted. The walls are 9in. common brick, 2in. cavity, 4½in. common brick, and 6in. stone parpoint facing—total thickness, 21½in. The cavity is closed where the buttresses occur, and built solid with the buttress. Please suggest the best method of putting the roof in a satisfactory state of repair."

—This is not strictly a hammerbeam truss, but a braced collar-beam truss. It is not well designed for a span of 40ft., and the buttresses are insufficient with such light walls. It is difficult to decide what is best to be done without a personal inspection, but apparently a staging will have to be built up and each truss raised by jacks to allow it to return to its original shape, while the buttresses are strengthened with 12in. more projection in the upper part and 18in. more in the lower part. Two ⅝in. rods with strap ends 1½in. by ⅜in. welded on should be bolted on the sides of the 10in. by 6in. pieces with three ½in. bolts in each, and be supported on the centre line of the church by a ⅝in. suspension rod. If these rods are very strongly objected to in this position, they may be raised to the level of the first purlins. HENRY ADAMS.

Architectural Employment at Messina.

J. W. C. (GATESHEAD) writes: "Please supply information in regard to the possibility of getting work in the architectural draughting line at Messina, Italy. I have heard that there is going to be a considerable amount of building done there, the intention being, I believe, to re-build the new town some distance from where the old city stood. I have recently returned from San Francisco, having been there since the earthquake of 1906. During this time I have had considerable experience in earthquake-proof buildings and the application of reinforced concrete and steel 'frame' to buildings."

—It is somewhat difficult to give any detailed information upon this subject, the intentions of the authorities not yet being fully determined. In August last the proposal was that the city should be rebuilt on the same situation, but the planning as to streets, etc., would be altered to a considerable extent. It is also doubtful if any detailed work is yet in preparation for house building. What opportunities an Englishman would

have in dealing with such matters is again problematical. If English architects or builders obtain any work in Messina, there is no doubt such qualifications as possessed by our correspondent would be extremely useful; but this would resolve itself into obtaining an appointment here even if the services were utilised in Sicily. We would suggest that a close watch be kept upon developments in the near future, and then perhaps a well-placed advertisement would bring into view the desired opening. Mr. Baylis Heynes is the British Consul in Messina, and a reply paid request for information would undoubtedly receive immediate attention.

A. G. H.

Hot Water Supply.

F. O. J. (HOLCOMBE) writes: "A hot-water system is fitted up as shown on sketch [not reproduced] with 1in. flow and return to cylinder from boiler. The supplies to bath, etc., are taken from top of the cylinder in ¾in. pipe. The cold supply enters the cylinder (which contains 30 gallons) as shown. The size of the boiler is 10ins. by 10ins. by 6ins., with flue under, the supply cistern being in roof. The fault of the system is that boiling water cannot be obtained, after having had a good fire for about four hours. I should like to know the cause for not heating. Ought there to be a return pipe from where bath, etc., supplies are taken?"

—Your installation has three little faults and one big one, which is that the amount of fire next the boiler is too small for the amount of water to be heated. The boiler contains at most one-third of a cubic foot of water, the hot water reservoir and pipes nearly 5 cubic feet, the heat-receiving surface of the boiler is about 1½ square feet, and the cubic amount of coal burning may be three-fifths of a cubic foot. If the boiler were 3ins. deep and planned with one flue under as now, much hotter water could be had in the same time. The minor faults are the right-angle elbows at the bends of the pipes and their being 1in. bore, and the cylinder being in the kitchen. Removing the cylinder to the bathroom, making the pipes 1¼in. bore, and the bends to the largest curve possible will give a quicker flow of water between boiler and reservoir. But it would be best to place a new boiler, cylindrical in shape, say, 2ft. high and 7in. or 8in. diameter inside, in the cellar or scullery; and if the chimney draught be proper much of the kitchen refuse can be burnt after a fire has been made with coke or the cinders from the kitchen and other fires. Your suggestion to lead a new pipe from the scullery to the boiler is good, as the complete circulation which this obtains will enable hot water to be drawn at once from the taps, without waiting till the cooled stagnant water has run out. This pipe should be a size smaller than the main outflow from the boiler, as when a tap is opened water flows to it from both ways of the pipe, but most quickly as a rule from the larger one. This returning pipe should enter the boiler half-way up the side. One way of improving the power of the present boiler is to lead its hot-water discharge pipe up the chimney-flue. The hole through which it comes out can be made smoke-tight by asbestos cord or slag-wool, and covered by an iron dish. Bends to a radius of four times the bore of the pipe will absorb the expansion. A cast-iron hot-water heating pipe, 2in. bore, will last as long as the boiler, and a 6ft. length will be enough. Your present 1in. pipe in the chimney will be a great aid to the boiler. This method may, however, cost more in fixing than a new boiler and its connections. INGENIOR.

Building Blocks Containing Silicate of Soda.

A. O. (BARNSLEY) writes: "I wish to know the name of a firm (if any) that manufactures partition blocks, building blocks, or tubes having silicate of soda as a binding principle or matrix. I also wish to know the method of manufacture adopted."

—So many firms have endeavoured to make building blocks and partitions with silicate of soda as a matrix that you would be ill-advised to start this on your own account without special advice, as their manufacture requires much skill and very careful selection of the bulking material. There are no books on the subject, and no articles of sufficient detail to be of any service to you. Modern partitions are best made of a special clay mixture and fired, or of some form of concrete or of plaster. S.

Varnish Making.

"CHELT" (EDGBASTON) writes: "What are the processes in the making of varnish? In boiling are the kettles of oil run on wheels over the fire, or is the fire portable? How is the oil prevented from taking fire? Where is the flue for taking off the hydrogen fumes from oil?"

—The kettles in which oil varnishes are made are portable, and exactly fit circular holes provided in the furnace, which is beneath the ground. Conical caps fit over them when in position, and these carry off the fumes which are now usually condensed by special apparatus. You can obtain the fullest particulars of varnish making by reference to Volume II. of "The Manufacture of Varnishes," by J. G. McIntosh, price 7s. 6d., published by Scott Greenwood and Son, 8, Broadway, Ludgate Hill, E.C. A.S.J.

Hammerbeam Roof Truss.

"CRAFTSMAN" (PLYMOUTH) writes: "I shall be glad to have an opinion as to the stability of the roof truss illustrated by enclosed tracing [not reproduced]."

—The design submitted has been slightly modified and the scantlings of timbers increased. Of course, in so small a scale there are many details not shown, but they do not involve anything exceptional. No constructional work should have bolts less than ⅝in. diameter, and generally ¾in. would be necessary. HENRY ADAMS.

Safe Loads of Roof Truss.

"PERPLEXED" (BRIDPORT) writes: "What would be the correct calculations of the safe loads of each member of the truss on enclosed drawing [not reproduced] for a roof covered with 18 B.W.G. corrugated sheeting? Are the members, stanchions, joists, and channels of sufficient dimensions?"

—The exact calculation of the stresses for a simple shed roof on stanchions involves much time and the consideration of many points in order to ensure safety, and the absence of such preliminary work has caused failure in several cases that have come under the writer's notice. The scantlings given on correspondent's tracing will be sufficient if the building is in a sheltered situation, but if exposed to high winds the whole arrangement should be reconsidered.

HENRY ADAMS.

Falling Off of Roughcast.

"ARCHITECT'S ASSISTANT" (OLDHAM) writes: "I have experienced some trouble in roughcasting a new cottage of mine at a seaside village. The work was carried out in August last in very good weather; but the end of December large patches of damp made their appearance and have since been spreading pretty rapidly, and about a fortnight ago a large piece of the "roughcast" fell off after a frosty night. The sand used was from a bank about a mile and a half from the sea, and the pebbles were seashore pebbles, the lime being from Buxton. I am not quite sure whether the plasterer has worked according to specification; if he had done so I hardly think this would have happened. Would you suggest taking it all off and remake it, or patch it up where it appears defective?"

—It is difficult to give a definite opinion as to the cause of the failure of the rough-cast without seeing it, as so many possibilities exist. It is also necessary to know how much of the material falls off, i.e., is it only the final coat or is the first coat also affected? For this purpose a very careful examination is necessary. It is not impossible that the materials chosen are unsuitable—this would be shown by examination—but it is more likely that the workmanship is poor. Under the circumstances your best plan is to have the work examined by a competent specialist and to accept his opinion and suggestions. He will say whether it would be better to patch or to remake. S.

Pugging and Dry Rot.

D. R. (SCARBOROUGH) writes: "A speculative builder is erecting a house on a ten years' lease for a client of mine. The first-floor joists have to be pugged with coke-breeze. The joists are wood. I find they are inferior 5th Swedish white wood. Will they be liable to succumb to dry rot in a short while? Will either ventilation or some solution covering the joists prevent this? If so, what?"

—Pugging—particularly that in which coke-breeze is used—seems, unfortunately, to be very favourable to the development of dry-rot. All the wood surfaces that come into contact with the pugging should be first painted with methylated spirits containing corrosive sublimate in solution in the proportion of 6ozs. to 1 gallon. Through ventilation, evaporating all dampness, is essential.

Dry Rot.

A. J. writes:—"Can a builder or an architect be held liable if dry rot breaks out in a building which has been recently erected?"

—A building owner is entitled to expect that the builder shall use proper materials, and that they shall be properly put in. He is entitled to rely on the skill and judgment of the builder and the architect. Now there are certain defects which result from faulty construction, and dry rot is one of them. It is caused either by the use of green wood or by insufficient ventilation—the latter being the most usual cause of trouble. The builder may be held responsible if he fails to carry out the instructions of the architect with regard to ventilation. Such instructions are generally given through the medium of plans. Suppose, for instance, the plans provided for air bricks, and the builder failed to put them in, with the result that dry rot broke out under the floor. The builder could be sued for negligence. In that case, also, the architect might be held guilty of negligence in not properly supervising the work.

There have been several cases in point. In a case reported in Fraser's Scotch Reports (1899), 1 F. 1211, an architect was held liable for dry rot which broke out owing to his negligent supervision. In another case (reported in the "Building News," 1907, December 13, p. 838), both builder and architect were held liable, and a similar result was arrived at in a case which is reported in the "Times," October 15, 1909.

Before moving in the matter all the documents should be submitted to a solicitor.

B.

Architect's Charge for Plans.

J. S. H. (WIGAN) writes: "Please state the amount I ought to charge fairly for:—Two complete sketch plans with elevations; one ditto with sections; 1 cloth tracing of last sent to local council; one cloth tracing for the builder; also measuring site, and interviewing adjoining owners for position of brook and rights of light, etc? I might say the owner and builder will erect the house between themselves, so that my services are ended with builder's working drawing. The house will not cost, I should think, more than £200."

—Our correspondent can fairly charge an amount equivalent to 2½ per cent. on the estimated cost in respect of his first two items which will amount to £5. The two cloth tracings of so simple a subject are probably not worth more than one guinea, and payment in respect of measuring site and negotiating with adjoining owner would be proportionate to time spent and result achieved. Probably a total charge of seven guineas would be a fair one. G.

SOCIETIES' REPORTS.

Leeds and Yorkshire Architectural Society.

On Wednesday evening, April 13th, the annual and first general meeting of session 1910-11 was held, Mr. Sydney D. Kitson, M.A., F.R.I.B.A., the new president, taking the chair. The report read by Mr. R. W. Thorp, A.R.I.B.A., hon. secretary, and the balance-sheet, presented by Mr. R. Fielding Farrar, A.R.I.B.A., hon. treasurer, both showed the Society's affairs to be in an eminently satisfactory state; the total membership of the Society was 167, against 165 last year. During the past session a Town Planning Committee had been formed, with the object of locally influencing the working of the Housing and Town Planning Act; while under the auspices of the Society the School of Architecture in connection with the School of Art was proving of advantage to associates in preparing them in the subjects required for the R.I.B.A. examinations.

Aberdeen Architectural Association.

The annual business meeting and "At Home" in connection with the Aberdeen Architectural Association were held in Kennaway's Rooms. The business meeting was first held, Mr. James B. Nicol, the president, in the chair.

The treasurer (Mr. James Blake) submitted the annual financial statement, which showed that the membership of the society stood at 88, and the balance at its credit £2 7s. 3d. Mr. Arthur Clyne was reappointed hon. president, and Mr. Nicol president. The vice-president (Mr. R. Connon Garden), the hon. secretary (Mr. R. W. Gibbon), and the hon. treasurer (Mr. James Blake) were also reappointed. The new committee was appointed as follows:—Messrs. Henry F. David, George Beith, Sydney H. Brown, J. Murray Easton, George G. Irvine, and Andrew McD. Cruickshanks. A vote of thanks was accorded to the retiring members.

Mr. Nicol submitted the report of the committee for the past year. That evening they completed their fifth year as an association, and the record had been one of steady and uninterrupted progress. Last general meeting they had to record the number of members at 76. This year they had to note a still further increase of 12, which, on considering the small amount of work in the various architectural offices in town, was, he thought, very satisfactory, and should incite them to still further efforts for promoting the work of the association. The work of the year, as outlined in the syllabus, had been closely adhered to. As they would recollect, it comprised six lectures, two meetings for discussion, and one meeting for the exhibition of sketches and designs. Two of the lectures were held under the joint auspices of the Aberdeen Society of Architects and the Aberdeen Architectural Association, and at both of the lectures the attendances were very good indeed. The joint lectures had proved themselves to be a great success, and thanks were again expressed to the Aberdeen Society of Architects for the assistance they had so generously given them for the past three years. Their only regret was that there was not a larger representation of the senior members of the profession at these joint lectures. The other lectures in the course were very useful and were largely attended and much appreciated by the members. An exhibition of designs was held on March 5th, when the designs submitted showed considerable originality. Two excursions were held early in the summer, the first to Crathes Castle, and the second to Harthill Castle, Oyne. He thought they might fairly congratulate themselves on the success of their year's work. The quality of the papers read had been excellent, and their sincere thanks were due to all those who had taken the trouble to prepare and read to them the papers at the various meetings, and to those who had joined in the discussions. The sub-committee appointed for the purpose had now issued a sketch book which was on sale, and the sincere thanks of the associations were due to Mr. Irvine for the great interest and care he had shown in its preparation. Another matter which from time to time had been in their minds was the question of a closer connection between the Aberdeen Society of Architects and themselves. This year, in the report of the Aberdeen Society of Architects, there appeared a paragraph bearing directly on the question, and the hope was there expressed that the two societies might see it to be for their mutual advantage to consider whether a more intimate connection could be established between them. He was confident that if the matter was approached in a broadminded spirit by both parties arrangements could be arrived at which would ultimately be of advantage to both bodies, and which should be of great advantage to those they were all trying to help—the architectural students of Aberdeen.

Mr. George G. Irvine made a few remarks as to the sketch book of the association, which he said was one of the finest productions north of Edinburgh or Glasgow.

Manchester Society of Architects.

At the annual general meeting the officers, council, and committees, for the ensuing year were elected. Mr. P. S. Worthington, M.A., F.R.I.B.A., was re-elected as president, for a second year; Messrs. Edgar Wood, A.R.I.B.A., and John Brooke, F.R.I.B.A., vice-presidents; and Mr. Isaac Taylor, F.R.I.B.A., hon. secretary.

The Junior Institution of Engineers.

A numerously attended excursion of this Institution took place recently to Southampton for the purpose of visiting the new 16-acre dock works, which are being carried out for the London and South Western Railway Company by Messrs. Topham, Jones and Railton; and the T.S.S. "Teutonic" of the White Star line. On arrival the party was met by the engineer, Mr. T. E. Wentworth Shields, and Mr. R. H. Taylor representing the contractors. After being shown over the works by these gentlemen, and members of their respective staffs, the visitors were entertained to luncheon at the South Western Hotel, by the kindness of the contractors. Opportunity was afterwards given to go through Messrs. Harland and Wolff's shops, of which many availed themselves. Mr. P. E. Curry, manager of the Ocean Steam Navigation Company, received the members on board the "Teutonic," and special arrangements were made for conducting the party over the vessel, the engine room, etc., being included, Mr. H. S. Boumphrey, superintending engineer, being present. Afternoon tea was served in the saloon at the conclusion, by invitation of the White Star Line, after which there was a short trip round the Dock Estate by steamer kindly provided by the Isle of White and South of England R.M.S. Packet and Towing Company, the party landing at the Royal Pier in time to join the 6.12 p.m. express from Southampton West for London. The acknowledgments of the Institution for all that had been done to render the occasion so interesting and enjoyable were expressed by the vice-chairman, Mr. J. Wylie Nisbet.

Gloucestershire Architectural Association.

Mr. L. Richardson, of Cheltenham, gave a lecture entitled "The Building Stones of Gloucestershire," treating the subject from the architectural point of view, and mentioning the chief stones of the county, together with some of their merits and defects. The lecture, which proved a most interesting and instructive one, was illustrated by an exceedingly fine collection of lantern views, and at the conclusion Mr. Waller expressed the thanks of the members to the lecturer.

The A.A. Play.

It was stated at the Architectural Association dinner last Thursday evening that the A.A. Play had ended with a slight deficit, but that Mr. J. H. Leigh, the lessee of the Royal Court Theatre, had generously given the use of that house for a further performance in November next, when it was hoped that the deficit would be made up and a balance in hand secured.

LEGAL MATTERS.

Public Lavatories and Private Interests.

In the Court of Appeal, before the Master of the Rolls, Lord Justice Buckley, and Lord Justice Kennedy, the appeal in the case of the Stourcliffe Estates Company (Limited), v. Bournemouth Corporation, which was heard last week, illustrates a principle which admits of many possible applications to matters in which builders are interested.

This was an appeal from a decision of Mr. Justice Parker's, in an action brought by a landowning company, to restrain the Corporation of the Borough of Bournemouth from continuing to erect certain lavatories, and for an order on the corporation to pull down and remove the lavatories so far as they had been built. The main contention of the corporation was that the lavatories complained of were not within the terms of a covenant subject to which the land had been acquired. The corporation had covenanted with the company "to preserve and keep the land to be devoted to pleasure ground purposes as an open space for the enjoyment of the public in such manner and form as the corporation shall think best in the interests of the public, subject to no building or erections of any kind being put thereupon except such structures as summer-houses, a band-stand, or shelters, not exceeding 12ft. in height, for the accommodation and convenience of the public, and subject also to no gravel being dug upon or removed from the said piece of land so to be devoted for the purpose of a public garden or pleasure ground, except for the purpose of making such garden or pleasure ground." In the trial of the action, Mr. Justice Parker had come to the conclusion that a public lavatory, urinal, or convenience of that kind, was not included with the shelters and other things mentioned in the covenant. Such an erection as the corporation was putting up would be contrary to the covenant. The corporation was endeavouring to comply with a public requirement, and evidently regarded the erection as a sanitary matter, but there was a breach of the covenant. Unless a corporation could enter into such a covenant, however, the price of land required for the benefit of the public might often be greatly enhanced. Landowners were often willing that there should be open spaces, the sites of which they were willing to dispose of for the benefit of the rest of their properties, but they would be unwilling to convey lands to public bodies if the parting with them to such bodies involved the danger of the lands sold becoming the sites of some structures which were not desired in the vicinity of the portion of the property retained. His Lordship therefore granted an injunction as asked. The corporation appealed.

Mr. Alexander Grant, K.C., and Mr. J. G. Wood appeared for the appellants; and Mr. Mark Romer, K.C., and Mr. MacSwinney for the respondents, the plaintiff company. The Court dismissed the appeal. The Master of the Rolls, in the course of his judgment, said he could not imagine any doubt as to the true meaning of the word "shelter," and particularly as used with reference to place at the seaside. It was a well-known structure, plainly different from what was known as a lavatory, and the attempt to make out that the erection of the structure contemplated by the corporation was a thing of the same kind with the shelters and other things mentioned in the covenant entirely failed; it was an impossible contention. As a fact, when plans were first considered, the plans were for lavatories, and the tenders were for lavatories, and the subsequent alterations of these plans by adding to them some kind of shelters was merely done with a view to try and comply with the terms of the covenant, and would not bear investigation, and Mr. Justice Parker's conclusion on this part of the case that there had been a breach of the covenant by the corporation was in his Lordship's opinion perfectly correct. The Lords' Justices concurred in the dismissal of the appeal.



INTERIOR OF AN INSURANCE COMPANY'S STRONG ROOM FITTED WITH RONEO STEEL FITTINGS.

TRADE AND CRAFT.

Steel Office Fittings.

It is only by the adoption of incombustible interior fittings that the absolute fireproofness so much desired can be obtained, and goods manufactured by Roneo, Ltd., certainly meet this requirement. Their steel counters, desks, letter files, etc., etc., are finished in handsome, well-baked durable enamels in art colours, so as to produce an artistic and harmonious interior. Such fixtures, besides ensuring an effective protection against fire, obtain a great increase in capacity as against wooden fittings for the same space. Steel fittings have the further advantage that they are impervious to the inroads of vermin. They are easily cleaned, and therefore sanitary; and the drawers are never affected by changing climatic conditions. Partitions, Desks, Letter Files and other fittings in actual use may be seen in the showrooms of Roneo, Ltd., 26, Holborn Viaduct, E.C.

The firm issue a booklet illustrating their fire-resisting furniture and fixtures, in which it is pointed out that banks and insurance offices now use steel fixtures almost exclusively for new strong rooms, and it is obvious that so excellent an example is likely to be extensively followed. To the advantages of compactness and cleanliness, already mentioned, are added those which accrue from the convenience of building the fixtures in sections. Re-arrangement, extension, or reduction are thus rendered easy and convenient. Among the ingenious devices illustrated in the booklet is the arrangement for the storage of heavy books. Ledgers, etc., that are constantly handled soon wear shabby by being pushed or dragged in or out of their shelves; but on the firm's steel roller shelf every part revolves that the book strikes. Consequently, there is no abrasive friction, and a large economy is effected in the saving of bindings that are frequently very costly. But the great advantage that is common to all the objects listed—combination cabinets, document files, card index cabinets, steel roll-top desks, office tables and draughting tables—is that, in the terse phrase of the firm's advertisement, "they won't burn."

THE SMOKE ABATEMENT SOCIETY.

The annual general meeting of this Society was held on May 3rd inst., at the Royal United Service Institution, Sir William Richmond, R.A., presiding. In moving the adoption of the report, the chairman said that the society had made rapid progress during its ten years of existence. The L.C.C. was alert and the Borough Councils were beginning to view the smoke nuisance as an unnecessary evil, and in consequence of this change of opinion, fogs caused through smoke were becoming rare. The Colonies, and many parts of the United Kingdom, were awakening to the necessity of coping with the smoke evil. The L.C.C. were trying to get the word "black" deleted from the smoke clauses of the Public Health Act of 1891, because some magistrates had held that "they could not convict of a nuisance unless they were satisfied that in a literal and technical sense black smoke was emitted." Coal-smoke contained acids which destroyed stone, spoiled marble, injured metal, ate into fabrics and painted surfaces; for in every smut, however small, there was strong sulphuric acid. The Society appealed for help to make this a brighter, healthier and cleaner London. The Very Rev. the Dean of Westminster, who moved a resolution supporting the Society's efforts, referred to the harmful effect of coal smoke upon life and property, and observed that almost every kind of stone used in the Abbey was showing signs of deterioration, due in the opinion of the best authorities to the process of burning coal. Experiments had been made on various stones, with almost every preparation, resulting in little or no success. He was sorry to say the Baryta treatment, which they had adopted at considerable expense, and carried out with considerable pains, had proved a failure, though it had succeeded at Chichester. All interested in the Abbey ought to recognise that the efforts of the Society should be supported.

Dr. Des. Vœux (hon. treasurer) said that in the City of Bradford the Society had been able by aid of the Corporation to do much to mitigate the smoke evil and its disastrous results in that important manufacturing centre.

Dr. Rideal observed that a change from coal to gas fires would mean a diminution of 90 per cent. of the smoke nuisance.

Dr. Owen urged the necessity for an official research department, which could fix the minimum of smoke allowed to be emitted from factory chimneys and a standard of smoke measurement.

Sir William Richmond, R.A. was re-elected president for the ensuing year, and the meeting concluded with the customary votes of thanks.

COMING EVENTS.

Wednesday, May 11.
ROYAL SOCIETY OF ARTS.—Mr. Sydney Perks on The Guildhall: the recent discoveries and restoration.

Thursday, May 12.
R.I.B.A.—Science Committee meets.

Friday, May 13.
R.I.B.A.—Last day for receiving applications and testimonies of study for June final examination and probationary work for special examination.

Saturday, May 14.
MUNICIPAL AND HEALTH EXHIBITION.—Royal Agricultural Hall, London, closes.

Monday, May 16.
Whit-Monday.—Bank Holiday.

Thursday, May 19.
R.I.B.A.—Literature Committee meets.

Saturday, May 21.
EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Broomhall, Fife.

R.I.B.A.—Last day for receiving notices of questions for discussion at meeting on June 6th.

Monday, May 23.
R.I.B.A.—Mr. E. A. Rickards on the Art of the Monument. 8 p.m.

Thursday, May 26.
THE SURVEYORS' INSTITUTION.—Country Meeting at Liverpool.

Friday, May 27.
ROYAL SANITARY INSTITUTE.—Provincial Sessional Meeting at Town Hall, Hereford.

THE SURVEYORS' INSTITUTION.—Country Meeting at Liverpool.

COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about **five days** or longer after the date of this issue.
Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders.
The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

May 13. **WOOD GREEN (London, N.).**—Erection of two houses in Clifton Road. Plans and specifications can be seen at the office of Vigers and Co., 4, Fredericks Place, Old Jewry, E.C., to whom tenders must belivered. (See announcement in advertisement columns.)

May 14. **COLLYWESTON (Northamptonshire).**—Erection of a new public elementary school. Send names to the architects, J. B. Corby and Son, of Stamford, on or before May 14. Plans and specifications may be seen at the office of the architects, and quantities for the work will be ready early in June.

May 16. **CARDENDEN (Scotland).**—Brickwork, joiner, plaster, slater, plumber, and gas-fitting for three cottages to be built at Bowhill, Cardenden. Apply to David Burt, Station Road, Cardenden.

May 16. **BARRY (Cardiff).**—Alterations, additions, and drainage works at Tredwgan Farm, for Mrs. Williams, of Miskin Manor. Plans and specification may be seen at the offices of Arthur LL. Thomas and Gomer S. Morgan, Architects and Surveyors, Church Street Chambers, Pontypridd, to whom tenders must be delivered.

May 16. **BRIDGNORTH.**—Restoration and improvement at the North Gate, for the Corporation. Drawings and specifications can be seen at the Borough Surveyor's Office, where further information can be obtained. Tenders to be sent to J. H. Cooksey, Town Clerk, Bridgnorth.

May 17. **DURHAM.**—Alterations and improvements at East Hedley Hope, Springwell, Lanehead, South Church and Etherley infants' Council schools, for the C.C. Sole tenders are required. Plans, specifications, and general conditions of contract may be seen at the office of F. E. Coates, Shire Hall, Durham. Tenders to be sent to A. J. Dawson, Clerk to the Education Committee, Shire Hall, Durham.

May 17. **BRIDGEND.**—Erection of a new boardroom and offices at the workhouse, for the Guardians. Plans, etc., may be seen, and all particulars obtained at the office of P. J. Thomas, architect, Bridgend. Tenders to be sent to R. Harmar Cox, Clerk, Union Offices, Bridgend.

May 17. **STORNOWAY.**—Erection of a spire on the U.F. English Church. Plans are to be seen with Alexr. Macdonald, architect, Municipal Buildings, Stornoway, from whom schedules of quantities may be obtained. Tenders to be lodged with Neil M'Callum, merchant, Cromwell Street, Stornoway.

May 17. **IRVINESTOWN (Ireland).**—Erection of 40 single cottages for labourers, and fencing 40 plots to same, for the R.D.C. Plans, specifications, and tender forms for the work can be obtained from the Clerk on payment of 5s., and tenders are to be lodged in his office at the Board Room, Irvinestown.

May 17. **WHITLEY BAY (Northumberland).**—Designs, etc., provision and erection of a shelter seat in an open space on the Promenade, Whitley Bay, for the U.D.C. Further particulars may be obtained on application to A. J. Rousell, A.M.I.C.E., surveyor, Council Offices, Whitley Bay. Tenders to be delivered to Augustus Whitehorn, clerk, 60, Saville Street, North Shields.

May 17. **HARTLEBURY.**—Provision of all materials for, and the erection of new schools, in accordance with the drawings and specification prepared by the Architect to the Governors, S. S. Reay, F.R.I.B.A., 4, Unity Street, College Green, Bristol. Drawings and specification may be seen at the offices of the Architect. Quantities may be obtained on deposit of £2 2s. Tenders to be delivered at the office of C. Hugh Watson, Solicitor, Stourport, Clerk to the Governors.

May 17. **GRANGEGORMAN (Dublin).**—Erection of hay shed and lean-to cattle shed, in corrugated iron, at the farmyard at Portrane Branch Asylum, Donabate, Co. Dublin, for the Joint Committee of the Richmond District Asylum, in accordance with plans and specifications prepared by S. J. M'Clure, and which may be inspected at the office of W. J. Murphy, chief clerk, Grangegorman, Dublin. Contractors are requested to put in alternative tenders, setting out in detail the amount of the work that will be done in Ireland, and value of same, as preference will be given to Irish manufacture. A bond for the fulfilment of contract will be prepared by the solicitor to the Asylum, William Dillon, 12, St. Andrew Street. Tenders to be left with the Chief Clerk.

May 17. **DUBLIN.**—Erection of the third section of the Bride's Alley Area Artisans' Dwellings scheme, for the Improvements Committee, in accordance with the plans, specifications, and conditions of contract prepared by the City Architect, which may be inspected daily (except on Saturdays) at his office, Municipal Buildings, Cork Hill, Dublin. Copies of bills of quantities and forms of tender may be obtained at the office of the City Treasurer, Municipal Buildings, Cork Hill, Dublin, on deposit of £2. Tenders must be accompanied by the priced bills of quantities (priced in ink), and must also contain the names of two solvent securities willing to be bound severally with the contractor in a sum of £1,000 each for the fulfilment of contract. Rate of wages, etc., clause to be observed. Tenders, addressed to the Chairman, Improvements Committee, to be lodged at the Improvements Committee Office, City Hall, Dublin.

May 18. **PENGARNISIOG (Anglesey).**—Erection of a Council school, at Pengarnisiog, Ty Croes, Anglesey, for the Education Committee. Plans and specifications may be inspected at the office of Jos. Owen, F.R.I.B.A., County Architect, Menai Bridge. Tenders to be delivered to R. H. Williams, Secretary of Education, Education Offices, Llangefni.

May 18. **CARDIGAN.**—Erection and completion of a new bungalow cottage, Gwbert Road, Cardigan, for T. Gwilym James, St. Peter's House, Hereford. Plans, specification, and conditions of contract can be seen at the office of J. Teifion J. Williams, architect, Napier Street, Cardigan, where also all information and form of tender can be obtained. Tenders are to be sent to Mr. James.

May 18. **PETWORTH.**—Erection of a new post office for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster, Petworth. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be delivered, addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

May 18. **LEEDS.**—Demolition of the existing bridge and the construction and erection of a temporary timber bridge, together with other accommodation works, and the masons', bricklayers', excavators' and ironfounders' works in connection with the construction and erection of a new 50ft. wide bridge, in three spans, across the River Aire at Kirkstall, Leeds, for the Corporation. Drawings may be seen, and a copy of specification, conditions of contract, and bill of quantities obtained at the office of W. T. Lancashire, city engineer, Municipal Buildings, Leeds, on deposit of £5 5s. Tenders must be received at the Town Clerk's Office.

May 19. **COLCAR.**—Erection of additions to Heath House mill, for T. W. Thorpe, Ltd. Plans may be seen, and quantities obtained, at offices of Lunn and Kaye, architects and surveyors, Milnsbridge and Huddersfield.

May 19. **MERTHYR TYDFIL.**—Re-building of Glantaff Factory and the erection of two cottages in Plymouth Street, for D. Mansell and Sons. Plans and specifications may be seen either at the above factory or at the office of Thomas Roderick, architect, Clifton Street, Aberdare. Tenders must be sent to D. Mansell and Sons, Glantaff Factory, Merthyr Tydfil.

May 19. **THORNBURY (Yorks.).**—Erection of a store in Woodhall Avenue, Thornbury (various works; painter's excepted), for the City of Bradford Co-operative Society, Ltd. Plans can be seen and quantities obtained at the office of William Rycroft, architect, Bank Buildings, Manchester Road, Bradford. Tenders to be sent to the Society's office only, 65, Sunbridge Road, Bradford. Contractors will be required to comply with the Society's resolution with respect to fair wages.

May 19. **GLASGOW.**—Erection of a telephone exchange at Cubie Street, Bridgeton, Glasgow, for the Commissioners of H.M. Works and Public Buildings. Tenders are required for the whole work and not for separate trades. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Clerk of Works, H.M. Office of Works, Head Post Office (Hanover Street Entrance), Glasgow. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, 3, Parliament Square, Edinburgh, on deposit of £1 1s. Tenders must be delivered, addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

May 20. **WATH-UPON-DEARNE (Yorks.).**—Erection of Park Road Council school: new infants' department (builder, joiner, slater, plumber, plasterer, painter), for the West Riding Education Committee. Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders to be sent to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

May 20. **BARNOLDSWICK (Yorks.).**—Erection of new infants' school, Gisburn Road, for West Riding Education Committee (builder, joiner, slater, plumber, plasterer, painter, whole or separate tenders). Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders must be addressed to the Clerk of the County Council.

May 20. **CHELMSFORD.**—Execution of the following works in their Cattle Market, for the T.C.:—1, construction of a roof over Redd and Slipper's stand; 2, construction of a roof over Offin and Rumsey's auction ring; 3, erection of a small horse shed of corrugated iron; 4, fixing new manger in, and repairing, existing horse shed. The specification and plans may be inspected, and form of tender and full particulars obtained, at the Borough Surveyor's Office, 16, London Road. Tenders must be delivered at the office of W. Smith, Town Clerk, Municipal Offices, 16, London Road, Chelmsford.

May 21. **HIRST.**—Erection of twelve semi-detached houses in Woodborn Road, for the Ashington Industrial Co-operative Society, Ltd. Plans, etc., can be seen, and quantities obtained at the office of Osborne Blyth, architect, Ashington.

May 21. **ABERCANAID (Wales).**—Erection of a new church. Drawings and specification can be seen at the office of T. Edmund Rees, architect and surveyor, Merthyr Tydfil. Tenders to be sent to the Rev. Peter Williams, The Vicarage, Troedyrhiw.

May 21. **DOWLAIS (Wales).**—Taking down two old cottages and erecting three cottages, for the Foresters' Society. Plans and specification can be seen at the office of T. Edmund Rees, architect and surveyor, Merthyr Tydfil. Tenders to be sent to the Architect.

May 21. **CARDIFF.**—Stripping and re-slating, etc., roofs at 62, Charles Street, for the Guardians, according to specification, a copy of which, together with the form of tender, may be obtained from Arthur J. Harris, Clerk, Union Offices, Queen's Chambers, Cardiff, to whom tenders must be sent.

May 21. **PORT-CHESTER (Hants).**—Erection of two semi-detached small holdings dwelling houses. Plans, specification, and conditions of contract (no quantities), may be seen, and other information obtained, at the office of W. J. Taylor, County Surveyor The Castle, Winchester, on and after May 17. Tenders, on form to be obtained from the County Surveyor, are to be delivered to H. Barber, Clerk of the County Council, The Castle, Winchester.

May 23. **CARDIFF.**—(See "Engineering.")

May 24. **PENIEL (Welshpool).**—Alterations to Peniel Congregational Chapel, near Llanfair, Welshpool. Plan and specification and further information may be obtained on written application to R. W. Davies, M.S.A., Architect and Surveyor, Severn Street, Welshpool, to whom tenders are to be delivered.

May 24. **LISCARD (Cheshire).**—Erection of new public library, Earlston Park, Liscard, in accordance with drawings prepared by MacColl and Tonge, Architects, of Bolton and Southport, for the Libraries Committee of the Wallasey U.D.C. Copies of bills of quantities and general conditions, with form of tender, may be obtained on application, on or before May 11, from J. Brierley Preston, Surveyor, Central Buildings, 41, North John Street, Liverpool, on deposit of £1 1s. The drawings may be seen at the Librarian's Office (which adjoins the site), Earlston Hall, Earlston Road, Liscard, Cheshire. The contract will be required to enter into a bond, with approved sureties, for the due performance of the contract. Tenders are to be addressed to H. W. Cook, Clerk and Solicitor, Public Offices, Egremont, Cheshire.

(*Continued on page xiv*)

May 24. **WEDNESBURY.**—Erection of Holyhead Road Council school, for the Education Committee of the Borough. Plans of the proposed buildings may be inspected, and bills of quantities obtained, not later than May 10, at the office of the Architect, C. W. D. Joynson, Springhead, Wednesbury, on a deposit of £2 2s. Tenders to be sent to E. Foster Knowles, Secretary to the Education Committee, Education Offices, Wednesbury.

May 25. **LONDON, E.C.**—(See "Sanitary Engineering.")

May 25. **MONEA (Ireland).**—Erection of the new Devenish school, Monea, according to drawings and specification to be seen at the office of Thomas Elliott, 37, Darling Street, Enniskillen, to whom tenders must be sent.

May 25. **CROYDON.**—Erection of two isolation pavilions and additions to Administrative Block, etc., at the Borough Hospital, Waddon, for the Croydon Corporation. Plans and specifications can be seen, and bills of quantities and form of tender obtained, at the office of the Borough Engineer, Town Hall, Croydon, upon deposit of £1 1s. Tenders to be sent to F. C. Lloyd, Town Clerk, Town Hall, Croydon, at which office the conditions of contract can be seen.

May 28. **WELSHPOOL.**—Erection of a Drill Hall at the Armoury, Welshpool, for the Montgomeryshire Territorial Force Association. Plans and specification may be inspected and further information obtained on written application to R. W. Davies, M.S.A., Architect and Surveyor, Severn Street, Welshpool, to whom tenders are to be delivered.

May 30. **CHELMSFORD.**—Alterations and additions to King Edward VI. Grammar School. The drawings and specifications may be seen on application to the architects, Charles and W. H. Pertwee, Chelmsford. A deposit of £5 is required. Quantities will not be supplied. Tenders to be delivered to William Stunt, solicitor, Clerk to the Governors, 71, Duke Street, Chelmsford.

June 17. **WARWICKSHIRE.**—Alteration of the premises at the Aston Lower Grounds to fit the same for the requirements of the Territorial Units who will be there located, for the Warwickshire Territorial Force Association. Bills of quantities, form of tender, etc., may be obtained from the architects, James and Lister Lea and Sons, 19, Cannon Street, Birmingham, on deposit of £3 3s. The plans and conditions of contract may be seen and all further particulars obtained at the architect's offices. The contractor shall pay rates of wages and observe hours of labour not less favourable than those commonly recognised by employers and trades societies in the building and allied trades in the Birmingham district. Further, the conditions of employment generally accepted in the Birmingham district in the trade concerned shall be taken into account in considering how far the terms of the fair wages clauses are being observed. The contractor shall be prohibited from transferring or assigning to any person or persons whatever any portion of his contract without the written permission of the Association. The contractor shall be responsible for the observance of the fair wages clause by the sub-contractor. Tenders should be delivered at the offices of the Association, 46, High Street, Warwick.

ENGINEERING.

May 16. **CONINGSBY (Horncastle).**—Removal of the present wooden bridge, known as the Wath Bridge, over the River Bain at Coningsby, and the constructing, in its place, of a steel girder bridge, for the Horncastle R.D.C. Specifications and plans can be seen at the Council Offices, and any further particulars desired will be furnished on application to Henry White, Surveyor, Tumby Woodside, Mareham-le-Fen, Boston. Tenders to be delivered to J. E. Chatterton, Clerk, Council Offices, Horncastle.

May 17. **MANCHESTER.**—Construction of a subway in Derby Street, Cheetham. Apply to the City Surveyor's Office, Town Hall, Manchester Deposit of £1 1s. required.

May 21. **ELY, CARDIFF.**—Providing and fixing boiler and connections at the probationary wards, Headquarters Homes, for the Cardiff Guardians. Specification by S. W. Allen, Consulting Engineer, a copy of which, together with form of tender, may be obtained from Arthur J. Harris, Clerk, Union Offices, Queen's Chambers, Cardiff.

May 23. **CARDIFF.**—Construction and maintenance of a skew bridge, consisting of two spans of 41ft. 6ins. each, by 50ft. wide, over the River Ely, in lieu of the existing masonry bridge, which is to be removed; and for the execution of certain road works, in connection therewith. The new bridge is to be constructed with masonry abutments, centre pier, and wing walls, and is to have a steel and concrete superstructure and iron parapet railings. Contract drawings and deed of contract may be inspected, and forms of tender, specification, and bill of quantities obtained at the City Engineer's office, upon deposit with the City Treasurer of £3. Tenders are to be delivered at the office of the Town Clerk of Cardiff, in the City Hall.

June 1. **SOUTHAMPTON.**—Reconstruction of a portion of the town quay, Southampton (contract No. 4), such tender being based upon proposals to be submitted by the persons tendering, and the particulars supplied by the Harbour Board. Specification, conditions, and copies of the general drawings may be obtained upon application to E. Cooper Poole, A.M.Inst.C.E., Engineer and Surveyor to the Board, at the Board's offices, from 10 a.m. to 12 noon, upon deposit of £5. Tenders must be delivered to Harbour Board Offices, Town Quay, Southampton.

SANITARY ENGINEERING.

May 17. **HALIFAX.**—Sewerage works at Northowram, for the Halifax Corporation:— (1) Construction of about 1,430 yards of 15in. main outfall sewer (Mytholme to Godley), 509 yards of 9in. sewer in Staups Lane, and 185 yards of 12in. sewer in Stump Cross; (2) supply of 15in. and 9in. cast-iron pipes to Hipperholme station. Plans and specifications may be seen and forms of tender obtained on application to James Lord, M.I.C.E., Borough Engineer, Town Hall, Halifax, upon deposit of £10 contract No. 1, and £5 contract No. 2. Tenders must be sent to Herbert Ashling, Town Clerk. The persons whose tenders are accepted will be required to observe the fair contracts clause adopted by the Corporation.

May 18. **BIGGLESWADE.**—Construction of about 7¼ miles of stoneware pipe sewers, varying in size from 15in. to 6in., together with manholes, lampholes, ejector chambers, and other works; also for the laying of about 1¼ miles of cast-iron and steel rising and compressed air mains, from 10in. to 2½in. diameter, for the U.D.C. Plans and specifications may be seen, and bills of quantities and schedule of prices obtained, at the offices of the Engineer, J. T. Eayrs, M.Inst.C.E., 30, Corporation Street, Birmingham, April 25 to April 30, and also at the office of the Surveyor to the Council, Market Place, Biggleswade, from May 2 to May 7, on deposit of £3 3s. Tenders to be delivered at the office of Henry Chaundler, Clerk to the Council, Council Offices, Biggleswade, Beds. It is hoped that only substantial contractors with extensive experience in similar works will apply.

May 23. **WALTON-UPON-THAMES.**—Construction of the following lengths of sewers, together with manholes, etc., for the U.D.C.:—113 yards lineal 9in. cast-iron pipe sewer, 537 yards lineal 7in. cast-iron pipe sewer, and 323 yards lineal 7in. stoneware pipe sewer. Drawings and specification may be seen and forms of tender obtained on application to R. Wilds, surveyor, Council Offices, Walton-on-Thames. Tenders must be delivered to Percy H. Webb, Council Offices, Walton-on-Thames.

May 23. **SOUTHAMPTON.**—Supply, erection, and setting to work, etc., (1) pneumatic sewage ejector, with cast-iron chamber, near Millbrook Station; (2) pneumatic sewage ejector in existing chamber at Rochester Street, for the Corporation. Plans, specifications and conditions may be inspected and forms of tender obtained at the Borough Engineer's Office on production of the Borough Treasurer's receipt for a deposit of £1 1s. for each contract. Tenders must be delivered at the Town Clerk's Office, Municipal Offices, Southampton.

May 25. **LONDON.**—Reconstruction of the convenience in Byward Street, E.C., for the Streets Committee of the Corporation, in accordance with the terms and conditions contained in specifications, which may be obtained at the office of the Engineer on deposit of £2 2s. Persons tendering must give the names and addresses of at least two substantial sureties, who will be required to enter a bond for the due performance of the contract. Tenders must be addressed to the Town Clerk, Public Heath Department, Guildhall, E.C., and delivered at the office of the Hallkeeper in the Guildhall.

May 28. **WIGSTON MAGNA (Leicester).**—Construction of sewage works:—Contract No. 1, sewers, pumping station, and outfall works; the construction of about 1¾ miles of concrete, brick, and stoneware pipe sewers, varying from 6ft. by 4ft. to 9in. diameter, the laying and jointing of about ¼ of a mile of 13in. cast-iron pumping main, the construction of a pumping station, tanks, two continuous filters, distribution, and other works. Contract No. 2, cast-iron pipes: the supply and delivery of about 190 tons of coated cast-iron pipes and specials, varying in diameter from 18in. to 4in. Contract No. 3, sewage ironwork: the supply, delivery, and fixing of two rotary sewage distributors, 7oft. in diameter, floating arm, screen with power rake, and the supply and delivery of about 130 various sluice valves, air valves, and penstocks. Drawings may be seen at the offices of the engineers, Everard, Son and Pick, 6, Millstone Lane, Leicester, from whom conditions, specification, quantities, and form of tender may be obtained on deposit of £2 2s. for each contract. Tenders upon the form supplied to be sent to A. H. Burgess, Clerk, 2, Wycliffe Street, Leicester.

May 30. **WAKEFIELD.**—Alterations and additions to existing precipitation tanks, etc., the construction of about three acres of percolating filters, containing approximately 31,000 cubic yards of filtering material, effluent settlement tanks, liming and ferric sulphate houses, offices, mess-room, culverts, carriers, drains, and other appurtenant works at Calder Vale, for the Corporation. The contract drawings may be seen, and specification, bill of quantities, and form of tender obtained at the office of the engineer, J. P. Wakefield, A.M.I.C.E., city surveyor, Town Hall, Wakefield, on deposit of £5 5s. (Bank of England Note). Tenders must be delivered to W. W. Greenhalgh, Town Clerk.

June 20. **YSTRADGYNLAIS.**—Schemes and estimated cost for sewering the Parish of Ystradgynlais Lower, for the R.D.C., who will pay a sum of £20 for the scheme which they consider most suitable, and the decision of the Council must be accepted as final. Competitors to state their terms for full detailed plans and specifications, and for carrying out the scheme they submit. Particulars of the area to be drained and any other information may be obtained from T. Watkins, Surveyor to the Council, Ystradgynlais. Schemes to be sent in to D. L. Moses Evans, Clerk to the Council, Commercial Street, Ystalyfera.

IRON AND STEEL.

May 16. **CONINGSBY (Horncastle).**—(See Engineering.")

May 17. **GRANGEGORMAN (Dublin).**—(See "Buildings.")

May 17. **LINCOLN.**—Supply of 2,260 tons approximately 21in. pipes and special castings, for the Corporation. Specification and form of tender may be obtained and drawings seen at the office of the Engineer, Neil McK. Barron, Waterworks Engineer, Lincoln. Tenders, addressed to the Chairman of the Waterworks Committee, to be delivered at the office of W. T. Page, Town Clerk, Guildhall, Lincoln.

May 20. **CHELMSFORD.**—(See "Buildings.")

May 23. **CARDIFF.**—(See "Engineering.")

May 30. **DARLINGTON.**—Corrugated iron roofs to tar macadam sheds, for the Corporation. For all particulars apply to George Winter, Borough Surveyor, Town Hall, Darlington.

PAINTING.

May 17. **ALDERSHOT.**—Painting and decorating the whole of the interior of the municipal buildings and fire station premises, Grosvenor Road, Aldershot, for the U.D.C. Specifications can be seen and further particulars obtained upon application at the office of Fred C. Uren, surveyor to the Council. Tenders to be sent to W. E. Foster, clerk, Municipal Buildings, Aldershot.

May 17. **LONDON, S.E. and S.W.**—Cleaning and painting at the Lambeth parish school, Elder Road, West Norwood, S.E., and No. 220, Brixton Road, S.W., for the Lambeth Guardians. Tenders must be sent to James L. Goldspink, Clerk to the Guardians, Guardians' Offices and Board Room, Brook Street, Kennington Road, S.E., or placed in a box provided for their reception in the office of the Clerk to the Guardians, by May 17, and will be opened at the Board Room at noon on the following day, when all persons tendering, or their authorised agents, must be in attendance. Forms of tender may be obtained at the office of the Clerk. Specifications will be supplied on personal application on deposit of £2.

May 19. **STIFFORD (Essex).**—Distempering and painting works, at the Children's Home, at Stifford, near Grays, Essex, for the Guardians of Stepney Union. Specification, forms of tender, etc., can be obtained on application at the office of T. G. Stacey, Clerk, Guardians' Offices, Barnes Street, Stepney, E., to whom tenders must be sent.

May 24. **GRIMSBY.**—Painting and cleaning the schools as under:—(1) Holme Bill, exterior, senior boys', junior boys', girls' and infants' departments; also cookery and handicrafts centres, and caretakers' house. (2) Harold Street, interior, senior, junior and infants' departments; also cookery, laundry, and handicraft centres. (3) Edward Street, exterior, senior boys', junior boys', senior girls', junior girls' and infants' departments, for the Borough Education Authority. Specifications and full particulars may be obtained at the Education Offices. Tenders, giving the price of each school, must be addressed to Douglas Chandler, Clerk to the Education Authority, Education Offices, Grimsby.

May 25. **HANDSWORTH.**—Painting and cleaning of the public elementary schools during the summer holidays, 1910, for the Education Committee. Apply to J. F. Ingram, Education Offices, Soho Hill, Handsworth, Staffs, for specifications and conditions of tender.

ROADS AND CARTAGE.

May 16. **SEVENOAKS.**—Supply of 1,075 yds. of cleaň local stone, unbroken, for the U.D.C. Specification may be obtained of Mr. Samuel Towlson, A.M.Inst.C.E., Surveyor to the Council, Argyle Road, Sevenoaks.

May 16. **STAMFORD.**—Supply of 1,000 tons of X and 200 tons of XX broken granite; also 100 tons of ½in. slag chippings, to be delivered free in trucks at Stamford Station as and when required during the months from May, 1910, to March, 1911, inclusive, for the T.C. Tenders with samples to be sent to Fredk. R. Ryman, A.M.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Stamford.

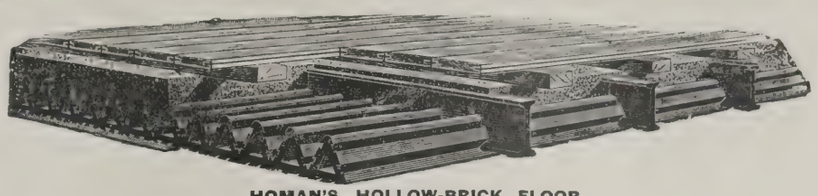
May 16. **EGREMONT.**—Repair of about 500 square yards of roadway, and the necessary refixing of gullies, at back John Street, Moor Row, for the U.D.C. Specification and quantities may now be seen, and all particulars obtained from J. Cowan, Surveyor, at the Town Hall, Egremont. Tenders will be received by John Bowly, Clerk to the Council, Union Hall, Whitehaven.

(Continued on page xvi.)

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CARDIFF UNIV. SETTLEMENT.
FLATS AT BENNER STREET, ST. JAMES STREET AND KENSINGTON HIGH ST.
KINGSWAY, ETC.
WAREHOUSES AT HACKNEY, SOUTHFIELDS, SMITHFIELD ETC., ETC.

LATE CONTRACTS.

BUILDING.

May 13. **OAKWORTH.**—Erection of two houses. Drawings may be seen and bills of quantities obtained at the office of Moore and Crabtree, architects, York Chambers, Keighley, on May 13.

May 16. **ST. ANDREWS.**—Repair of the boundary wall at the St. Andrews Links. Copy of specification and schedule of measurement can be obtained on application from Wm. Watson, Burgh Surveyor, St. Andrews, to whom tenders must be sent.

May 16. **BOLTON.**—Adaptation of 9 and 11, Crown Street, Bolton, for the purpose of a Labour Exchange, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster, Bolton. Forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., to which address tenders must be sent addressed to the Secretary.

May 17. **ABBEYLEIX (Ireland).**—Erection of 29 labourers' cottages and fencing plots under the 10th improvement scheme, for the R.D.C. Forms of tender, plans, specifications, and other particulars can be had on application a tthe office of James Finnegan, Clerk to Council, Clerk's Office, Workhouse, to whom tenders must be sent.

May 18. **FRIZINGHALL.**—Erection of house at Frizinghall (all trades separately, except painters'). For quantities, etc., apply, Horace E. Priestley, M.S.A., Architect and Surveyor, 4, Bertram Road, Manningham, Bradford.

May 19. **BARNSLEY.**—Erection of two semi-detached villas, West View. Plans may be seen and quantities obtained on application to W. T. Turner, architect, etc., Market Hill, Barnsley, to whom tenders must be sent.

May 19. **LEEDS.**—Extending the Jewish baths at the junction of Albert Grove and Leeds Terrace, off North Street, for the Corporation. Plans and specifications may be seen, and bills of quantities, together with general conditions of contract and forms of tender, obtained at the offices of the architect, J. Lane Fox, Britannia Buildings, Oxford Place. Tenders must be delivered at the Town Clerk's Office, Town Hall, Leeds.

May 25. **QUEEN'S COUNTY (Ireland).**—Erection of a building and other alterations, at the Infirmary, for the Committee of Management. Plans and specifications to be had at infirmary.

May 25. **ALLERTON.**—Building new Mistal, Lee Side Farm, Allerton. Application for quantities to be sent in before May 14. Plans will be on view at the offices of Jackson and Fox, Architects, 7, Rawson Street, Halifax, to whom tenders must be sent, and at the farm, from May 18.

May 25. **WEST DERBY.**—Erection and completion of a new hospital at Alder Hey, West Derby, for the Guardians. A set of quantities can be obtained from Harris P. Cleaver, Union Clerk, Brougham Terrace, West Derby Road, Liverpool, on deposit of £5 5s. Specifications and drawings to be seen at the office of the architect, C. H. Lancaster, Brougham Terrace, West Derby Road, Liverpool. The contractor whose tender is accepted will be required to enter into an agreement, under seal, with security as named in specification and quantities, for the due fulfilment of the contract. The acceptance of any tender is subject to the approval of the Local Government Board, whose disapproval of the scheme would cancel any contract the Guardians may have provisionally entered into, and the contractor or contractors would have no claim for compensation. Tenders must be delivered to the Union Clerk.

No date. **BELPER (Derby).**—(See "Engineering.")

No date. **STUBLEY (Dronfield).**—Alterations to the Talbot Arms, Stubley, Dronfield. Send names to W. H. Wagstaff, C.E., Architect and Surveyor, Chesterfield.

No date. **BRADFORD.**—Erection of a new hall, and alterations to Prospect Wesleyan Chapel, Bradford. Send names to W. J. Morley and Sons, Architects, 269, Swan Arcade, Bradford, when quantities will be forwarded.

No date. **PUDSEY.**—Alterations and extensions at the Town Hall, for the Corporation. Send names and addresses to the architects, Jowett Kendall and Sons, Architects, South Parade, Pudsey, and bills of quantities will be sent in due course.

ENGINEERING.

No date. **BELPER (Derby).**—Carrying out of a water supply scheme for the parishes of Denby, Kilburn, Horsley, Horsley Woodhouse, and Smalley, for the Belper R.D.C. 1, supply and laying of about 20 miles of 3in. to 8in. mains and the necessary fittings; 2, building of a covered-in brick reservoir of 100,000 gallons capacity. Bills of quantities will shortly be ready, and intending contractors are to send in application to John B. Mason, Engineer, Duffield, near Derby, with a deposit of £1 1s. for each contract. Contractors will be required to give security for the due execution of the contract by bond of two approved parties.

SANITARY ENGINEERING.

May 18. **ROCHDALE.**—Construction of about 350 lin. yards of 24in. diameter earthenware pipe sewer, 148 lin. yards of 3ft. by 4ft. 6in. brick sewer, 183 lin. yards of 2ft. 6in. by 3ft. 9in. brick sewer, and 69 lin. yards of 3ft. diameter brick sewer, with all manholes, lampholes, storm-water overflow, etc., in connection therewith, situate between Castleton Gales and Collinge Street, near the Crest Mill, Castleton, for the Paving, etc., Committee of the Corporation. Plans may be seen and copies of the specification, quantities, and form of tender obtained on deposit of £1 1s., at the office of S. S. Platt, M.Inst.C.E., Borough Surveyor, Town Hall, Rochdale. Tenders to be delivered at the office of Wm. Hy. Hickson, Town Clerk, Town Hall, Rochdale.

PAINTING.

No date. **LEEDS.**—Painting, etc., of the interior of St. Clement's Church, Chapeltown Road, (painters in the City of Leeds only). Specifications may be inspected at the Vicarage, adjoining the Church, and tenders should be sent, addressed to the Vicar and Churchwardens. The lowest or any tender will not necessarily be accepted.

ROADS AND CARTAGE.

May 16. **HITCHIN.**—Supply and delivery of 2,100 tons of 2in., 1½in., and 1¼in. broken granite (more or less) in such quantities as may be from time to time ordered by their Surveyor, for the U.D.C. Tenders at per ton delivered at the Great Northern and Midland Railway stations respectively, with samples of granite of the sizes specified, to be left at the Council offices, Town Hall, Hitchin. No forms of tender will be issued.

May 16. **SHIREMOOR (Northumberland).**—Supply of whinstone, slag, kerbstone, 6 by 3 setts and refined tar, and for team labour in connection with the repair of roads in the district to March 31, 1911, for the Earsdon U.D.C. Full particulars and form of tender can be obtained from J. R. MacMillen, surveyor, Council Offices, Shiremoor, between 9 and 10 a.m. Tenders to be sent to C. E. Hall, Clerk, Council Offices, Shiremoor.

May 16. **EARSDON.**—Supply of whinstone, slag, kerbstone, 6 x 3 setts and refined tar, and for team labour in connection with the repair of roads in the district to March 31, 1911, for the U.D.C. Full particulars and form of tender can be obtained from J. R. MacMillen, Surveyor, Council Offices, Shiremoor, between the hours of 9 and 10 a.m. Tenders to be sent to C. E. Hall, Clerk, Council Offices, Shiremoor.

May 16. **HAM.**—Materials for the U.D.C.:—1, 400 yards (more or less) of Guernsey or Quenast granite, broken to pass through a 2in. ring, delivered alongside at Petersham Dock; 2, 200 yards (more or less) of broken brown Kent flints, delivered alongside at Petersham Dock; 3, unloading and cartage of granite and flints from Petersham Dock to any part of the district of the Council as required (at per cube yard); 4, hire of horse, cart, and man (per day of 9 hours), for ashes, gravel and rubbish, and horse and man for the Council's water van and horse broom. Further particulars may be obtained on application to R. W. Hindhaugh, the Council's Surveyor, at the Council Offices, Lock Road, Ham, to whom tenders must be delivered.

May 18. **MONMOUTHSHIRE.**—Supply of materials or for hauling broken and unbroken stone for the repair of the main roads within the county for the year ending March 31, 1911, for the C.C. Particulars and schedules may be obtained on application at the County Council Offices, Newport. Tenders to be sent to William Tanner, County Surveyor, County Council Offices, Newport, Mon.

May 18. **ALRESFORD.**—Grading, draining, and tar-paving the playgrounds at the new Alresford Council School. Plan and conditions of contract may be seen, and specification and other information obtained at the office of W. J. Taylor, County Surveyor, The Castle, Winchester. The plan and conditions of contract can also be seen at the school. A deposit of 10s. 6d. will be required for a copy of the specification and form of tender. Deposits must be made by cheque, payable to Hants County Council and crossed Bank of England, or particulars will not be sent. Tenders to be delivered to H. Barber, Clerk of the County Council, The Castle, Winchester.

May 23. **PORTSMOUTH.**—Laying compressed asphalte pavement in Queen Street, Portsea, and part of King's Road, Southsea, and maintaining the same in thorough repair for two years, from completion, for the T.C. Specification, form of tender, and schedule of prices, may be obtained on application to G. Hammond Etherton, Town Clerk, The Town Hall, Portsmouth, on deposit of £2 2s. Tenders must be sent to the Town Clerk.

May 23. **STREATHAM.**—Making-up and paving of that part of Becmead Avenue, Streatham, for the Wandsworth B.C. The specification and drawings may be seen, and forms of tender obtained, of the Borough Engineer, at the office of the New Streets Department, No. 56, East Hill, Wandsworth, S.W., upon deposit of £5 5s. Tenders must be delivered at the Council House, East Hill, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose. Persons tendering must in the case of all workmen employed by them pay wages at not less and observe hours of labour not greater than the rates and hours recognised by the associations of employers and employees and in practice obtained in the district where the work is to be executed. If required, the contractor must provide two sureties for the due execution of the contract.

May 25. **RUNCORN.**—Supply of macadam for the R.D.C. Forms will be supplied on application to Geo. F. Ashton, Clerk to the Council, 71, High Street, Runcorn.

May 26. **ASHFORD.**—Supply of 1,320 cubic yards (more or less) of 2in. gauge broken granite, for the U.D.C., as per form of tender, to be obtained from Wm. Terrill, Surveyor, 5, North Street, Ashford, Kent, to whom tenders (with samples) must be sent.

May 30. **CAMBERWELL.**—Kerbing and York paving the footways in Peckham Rye West Side (from Barry Road to Nigel Road); also for roadway paving (patent or otherwise) to specification as submitted by contractors, for the B.C. Full particulars and form of tender can be obtained from Wm. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E. Contractors are invited to state the roadway paving they are prepared to lay and their conditions as to maintenance for a term of years. Tenders to be delivered to the Town Hall, Camberwell, S.E., addressed to the Works Committee.

May 24. **STROUD.**—Supply of Clee Hill stone, Tytherington stone, and Chepstow stone, for the twelve months ending March 31, 1911, for the U.D.C. Tenders should be sent to E. Northam Witchell, Clerk. Samples of the stone to be supplied should be sent to the Council Offices, Town Hall, Stroud, for inspection.

MISCELLANEOUS.

May 18. **BRAY (Maidenhead).**—Work to be done at the Bray cemetery, for the Parish Council. Tenders must be sent to 5, St. Luke's Road, Maidenhead, where specification of work required may be seen.

May 28. **LONDON, N.**—The following during year ending June 30, 1911, for the Finchley U.D.C. (1) heavy castings; (5), gravel, hoggin, and flints; (6) broken granite; (6a) hardcore; (6b) crushed shingle; (9a) lias lime and Portland cement; (9b) Buxton and grey lime; (10) stoneware pipes and goods—(a) London make, (b) country make; (11) removal of dust and house refuse (for the whole district or separate wards); (12) slab footway paving and tarpaving; (13a) cartage of materials to and from railway stations; (13b) general cartage, including horsing water vans, brooms, scrapers, etc. Forms of tender, conditions, and full particulars may be had on application at the offices. Tenders must be addressed to E. H. Lister, Clerk, Council Offices, Church End, Finchley, N.

LATE TENDERS.

Bray (Berks.).—For alterations and repair to Bray Cottage, Bray, for R. Lewis, St. Annes, Bray Road, Maidenhead. H. Stanton Webber, F.S.I., architect, 23, Queen Street, Maidenhead.

J. K. Cooper and Son	...£649
C. W. Cox and Sons	... 588
F. Bissley	... 559
W. Creed*	... 547

*Accepted.

London, S.E.—For external painting and decorating at the Licensed Victuallers' Asylum, Old Kent Road, S.E., consisting of 176 houses, chapel, board room, and library, and lodges, etc. W. F. Potter, architect. Quantities prepared by C. R. Griffiths, surveyor, 5 and 5, Warwick Court, W.C.

F. and H. F. Higgs, Herne Hill, S.W.	£1,221	0	0
H. L. Holloway, Deptford, S.E.	1,140	0	0
George Hall, New Cross, S.E.	1,039	0	0
Small and Sons, S. John Street, E.C.	998	0	0
Sabey and Sons, Islington Green	992	0	0
W. S. Sharpin, Bow, E. ...	899	10	0
C. Dearing and Sons, Islington, N.	885	0	0
Charles Ansell, York Road, Lambeth	880	0	0
E. E. Asborn and Son, Gracechurch Street	838	16	0
Crabb and Son, Brixton Hill, S.W.	770	0	0
H. H. Hollingsworth, Peckham	740	0	0
H. King and Son, Peckham ...	724	5	0
R. Maskell and Son, New North Road	715	0	0
J. A. Renwick, Tooley Street, S.E.	712	0	0
H. Eames, Hill Street, Peckham	614	0	0
A. J. Pickard, Bloomfield Road, Bow	560	0	0
W. Garner, Old Kent Road, S.E.	521	10	0
F. Dawes,* Peckham Rye ...	495	0	0

*Accepted.

Stafford.—Accepted for erection of proposed Council school at Tenter Banks, Stafford, for the Staffordshire Education Committee:—
G. Hodges, Burton, £4,780.

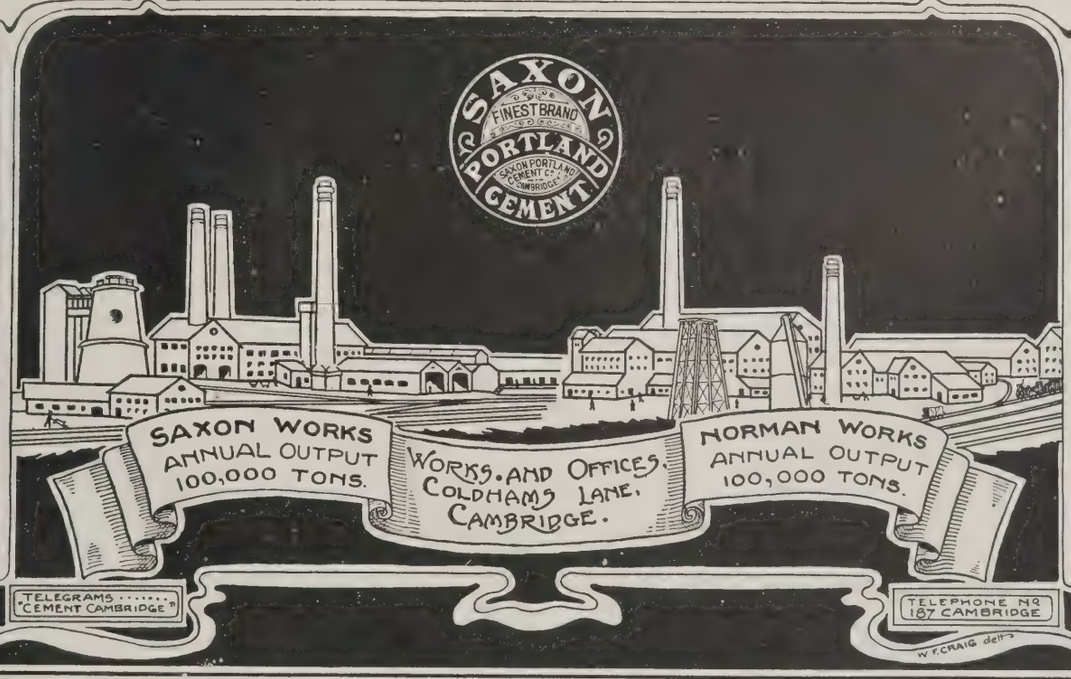
Sturminster Newton (Dorset).—Accepted for erection of new Council school, for the Dorset Education Committee:—
J. Smith, Wimborne, £1,515.

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CAXTON HOUSE, WESTMINSTER, S.W.

Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, ARCHITECTS' AND BUILDERS' JOURNAL, *Caxton House Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Friday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Aylesbury.—For alterations and repairs at the following schools:—Edlesborough, Ivinghoe, Cheddington, Shenley, and Olney, for the Bucks County Education Committee:—

Cheddington Mixed School.

G. T. Montague	£695 10 0
H. Edwards and Sons	547 10 0
Webster and Cannon...	547 0 0
E. J. Tompkins	562 10 0
J. Chandler and Son,* Long Marston	464 0 0

Edlesborough.

J. Honour and Sons...	£530 0 0
W. G. Willis	467 10 0
T. Yirrell	442 0 0
H. Edwards and Sons	444 0 0
P. J. Clarke	417 7 6
Webster and Cannon,* Aylesbury	404 0 0

Ivinghoe.

J. Honour and Sons	£709 0 0
P. J. Clarke	628 16 6
H. Edwards and Sons	640 0 0
Webster and Cannon	624 0 0
W. Rogers and Williamson ...	572 11 0
T. Yirrell,* Leighton Buzzard ...	597 0 0

Olney.

A. P. Hawtin	£438 0 0
E. Archer	431 0 0
W. T. Revitt	370 0 0
E. Green,* Northampton	369 0 0

Shenley.

T. P. Robinson and Son	£1,398 0 0
Ebbs Bros.	1,380 0 0
Cripps and Sons	1,239 0 0
A. P. Hawtin...	1,203 0 0
J. S. Cowley and Sons	1,141 3 6
T. Yirrell*	1,094 0 0

*Accepted

Bacup (Lancs.)—Accepted for the covering in of the River Irwell with masonry and brick arch, for a length of about 200 lineal yards, within the borough of Bacup, for the County Council of Lancashire and the Corporation of Bacup.

W. Pollitt and Co., Pool Street, Bolton, £4,952 12s. 10d.

Canterbury.—For extension of the School of Art, for the Education Committee:—

Moss, Loughborough	£3,330 0 0
Knock, Ashford	2,997 0 0
.. Denne, Deal	2,832 0 0
Wallis, Maidstone	2,794 0 0
T. Denne, Walmer	2,720 0 0
Godden, Ashford	2,700 0 0
Edwards, Canterbury	2,675 10 0
Foster, Norwood	2,627 0 0
Bowles, Ashford	2,605 0 0
Browning, Canterbury	2,585 0 0
C. Mount,* Canterbury	2,453 0 0

*Accepted.

Earswick, near York.—For erection of a warehouse and workshops for Messrs. Henry Hall and Sons. A. D. Creer, architect, 5, Coney Street, York:—

F. Shepherd	£2,400 0 0
J. Tinson	2,267 10 0
J. Pulleyn	2,190 18 2
Wray and Sons	2,039 19 4
W. Usher	1,961 11 0
W. Birch,* Barbican Road ...	1,942 10 8

All of York.
*Accepted.

Exeter.—For rebuilding 175 and 176, Sidwell Street, for James Hammett. James Jerman, F.R.I.B.A., 1, Bedford Circus, Exeter:—

J. M. Soper, Magdalen Bridge	£1,678 6 9
Westcott, Austin and White, Summerland Crescent	1,589 0 0
E. Bunclark, 26, Paris Street ...	1,581 11 0
Ham and Passmore, Sidwell Street	1,570 10 0
W. G. Coles, Alphington, near Exeter	1,497 10 0
W. Brealy, 163, Cowick Street ...	1,497 0 0
G. Setter, Old Tiverton Road ...	1,490 0 0
G. Herbert, 24, Bartholomew Street	1,470 0 0
M. T. Sleeman, 62, Mount Pleasant Road	1,360 0 0
J. Triggs, Cowley Road	1,327 1 3

Rest of Exeter.
*Accepted.

East Molesey.—For alterations and additions to manufacturing premises at Creek Road. Fuller, Horsey, Sons and Cassell, architects, 11, Billiter Square, E.C.:—

E. Pollerton	£2,455 0 0
Dean and Perkins	1,816 0 0
Hawkey and Oldman	1,692 0 0
F. Hawkey	1,200 0 0
F. Deacon and Sons	880 0 0
R. O. Roberts,* Hampton Lodge, Hampton Hill	879 10 0

*Recommended for acceptance.

(Continued on page xx.)

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(Tenders continued from page xviii.)

Edenbridge (Kent).—For erection of a new Council school to accommodate 200 children at Edenbridge, Kent, for the Kent Education Committee. W. H. Robinson, M.S.A., architect :—

Sykes and Son, 68, Camden Road, Tunbridge Wells	£3,800 0 0
J. Longley and Co., Crawley	3,389 0 0
G. Packer and Sons, Peckham, S.E.	3,257 0 0
H. and E. Waters, Highgate, Forest Row	3,387 0 0
G. Wade and Sons, Mill Hill, Edenbridge	3,238 0 0
F. H. Bingham, Groombridge, Kent	3,211 6 5
T. C. Gorham, Riddlesdown Works, Whyteleafe	3,209 0 7
J. Smith and Sons, Ltd., South Norwood, S.E.	3,169 0 0
Battley, Sons and Holness, Clifton Works, Old Kent Road	3,161 0 0
F. and G. Foster, Camden Works, Norwood Junction, S.E.	3,157 0 0
Perton and Co., Ltd., Ashford, Middlesex	3,150 0 0
G. E. Wallis and Sons, Ltd., Broadmead Works, Maidstone	3,123 0 0
R. A. Lowe and Co., Chislehurst	3,077 0 0
J. A. Davison, West Malling, Maidstone	3,049 0 0
G. and F. Penn, Pembury, Tunbridge Wells	3,038 0 0
G. Browning, Canterbury	2,984 0 0
Martin and Co., Tonbridge	2,979 0 0
W. H. Archer and Son, The Grove, Gravesend	2,950 0 0
C. E. Skinner, Railway Street, Chatham	2,884 0 0
R. Cook and Sons, Crawley	2,874 0 0
J. Podger and Son, Bromley	2,843 0 0
S. Wise, High Street, Hythe	2,825 0 0
Gathercole Bros., London Road, Norbury	2,822 0 0
W. J. Ballard, Ramsgate	2,811 0 0
D. Godden and Sons,* Ham Street, Ashford	2,634 0 0

*Accepted.

Erith (Kent).—Accepted for erection of additions to the Sanatorium, for the U.D.C. :—
G. H. Gunning and Son, £1,298 19s.

Herne Bay.—For erection of Pier Pavilion at Herne Bay, for the U.D.C. Percy J. Waldram, Moscrop-Young and Glanfield, joint architects, 12, Buckingham Street, Charing Cross, W.C. :—
Main Estimate A.

A. Thorn and Son	£6,279
F. and H. F. Higgs	5,988
J. and M. Patrick	5,904
Jones and Andrews	5,800
J. Grover and Son	5,783
Stephens, Bastow and Co.	5,562
Kirk and Randall	5,524
Henry Lovatt	5,164
F. G. Minter	5,144
G. H. Denne and Son	4,949
W. Pattinson, Ltd.	4,856
W. H. Archer and Sons	4,750
Laurence Seager	4,700

Main Estimate C—Reduced.

Denne	4,479
Archer	4,364
Seager	4,287
Pattinson*	4,243

*Accepted.

Holmebridge (Yorks).—Accepted for erection of Parish Hall, etc. J. Auty, A.R.I.B.A., architect, Union Bank Chambers, Morley :—

J. Cooke, Little Boyd, Huddersfield, ferro-concrete construction	£284 0 0
S. Earnshaw, Holmebridge, builder	812 0 0
F. and H. Barker, Holmebridge, joiners	354 0 0
H. Webster, Honley, plumber	178 15 0
E. Wilson, Morley, plasterer	92 10 0
Watson and Worsnop, Leeds, tilers	93 0 0

London.—For alterations and additions to underground convenience in front of the Royal Exchange for the Corporation :—

H. and E. Lea	£5,900 0 0
S. Kavanagh and Co.	5,390 0 0
W. F. Fry and Co.	5,304 0 0
W. H. Wagstaff and Sons	5,258 0 0
W. H. Hyde and Co.	5,112 0 0
Jarman and Co.	5,098 0 0
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Doulton and Co., Ltd.	5,062 0 0
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McCormick and Sons	4,990 0 0
W. Shurmer and Sons, Ltd.	4,986 0 0
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Loughton (Essex).—For erection of a school for girls, for the Essex Education Committee. H. Tooley, F.R.I.B.A., architect, Queen's Road, Buckhurst Hill, Essex. Quantities by F. W. Hingston, Portland House, Basinghall Street, E.C. :—

W. J. Ballard, Church Road, Ramsgate	£4,700 0 0
R. Woollaston and Co., Burdett Road, E.	4,360 0 0
Battley, Sons, and Holness, 21, Old Kent Road, S.E.	4,269 0 0
R. Warriner, Loughton	4,245 0 0
Myall and Upson, Connaught Road, Ilford	4,206 0 0
G. Parker and Sons, 124, Sumner Road, Peckham, S.E.	4,199 0 0
F. and C. Foster, Norwood Junction, S.E.	4,196 0 0
Ekins and Co., Great Northern Works, Hertford	4,180 0 0
B. E. Nightingale, Albert Embankment, S.E.	4,160 0 0
A. H. Fryd, Southend-on-Sea	4,157 0 0
Hawkey and Oldman, Mile End, E.	4,145 0 0
A. E. Symes, Stratford	4,030 0 0
R. Cook and Sons, Crawley	3,969 0 0
A. Monk, Lower Edmonton	3,935 0 0
P. R. Paul, Waltham Abbey	3,898 0 0
C. S. Foster and Son, Loughton	3,746 0 0
J. S. Hammond and Son, Romford	3,725 0 0
Clarke and Sons,* Cambridge	3,597 10 0

*Accepted.

Plumpton (Sussex).—For alterations and additions to Novington Manor, for H. P. Edwards. Fredk. W. Foster, architect, 26, Bedford Row, W.C. Quantities by L. H. G. Stanborough, 26, Bedford Row, W.C. :—

A. Chilton	£2,899
Parson and Sons	2,813
W. Wells	2,730
Norman and Burt	2,697
Longley and Co.	2,678

Southend-on-Sea.—For erection of a new infants' department, Chalkwell Hall Council school, for the Education Committee. W. J. Wood, architect, 26, Alexandra Street, Southend-on-Sea :—

H. W. Grainger	£5,000 0 0
F. E. Woodhams	4,790 0 0
A. R. Whur	4,755 0 0
F. J. Green	4,700 16 0
J. C. Flaxman	4,695 0 0
H. E. Milton	4,672 3 3
Kirk and Kirk	4,630 0 0
W. J. Ballard	4,488 0 0
E. and B. H. Davey	4,486 0 0
F. and E. Davey, Ltd.	4,436 0 0
E. Pavitt and Sons	4,370 0 0
F. and A. Willmott	4,302 0 0
T. W. Moss	4,271 9 0
J. S. Hammond and Son	4,244 0 0
F. W. Burtwell	4,178 0 0
A. H. Fryd*	4,115 0 0

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Weybridge.—For alterations and additions to Waltham, Oatlands Chase, Weybridge, for F. Machin. Crickmay and Sons, architects, 13, Victoria Street, Westminster, S.W. :—

Drowley and Co.	£1,113 0 0
W. A. Annett	1,086 0 0
T. C. Ranger	954 10 0
G. Jarvis	944 0 0
H. J. Nicholson	925 0 0
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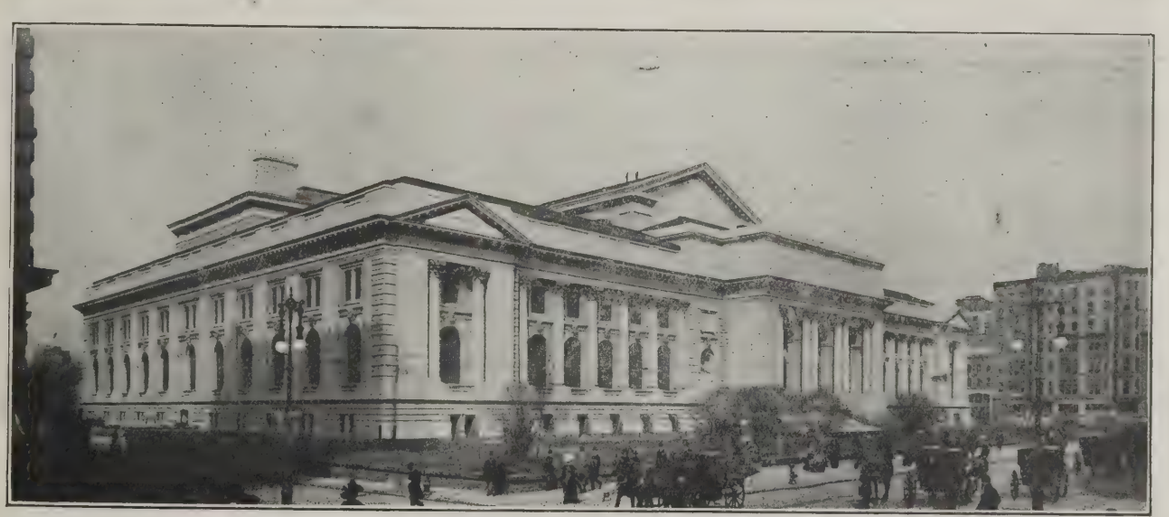
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THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
MAY 18th, 1910.

Volume XXXI. No. 798.



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THE ARCHITECTS' & BUILDERS' JOURNAL.

MAY 18, 1910. CAXTON HOUSE, WESTMINSTER. VOLUME 31. No. 798.

Note: The List of Contents will be found on Page V of the front advertisements in this and subsequent issues.

The Royal Academy Exhibition.

"I KNOW of but one art," said Michelangelo, implying thereby not that he himself had mastered but one form of art, but that all forms of art were manifestations of the same spirit. Architects would do well to remember this more than they do, and not to think of painting and sculpture as alien arts. Invention and composition come into all branches of art, and the study of painting and sculpture should serve to quicken the architect's inspiration in his own art, to which, after all, they are the decorative handmaids. The annual exhibition of our leading artistic society should therefore be matter of interest to us all.

Different Points of View.

The public and the artist no doubt look at painting (in this country, at least) from very different points of view. What the English public like is what may be called the "incident" picture; something that tells a story or illustrates a fact. What the artist looks to is the picture which, whether relating a story or not, shows originality and power of composition, colour, and suggestion; for a painting may suggest a great deal to the imagination without illustrating, or perhaps just because it does not illustrate, any concrete fact. From this point of view there is no doubt that the picture of the year to artists is Mr. Brangwyn's "Wine," though it will not be liked by the general public, who will call it brutal—perhaps not without excuse. But this picture, embodying, as one may say, the genius of drunkenness, shows a power of composition and colour, and a boldness of style, which remind one of Velasquez, if indeed in colour it does not surpass Velasquez. One may wish that the artist's great powers had been expended on a nobler subject, but of the power itself there can be no question. Most other things in the Gallery seem comparatively weak beside it.

Decorative Paintings.

We have this year three large decorative paintings, a kind of painting not nearly so much practised in England as in France, partly because so little encouragement is given to it; and Mr. Abbey's two pictures, in fact, are painted for the United States, and not for England. "The Camp of the American Army at Valley Forge," however, is rather illustrative than decorative; it is satisfactory as an historical mural picture, but hardly arouses much interest. "Penn's Treaty with the Indians," painted, like the other, for the State Capitol of Pennsylvania, is a fine work in a decorative sense; it is a great upright, reaching from floor to ceiling of the Academy rooms, the upper part covered with the foliage of the tree under which the ceremony takes place, with the light sparkling through the leaves. In another room Mr. Gerald Moira has a large picture entitled "London," seen from a columned terrace, the whereabouts of which we do not exactly make out—the architecture is perhaps merely invented for foreground effect; under a great space of sky St. Paul's is seen in the distance. This is a vigorous masculine piece of painting, of a type more often seen at the Salon than at the Academy; its defect is that the sky is too solid and insistent, and seems to press upon and be mixed up with the distant buildings.

Figure Subjects.

Of pictures in which figures are the main subject there are but few of importance. Two of the largest are by rather new men. Mr. Middleton's "The Joy of Life," three nude girls by the edge of the sea, one of them standing and holding up both hands in a kind of rapture, looks fine in the distant view of it from the entrance lobby, but it is hardly more than a study of nude models, with a sea painted in behind them; figures well drawn, but rather hard and poor in colour, and altogether scarcely coming up to its title. "The Top of the Hill," by Mr. Mostyn, three girls in white, apparently also enjoying life, is a striking piece of effect, rather spoiled by the commonplace heads at the top of the white dresses; the mass of white makes an effective foil to Mr. Brangwyn's picture hung below it. Sir L. Alma-Tadema has seldom done anything more beautiful than his picture of this year, "The Voice of Spring," a curved marble seat and balustrade with a seated statue terminating it in the foreground, on the side of which we see the reflected sunlight from the grass sward; two or three figures, a dark-blue sea and a distant coast-line; the whole, painted in every detail with the most conscientious care, makes a lovely vision of an antique day. There are two battle pictures, both good; Mr. Beadle's illustrating the stand of "The Rear-guard," under Crawford, on the retreat to Corunna; and Mr. Caton Woodville's picture of Napoleon before St. Jean d'Acre, shaking hands with the engineer officer who had managed to blow up the "curtain" in front of the gate; one of the best things Mr. Woodville has ever painted, and evidently it is the outcome of much careful study as to details. He has contrived to realise for the spectator, too, what a very youthful conqueror Napoleon was at that time.

Mr. Hemy has hardly equalled some of his earlier Academy pictures, but there is much beauty in his figure of a girl in evening dress, listening to "The Nightingale," at a moonlit doorway; his portrait of a lady, in the same room, is remarkable for the beauty of line and composition of the seated figure. Then there are the various antique subjects by Mrs. Normand (Miss Henrietta Rae), Mr. Waterhouse, and Mr. Harold Speed. The "Apollo and Daphne" of the last-named painter is (in a very different way) like Mr. Brangwyn's picture, a merely suggestive composition of line and colour, rather marred by an uncertainty as to the exact attitude and construction of the Daphne figure, which tails off into obscurity in an odd kind of way. Mrs. Normand's classic subject, "Hylas and the Nymphs," good in colour and drawing, has the defect that, while illustrating an antique legend, there is nothing of the antique feeling about it; it is an imaginative subject treated with a want of imagination, and is as far from being Greek as anything could well be. Mr. Stott's "Good Samaritan," too, is rather a composi-

tion of two figures than an illustration of the subject. Mrs. Laura Knight's two *genre* pictures, "Boys" and "Flying Kites," are works of real ability by an artist who has made a style of her own; her evident object is to combine figures and landscape into one whole, which she succeeds in doing at the cost of leaving the figures a little ragged and neglected in detail; but her pictures are pervaded by a true artistic spirit. "Boys" is a bathing subject on the margin of a port; the striving after unity of effect results in leaving the boys, the boats, and the ground a little too similar in colour, but it is better than the forced detachment of objects in the popular style of painting such subjects. Then there is Mr. Hornel, who is absolutely different from every other painter, and regards figures and foliage as merely affording the basis for a scheme of colour and effect invented by himself. "The Earth's Awakening" is one of the best of his peculiar compositions. The only portions of the picture showing natural colour are the faces of the children, which he always paints admirably; the rest is a scheme of colour and texture belonging only to the world of Mr. Hornel. However, it is very clever and very interesting, only we confess we should like to see snowdrops looking a little more like Nature's flowers and less like artificial imitations. And we must not forget, either, Mr. Stanhope Forbes's picture "The Pier-head." The figure of the girl in the foreground is one of the best pieces of design and character in the Gallery.

Portraiture.

In spite of some very bad portraits, and some well-painted portraits of very uninteresting people, the Academy is strong in portraiture, and it may be noted that one of the best and most characteristic portraits is that of an eminent architect, Mr. Collcutt, by Mr. Cope, who now takes rank as one of our best portrait-painters. This is the class of portrait which aims at being simply a likeness, without any special effort at pictorial effect; which is, after all, the primary object of portraiture. The class of portrait in which pictorial effect is the primary object, and the portrait is merely, as it were, thrown in as part of the composition, is illustrated to the full in Mr. Sims's exceedingly clever picture, which includes the portrait of Mrs. Hayes Sadler, a charming figure in a gay costume, forming the centre of a riot of colour and light and shadow, Chinese lanterns, and other accessories. This is one of the cleverest pictures of the year, but it is hardly the way in which most people would desire their friends' portraits to be painted; the accessories are too disturbing, and the personality of the sitter forms only an element in the general effect. Mr. J. J. Shannon, who makes his portraits the vehicle of superb colour effects, nevertheless keeps them completely to their proper character as portraits. He has never been better than this year. Among his works, the full-length portrait of Mrs. Frederick Montagu, supported in the composition by a pedestal and statue, recalls the old style of some of the Reynolds and Gainsborough portraits, with a difference; and his seated portrait of the Duchess of Buccleuch, backed by a great mass of crimson curtain, is a work of great dignity. The half-length under the title of "Black and Silver," in the first room, which is his diploma work, is also essentially a portrait, and is a masterly piece of fine colour and broad and facile execution. Among other portraits one of those which will compel attention is Mr. Strang's remarkable "Portrait Group" in Gallery VIII. Mr. Strang is nothing if not forcible; the faces all stand out, hard and precise, as if modelled in relief; the colour assortment is of the boldest—a girl in a puce frock, a man in a green coat; a gold-coloured table-cloth (which assists of course to harmonise the whole), and a jar of crimson flowers. It is not reposeful; it jumps at you, so to speak; but it is certainly effective. Whether the curious similarity in the modelling of all the faces is due to the fact that the figures are all of one family, or whether it is due to a mannerism on the part of the painter, one can only conjecture. Another highly original portrait is Mr. Orpen's small one of Sir Eric Barrington, treated as Mr. Orpen likes to treat portraiture, as a figure seated in the middle of a room, the details of which are painted as carefully as the figure; but the latter is always the dominating object; it is not, like Mr. Sims's, a picture of which a portrait forms part; it is a representation of the sitter amid the ordinary setting of his indoor life, and as such forms an interesting variation from the more usual types of portrait-painting.

Landscapes.

We have no really great landscapes at the Academy, but there are some very good ones, though they are not those which are popular with the public. What the English public like is a landscape that looks "so real," like Mr. Leader's in the first room; whereas the object of landscape-painting is not so much to represent facts of nature as to represent the feeling of a scene as it impressed the artist's mind, and to convey its predominant character, not its mere facts of detail, in which nature is too multifarious for any merely mortal painter to follow her up. Mr. East paints nature in this spirit, though in his two pictures in which trees form a prominent element he seems to be getting into a habit of painting them in rather too flat a matter, giving a silhouette of their outline rather than an impression of mass. His best picture is really the quiet and unobtrusive landscape "Morning Sunshine," in Gallery V.; a composition in level lines, very thoughtfully carried out, but which will not attract the average spectator. Mr. Adrian Stokes's "Dawn in Winter," in the same room, is a beautiful and refined work, very different from the average "snow scene"; the delicacy with which the slight glow of the sunlight on the foreground snow is hinted rather than shown is remarkable. Mr. H. W. B. Davis occupies a kind of middle position between the merely realistic and the poetic landscape painters; he aims at realism, but it is a realism conveyed in a broader manner, and without hardness of effect. In his "Valley of the Liane" the balance between foreground and distance is perfect. What we want in English landscape-painting is a greater breadth and power of design and treatment. Mr. Davis's landscapes look charming in the Academy, but when one of them is exhibited at the Salon, it is surprising how weak it becomes in comparison with the more massive style of the French landscape school. Mr. Aumonier and Mr. Bertram Priestman come nearest to the grand style in landscape; but Mr. Aumonier only exhibits this year a small work in Gallery IX.; and Mr. Priestman's picture, not very well hung, is not one of his best. Mr. John R. Reid, usually known as a sea and coast painter, brings his power of conveying the impression of air and sunlight to a new class of subject with him—an inland glen and trout-stream, "Glen Ashdale, Arran," which ought to have been better hung than it is. But the great landscape of the year, to use a contradiction in terms, is not land but sea—Mr. Hemy's "Mid-Ocean"; a painting of sea merely, without a ship to give incident to it. That is really a picture of the first order.

We may have something to say about the sculpture on another occasion.

The Right Monument to King Edward VII.

A CORRESPONDENT who signs himself "Loyalist," in a letter to the "Times," makes the best suggestion that could possibly be made for a monument to the late King; a suggestion so entirely admirable that we envy him for having been the first to make it. It is that a new façade should be erected to Buckingham Palace to form a monument to the King, and thus to connect the memorial of the two sovereigns in one monumental scheme. The suggestion has more to recommend it even than the writer of the letter seems to have been aware of; it is not only so suitable from the point of view of sentiment and feeling, but it would remedy the one great defect in the memorial road and sculptural monument to Queen Victoria—the fact that it leads up to and is terminated by a poor and commonplace architectural façade, which will form a pitiable anticlimax to it. It is to

be hoped that the idea will not be allowed to drop. And in case it should be carried out, we wish at once to draw attention to one important point which ought to be kept in mind in the design of the new façade. The treatment of the centre of the façade ought in that case to be kept of a rather flat and unobtrusive design, of a continuous and unbroken character, so as to form a background against which the sculptured monument to Queen Victoria would be relieved. It would be a fatal mistake to make a design with an important central feature, immediately and axially in the rear of Mr. Brock's monument; the two would quarrel with each other. What we should like to see, and hope to see, is a new and fine Classic façade to Buckingham Palace, the centre part forming a somewhat unobtrusive background to the Victoria group of sculpture, with the principal architectural emphasis of the façade thrown into the wings, so as to form, as it were, a framework to the central vista and monument. The effect, if it were well done, would be very fine.

The late King's Interest in Housing.

MR. J. E. C. BODLEY states that it was in 1884 that the late King, who was then Prince of Wales, joined the Royal Commission on the Housing of the Working Classes, on which there was no more assiduous or hard-working member. His Majesty attended with great regularity the biweekly meetings, and examined witnesses in a manner that showed remarkable grasp of the subject, while his criticisms when the draft report was under consideration were always pertinent. The late Mr. Beck, the agent at Sandringham, was called as a witness, and testified as to what had been done for the labourers on that estate; and, Mr. Bodley adds, "not content with letting us hear his agent, his Royal Highness, on several occasions, invited some of us to Sandringham to see for ourselves how the housing problem had been anticipated on the Royal domain." Moreover, his late Majesty adventured into the East End, when, resolved to see for himself how the poor of London lived, he disguised himself in a strange ulster and a slouch hat so well as completely to deceive a familiar vestryman who acted unknowingly as guide to the Heir to the Throne. Mr. William Thompson, Chairman of the National Housing Association, also testifies to the keenness of the late King's interest in housing subjects. In opening the Municipal and Health Exhibition at the Royal Agricultural Hall, Mr. Thompson said: "King Edward was not only one of the greatest monarchs that ever lived, but was one of the foremost sanitarians in this or in any other country. The work on which we are engaged is one that always elicited his late Majesty's keenest sympathy from the time that he was a member of the Royal Commission on the Housing of the Working Classes. His Majesty's concern for the health of his people was demonstrated by the keen interest he took in municipal institutions and in the establishment of the Hospital Fund." Mr. W. Steadman, speaking at the Browning Settlement, added the further testimony that, as a former member of the London County Council, he knew that King Edward took a great interest in the housing of the people of this country. Such testimony is valuable as placing on record what many of us, it is true, knew perfectly well—that, as with his august father, so with King Edward, the social welfare of the people was a deep-seated desire.

The Work at Winchester Cathedral.

IT is now more than five years since the work of renewing the foundations of Winchester Cathedral was begun. As the work proceeded it was found that if the cathedral was to be saved—and its loss would be nothing short of a national calamity—it would have to be entirely underpinned. Before this work can be completed it will be necessary to raise the sum of £12,000. A recent visitor, writing in the "Morning Post," says that Bishop Walkelin, when, in the eleventh century, he laid the foundations, had no firmer support for them than a peat marsh, under which is a subterranean lake or river, with, at the bottom of all, a bed of gravel. In places oak piles were inserted as supports, but generally the builders simply heaped flints on the peat, and laid their foundations thereupon. De Lucy, who, at the beginning of the thirteenth century, added the east end, placed beech trunks on the peat marsh, and laid his foundations on these. Hence it is not surprising to be told that, in about seven hundred years, the building has sunk fifteen inches; indeed, it seems marvellous that the sinking and the consequent damage have been confined within the limits of preservation. It would seem as if the cathedral had been within an ace of utter destruction. The south wall of the south transept is nearly five feet out of plumb, while the arches of the retrochoir have become flattened where they have not been positively inverted! The work of underpinning has been attended with unusual difficulty. At the base of each buttress three shafts or "drifts" have been dug, and a diver has gone down them and cleared away the waterlogged flints, the peat, and the beech trunks. Then he has laid, on the cleared gravel bed, bags of concrete. Finally the water has been pumped out, and new foundations of concrete, finished off with brick round the base of the buttress, have been built up. The east end and the north transept now rest securely on concrete foundations, so that the impression that the cathedral gives as seen from the hills, "not so much of grace or beauty as of massive solidity, peace, dignity, and silent strength," is, as regards the attributes here enumerated first and last, falsified by the foundation facts. We trust that the sum required for putting the entire building on a firm basis will be speedily forthcoming. The ruin of any part of it would be not only a national calamity, but a disgrace, and should be averted at all costs.

Manchester's Indecision.

MANCHESTER is for the moment suffering from what the essayist Foster, in his "Decision of Character," regards as one of the most deplorable states of the human mind. It is halting between two opinions. It has the site of the old Infirmary available, and does not know whether to erect on it an Exchange or an Art Gallery. So far as can be gathered, the objection to the Art Gallery is æsthetic, and the objection to the Exchange is utilitarian, so that the rivals are indeed at cross purposes. Those who are in favour of the Exchange contend that such a building would be more appropriate for a purely commercial city like Manchester (and we all know that fitness or propriety is an æsthetic consideration); and those who oppose it advance the very practical objection that the site is not large enough for an Exchange; and they might also argue that an infusion of Art is a splendid stimulus to Commerce, if Manchester did not already know this quite well. For has it not, in its Corporation Art Gallery, its Royal Museum and Art Galleries in Peel Park, its Whitworth Institute, its Art Museum at Ancoats, and its School of Art, shown a liberal appreciation of the claims of Art? To cite this fine record is by no means to imply that enough has been done in this direction; rather we would adduce it for encouragement and precedent. As a matter of personal preference we could wish a handsome victory for the Art Gallery; although a fine Exchange building would afford some fortunate architect an even rarer opportunity for austere and dignified design. A lurking dread that the rival parties may chance to effect a compromise, and agree upon a combination Exchange and Art Gallery, is wholly unwarranted by anything that has ever been done in Manchester, and is probably traceable to a dim remembrance of atrocities of the kind that have been perpetrated elsewhere. We have but little fear as to the result of the contest. Manchester, we feel sure, is, as Mr. Gilbert Chesterton might say, too intensely utilitarian to prefer the Exchange to the Art Gallery; the resolution of this seeming paradox being that practical wisdom certainly includes a due appreciation of the value of art in practical affairs, as well as recognition of the important part that the imagination, and all its healthier emanations, must always play, even in business affairs; to say nothing of its emollient mitigation of the commercial crudities that tend to harden the heart and soul.

ARCHITECTS OF THE DAY.

XII.—MESSRS. CARRÈRE AND HASTINGS, OF NEW YORK.

[*Messrs. Carrère and Hastings are one of the principal firms of architects in the United States of America. Though to English readers the slightly older firm of McKim, Mead, and White is perhaps better known, Messrs. Carrère and Hastings enjoy a reputation second to none in their own country. Several illustrations of their work in the new Capitol Group at Washington were published in our Edition de Luxe last year.*]

The auspices under which Messrs. Carrère and Hastings began their career, taking the factors of education and social conditions, were almost the same as those of McKim, Mead, and White. Hunt had already exerted his personal influence on behalf of architects, but had not done much by his work to elevate Architecture. Wotan, in the person of Richardson, was building Walhallas in every city, which reflected very accurately the public taste of the time. McKim, Mead, and White had emanated from the office of the latter, and, though trained previously in Paris, their work, at first, displayed traces of Richardson's influence, and, later, of Hunt's.

Two or three years after the formation of the firm of McKim, Mead, and White, and at the time when their work first began to show a leaning to the refined styles of the Renaissance, among the factors in the production of these designs were two of their leading draughtsmen, who were each in charge of important work. These draughtsmen were John M. Carrère and Thomas Hastings. In the year 1885 these two entered into a partnership and began to look about for "something to do."

The Beginning of the Practice.

"Something to do" turned up in the form of a request for a "pretty picture" of the outside of a hotel which Mr. Henry Flagler was about to build at St. Augustine, Florida, the idea being that some local builder was to do the "practical work" of making the plans and details, and that the young architects were to make elevations "to fit." When the builder began to set out the work he began to discover "mistakes" in the architect's drawings (the customary attack of the American country builder upon the young architect); but instead of leading to their summary dismissal it brought Mr. Carrère to St. Augustine, and after proving the accuracy of the drawings he and his partner Hastings were commissioned as architects to design and supervise the Hotel Ponce de Léon. This led to other work, and at St. Augustine they remained for a period of three years, designing and supervising the erection of the Ponce de Léon, the Alcazar, the Methodist and the Presbyterian churches. This work was completed before the inception of the Columbian Exposition of Chicago, and was notably in advance of anything which had been produced in America up to that time. Then came "studies for" a crematory, a Necropolis for Brooklyn (which was not necessary!), and a few other ideal studies and sketches for proposed or executed work, including a design for a fine country house—perched upon a hill—for Mr. C. H. Tenney, at Methuen, Massachusetts. The great competition for the Cathedral of St. John the Divine, in New York, produced more than one masterpiece—including a wonderful Romanesque design by Harvey Ellis. The assessor, Professor Wm. R. Ware, placed first the Renaissance design by Carrère and Hastings. This assured for them a permanent leading position among the architects of the United States—a position which they have maintained ever since, with not more than three or four rivals at any time.

The magnificent design for the cathedral was, however, too far ahead of the times; the building committee was not yet advanced beyond the taste for the work of the school of Richardson, and another design was selected by the committee for execution.

Perhaps the critics did not recognise, as these architects did themselves, that good work could only succeed if the public was educated up to higher standards of taste; and that architects must be taught the ethics of their profession—more especially the ethics of architectural competitions. Upon this task Mr. Carrère began with an energy that drew the attention of the architects, draughtsmen, and students throughout the country; and for nearly twenty years this educational work has been carried on by him with a strenuous zeal. Throughout he has had the steadfast support of his partner, Hastings.

Their Theory of Architectural Art.

Both members of the firm having been trained at the Ecole des Beaux-Arts, where they spent several years, their sympathies have always been with the broad and comprehensive lines laid down at the French school. In their relation to public affairs connected with art they have been enthusiastic exponents of the methods of the Ecole des Beaux-Arts and all that it stands for, and they have contributed largely toward the remodelling of the American educational system in the principal universities on parallel lines with those of the French School.

Their work, which has been executed in every part of the United States and Canada, has been designed on the theory that American architecture needed traditions, and that it should go back, as its point of departure, to the last consistent and really successful period of the Renaissance, the eighteenth century, for its inspiration and its lessons, holding that the development of architecture follows a natural course of development or evolution parallel with the commercial, political, social, and ecclesiastical development in history, and while not disregarding the influence of the periods succeeding the eighteenth century, their theory has been to take up the thread of the evolution where it was broken and to endeavour to carry it on, and in this their work has been consistent and they have always been loyal and faithful to their theories.

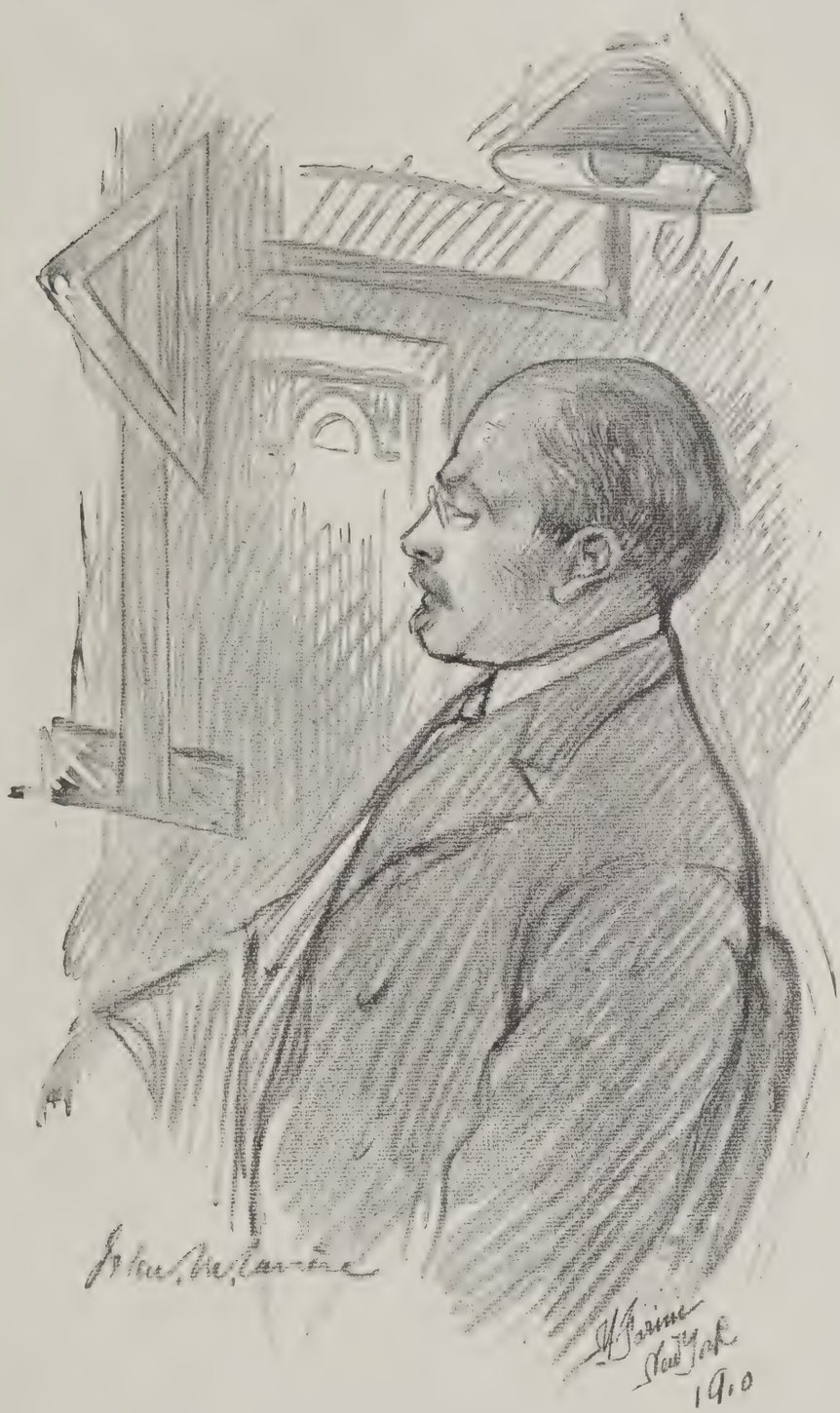
The House and Senate Office Buildings, as an illustration of this theory of Messrs. Carrère and Hastings, were inspired directly from Perrault's Colonnade of the Louvre and Gabriel's buildings on the Place de la Concorde, which to them represent the most complete and successful expression of the monumental architectural work of the eighteenth century in France. But however clear the source of inspiration, and however frankly acknowledged, there is no suggestion of slavish copying of the older work, no mere transforming or disguising of a model, but the scholarly study of a new and fresh design which embodies the best characteristics of the French works, but rejects their weaknesses. This is true progress, for it is progress from the best precedents that have come down to us.

As to the individual members of the firm, as it is always interesting to know how far an American *is* an *American*, especially if the name is not of English origin, some account of the personal history of each may not be without value to this article.

Mr. John M. Carrère.

The name Carrère has been for at least four generations American. The great grandfather of Mr. John M. Carrère, having emigrated from France and become an American citizen, married a Miss Walsh, who was closely related to the United States Ambassador to France under President Buchanan. His grandfather, who was American born, married a Miss Buchanan, and his father married a Miss Maxwell.

Mr. Carrère was born in Rio Janeiro, Brazil, in the year 1858, but according to the American and Brazilian laws he is an American by birth. He was educated in the schools of Brazil and Switzerland, and at the Ecole des Beaux-Arts became an "élève de Première Classe." His professors were, first, Victor Ruprich Robert, then Charles Laisne, a member of the Institute of France, and upon his retirement from the direction of the atelier, Léon Ginain, Membre de l'Institut de France. Upon returning to the United States after the com-



MR. JOHN M. CARRÈRE.

(A Sketch from Life by Our Special Artist in New York. Signed by Mr. Carrère.)

ARCHITECTS OF THE DAY. XII.—MESSRS. CARRÈRE AND HASTINGS, OF NEW YORK.

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MR. THOMAS HASTINGS.

(A Sketch from Life by Our Special Artist in New York. Signed by Mr. Hastings.)

ARCHITECTS OF THE DAY. XII.—MESSRS. CARRÈRE AND HASTINGS, OF NEW YORK.

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RESIDENCE OF F. H. GOODYEAR, BUFFALO, N.Y.
CARRÈRE AND HASTINGS, ARCHITECTS.

pletion of his studies he entered the offices of Messrs. McKim, Mead, and White, where he remained in charge of important work for three years.

Besides the work which the firm has done jointly, each member has worked individually along special lines for the benefit of the art and profession of architecture. As already indicated in this article, Mr. Carrère has devoted many years to teaching ethics, and to educating the younger men in the profession in the art of design. It was at the instance of Mr. Carrère and the late Richard Morris Hunt, jointly, that M. Masqueray founded his atelier in New York, out of the success of which has grown the whole modern system of instruction in architecture in the United States. Whether Masqueray's atelier would have continued or have ceased after a few years' experiment—just as Hunt's did nearly a half-century earlier—had it not been for the formation of the Society of Beaux-Arts Architects, is a question which does not admit of much doubt.

The only means of keeping students at work after the first few encounters with the necessary drudgery in connection with architectural drawings is to inaugurate the spirit of emulation and competition. The Society of Beaux-Arts Architects was founded in 1894 at the suggestion of Mr. Carrère, and several ateliers were formed to work under the auspices of that society. Mr. Carrère was made the first Chairman of the Committee on Education, and he outlined the course in architectural design which has revolutionised the system formerly prevailing in the American colleges. At the present time practically all of the universities including an architectural course take part in the competitions held by this society, and the recompenses given count so many points in the advancement of the student in his course. The fundamental principle which Mr. Carrère introduced into the American system of architectural education is, that *design* is the first essential to architecture—that whatever other training a student may receive he is wholly unfit to practise architecture unless thoroughly trained in design. Mr. Carrère was for two terms



RESIDENCE OF F. H. GOODYEAR, BUFFALO, N.Y.
CARRÈRE AND HASTINGS, ARCHITECTS.

President of the Society of Beaux-Arts Architects, composed of pupils of the Ecole des Beaux Arts residing in the United States.

The very important work of establishing the Art Commission of the City of New York was entirely Mr. Carrère's idea, and was put through by himself and his friends, notwithstanding the pessimistic views of the art interests at large.

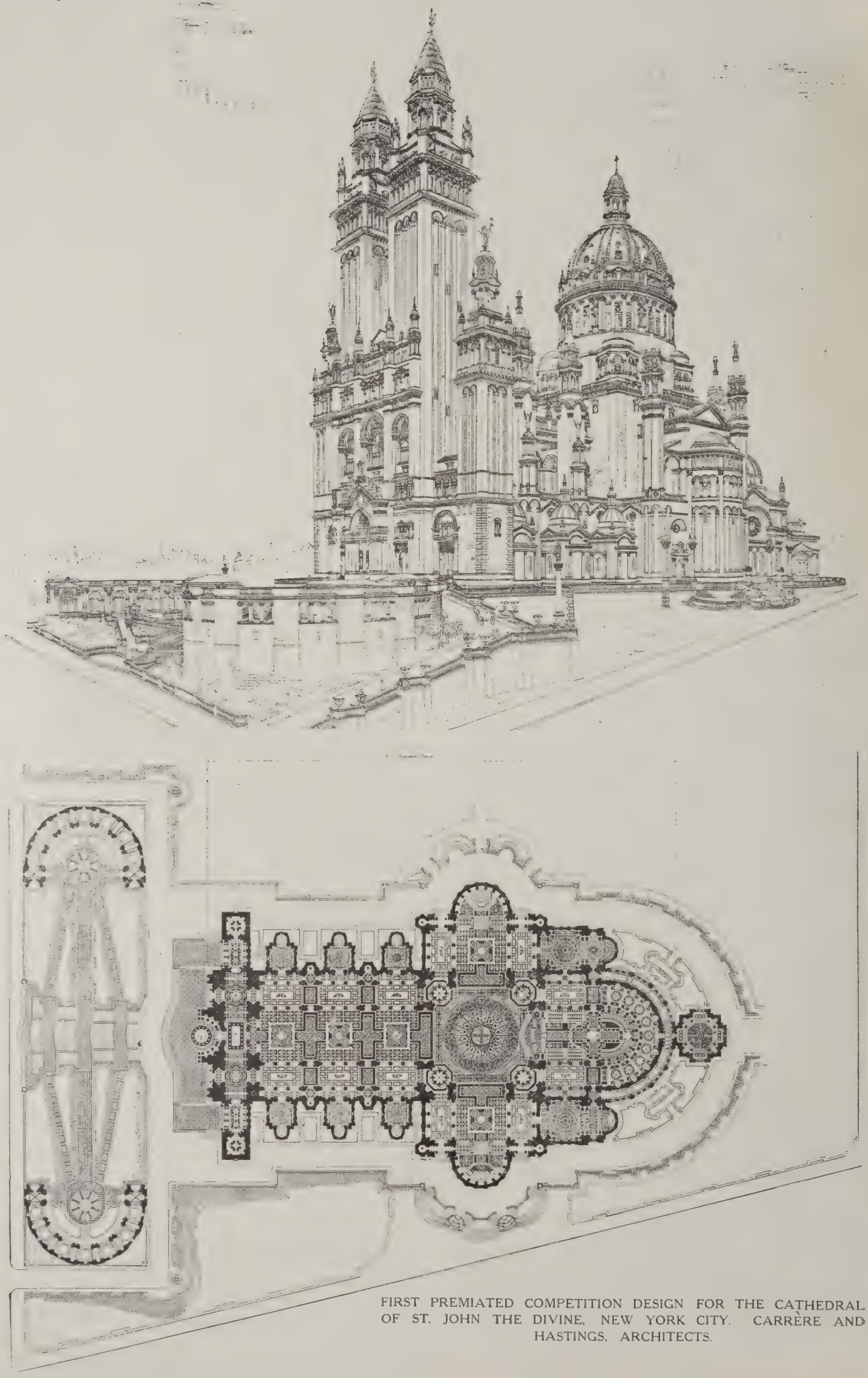
When the American Institute of Architects, under the leadership of Mr. Burnham, was warring for a revision of the method of designing public buildings—that is to say, for the placing of the work in the hands of the leading practising architects, under the supervision of the Government architect, instead of having it designed by him—there came a time when the architects had so clearly made their case against the Government that it could no longer ignore their protests and claims. Carlisle, who was Secretary of the Treasury, seemed to have no desire to make improvements in his department, and so far as the attacks of the President of the American Institute of Architects were concerned, he made them a personal matter between himself and Mr. Burnham. Finding



YALE MEMORIAL DINING HALL, YALE UNIVERSITY, NEW HAVEN, CONN. CARRÈRE AND HASTINGS, ARCHITECTS.

that he was losing in the fight, and that he had but one more card to play, he cast about him and sought for a way out of the difficulty. It was upon Mr. Carrère that his eye fell. Carrère was the youngest and most vigorous of the hornets about his ears; he was the whip of the party; it was he who kept an agent at Washington to keep track of, and to push, bills which interested the architects. It was he who advanced money to pay various expenses; and it was he who—worst of all—sent out the telegrams which brought those accursed "architect fellows" (to use the Secretary's own words) to Washington from time to time, and just in time to spoil some of his best plans. It was Carrère who was responsible for the occasional and objectionable intrusion of Post, Mead, and Burnham upon his tapis in the Treasury Department, and, to use the choice expression employed at the time by a Western New York Irish-American Congressman, "Carlisle hates Burnham worse than the devil hates holy water." He listened to a suggestion which came from the architects themselves; he offered the position of Supervising Architect of the Treasury Department to Mr. Carrère! That, surely, would settle the matter to everybody's satisfaction.

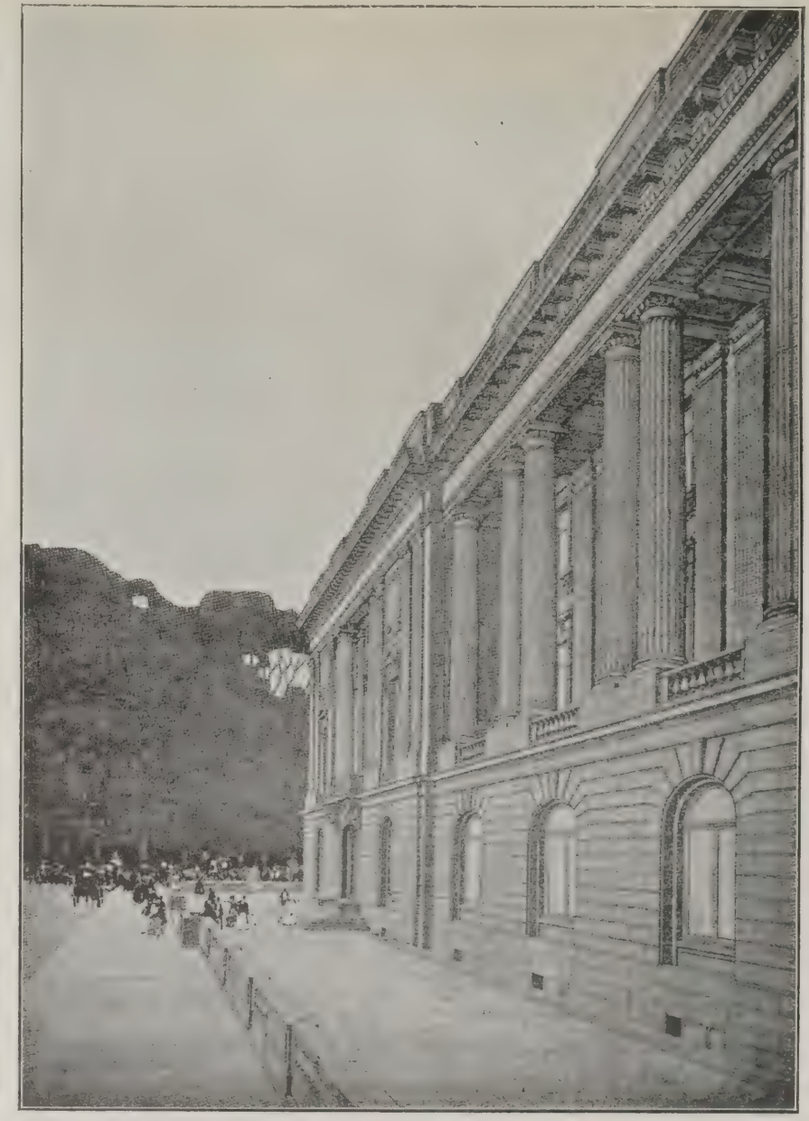
The writer recalls some of the discussions which took place among the architects in a town where he was working at the time. One of the prominent architects of that town came to the office of another and asked if the latter had heard that Carrère had been offered the position of Supervising Architect, to which the reply was made that it hardly seemed credible, but, if true, it would give him a wonderful opportunity to make a great reputation, and the temptation to accept must be very severe. And the observation was added, "Carrère has been preaching the higher code of ethics; we have



FIRST PREMIATED COMPETITION DESIGN FOR THE CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK CITY. CARRÈRE AND HASTINGS, ARCHITECTS.



STAIRCASE: OFFICE BUILDING OF THE HOUSE OF REPRESENTATIVES.
U.S. CAPITOL, WASHINGTON, D.C.



CORNER OF THE OFFICE BUILDING OF THE HOUSE OF REPRESENTATIVES.
U.S. CAPITOL, WASHINGTON, D.C.

THOMAS HASTINGS, ARCHITECT.



RESIDENCE OF MRS. R. H. TOWNSEND, WASHINGTON, D.C.
CARRÈRE AND HASTINGS, ARCHITECTS.

now the opportunity to learn whether he can practise them." Shortly afterwards the architect who had passed this remark entered the office one morning with a newspaper in his hand and announced: "Well, I see that Carrère has made good." Mr. Carrère declined the appointment, not only upon grounds of loyalty to the cause of his confrères, but because he was satisfied that with the large volume of work being done by the Government, it was impossible for any one architect to cope with it, and that, with whatever valuable assistance he might be afforded in the way of young designers, positions in the Government office could never attract the best talent. The only way for the Government to obtain suitable experienced professional and artistic talent was to employ the leading practising architects. This was the substance of his reply in declining the appointment, and it convinced the public officers of the earnestness of his and the other architects' purpose.

President Cleveland and his Cabinet went out of office shortly afterwards, but under President McKinley and his Secretary, Seymour Gage, the present order of things was established. All large Government buildings are now given out to private architects, who are usually selected by competition.

Mr. Carrère has succeeded very largely through his personal efforts in establishing a proper code of ethics for the New York Chapter of the American Institute of Architects, which was the basis of the code adopted by the Institute at its last Convention. He is also the originator of the code of competitions of the Chapter which the Institute at the last Convention voted to enforce for the entire country, with this difference: That it shall be unprofessional for any member of the Institute to *enter* a competition until the programme has been submitted and approved.

Mr. Carrère was Chief Architect of the Pan-American Exposition, and Chairman of the Board of Architects in charge of the grounds and landscape features of the Exposition. Besides this, he has personally held the following appointments and commissions:—

Under appointment by the State of Ohio he now holds office as a member of the Group Plan Commission, having charge of the remodelling of a large section of the City of Cleveland, with a view to establishing the grouping of all the public monuments and buildings with proper surroundings and parks. The work is still in process and well advanced.

He is a member of a similar commission to revise the plan of the City of Baltimore, Maryland, and to design a civic centre, the grouping of its public buildings and a system of avenues and parkways connecting the various points of interest of the city. Preliminary reports have been made and approved.

Member of a similar commission to report on a comprehensive plan for the City of Grand Rapids, Michigan. Preliminary reports have been made and approved.

Appointed by the City of Hartford in association with Mr. Hastings to advise and report concerning the development of the plan of that city. The report is now under preparation.

Appointed in association with Mr. Hastings to make an extensive report for the entire remodelling of Atlantic City. The report has been presented and approved, and the work is in process of execution.

Was consulting architect in charge of the design of the Senate Office Buildings or annexe to the United States Capitol in Washington, D.C.

Appointed with Mr. Hastings by Joint Committee of the United States Senate and House of Representatives to prepare a report on the extension of the United States Capitol.

President for two terms of the New York Chapter of the American Institute of Architects. Was several times a Director and a member of the Executive Committee, and is serving at present in that capacity. Several times a Director of the American Institute of Architects, and is serving at the present time in that capacity.

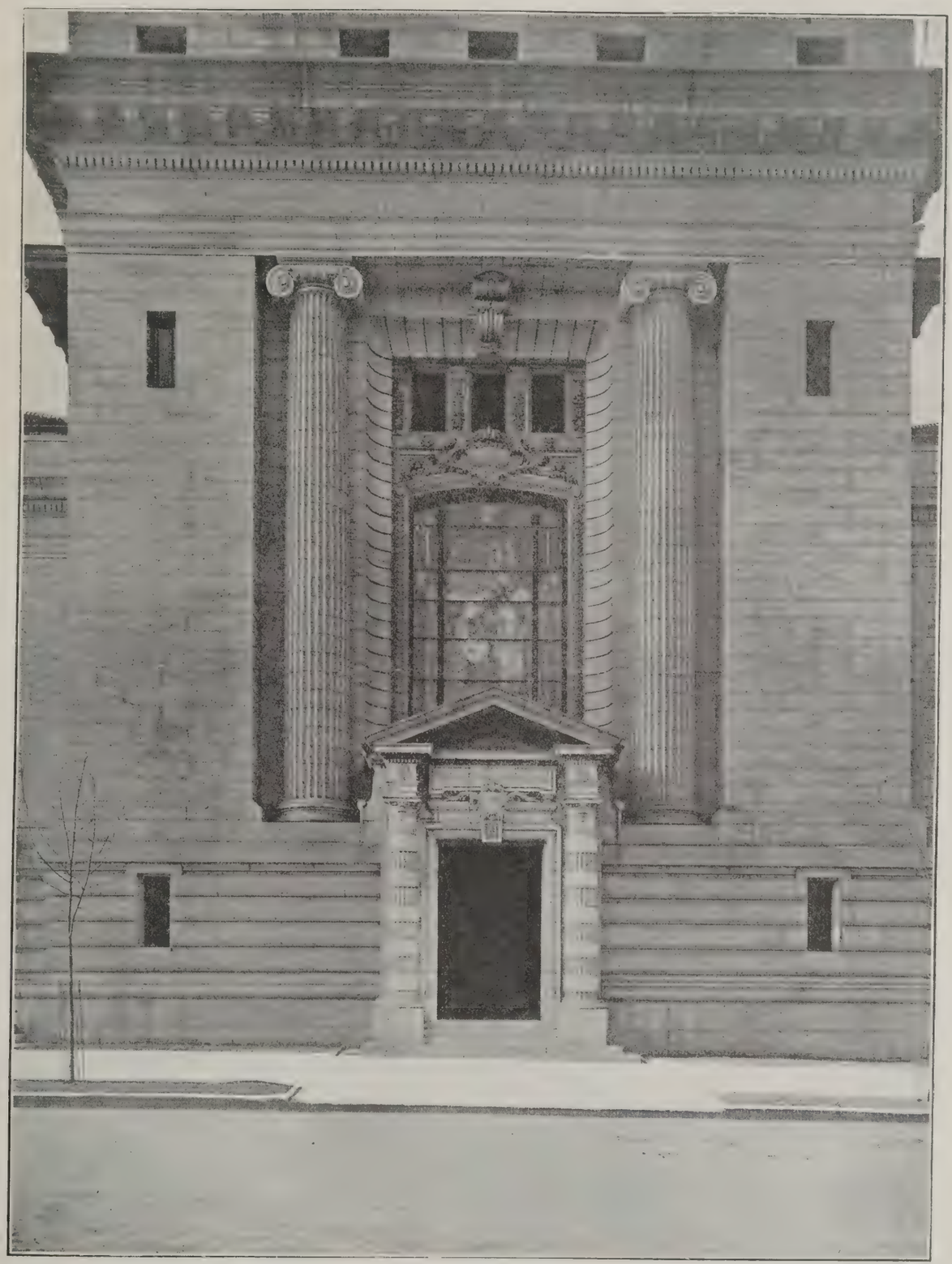
One of the founders and trustees of the Fine Arts Federation, comprising as its constituent societies the thirteen leading arts societies of the City of New York. The founder of the Art Commission of the City of New York. One of the founders of the "Prix Américain." which is a prize offered at the Ecole des Beaux-Arts. It is open only to French students. An associate member of the National Academy of Design. Member of the National Institute of Arts and Letters; member of the Century Club of New York; Director of the American Academy in Rome (Villa Mirafiori).

Mr. Thomas Hastings.

Mr. Thomas Hastings was born in 1860 in the City of New York, of American parents. His grandfather was distinguished as a musical composer. His father, the Rev. Dr. Thomas S. Hastings, an eminent Presbyterian divine, was for



FIRST CHURCH OF CHRIST SCIENTIST, CENTRAL PARK WEST AND NINETY-SIXTH STREET, NEW YORK CITY.
CARRÈRE AND HASTINGS, ARCHITECTS.



FIRST CHURCH OF CHRIST SCIENTIST, CENTRAL PARK WEST AND NINETY-SIXTH STREET, NEW YORK CITY: DETAIL, LOWER PART OF TOWER. CARRERE AND HASTINGS, ARCHITECTS.

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many years the minister of the principal Presbyterian Church in New York, and President of the Union Theological Presbyterian Seminary. His mother was a Miss De Groot, an American of Dutch and French origin.

Mr. Hastings was educated in New York City. At the Ecole des Beaux-Arts he became an "élève de Première Classe" under the professorship of Jules André. Upon his return to the United States he entered the office of Messrs. McKim, Mead, and White, where he remained for two and one-half years, when he entered into partnership with Mr. Carrère. Mr. Hastings has held the following appointments and commissions;—

One of the founders of the Society of Beaux-Arts Architects, and for several terms a director. He was for two years President of the Architectural League of New York, and several times a director.

He is a member, and was several times a director of the American Institute of Architects, and also of the New York Chapter of the American Institute of Architects. He is also an associate member of the National Academy of Design; a member of the American Academy of Arts and Letters; a member of the National Institute of Arts and Letters.

For several years was architect of the Department of Parks of the City of New York. Consulting architect of the Department of Bridges of the City of New York. Consulting architect in charge of the design of the House Office Building or annex to the United States Capitol in Washington, D.C. Professor of architecture in charge of one of the ateliers at Columbia University in the City of New York.

Appointed by the City of Hartford in association with Mr. Carrère to advise and report concerning the development of the plan of that city.

Appointed in association with Mr. Carrère to make an extensive report for the entire remodelling of Atlantic City. The report has been presented and approved, and the work in is process of execution.

One of the founders of the "Prix Américain."

In collaboration with Mr. Carrère appointed architect of the Lafayette Monument pedestal in the Place du Carrousel, Louvre, in Paris.

Appointed with Mr. Carrère by the Joint Committee of the United States Senate and House of Representatives to prepare a report on the extension of the United States Capitol.

Established one of the first free ateliers for the teaching of architecture on the lines of the Ecole des Beaux-Arts, helping to establish the foundation of the present successful educational work of the Society of Beaux-Arts Architects.

Second chairman of the committee on education of the Society of Beaux-Arts Architects and continued the work started by Mr. Carrère.

Member of the Century Club for New York.

One of the founders, and for several terms a director, of the American Academy in Rome (Villa Mirafiori), and is serving at the present time in that capacity.

Received the decoration of Chevalier of the Legion of Honour from the French Government in recognition of his services as the official architect of the Lafayette Pedestal in the Place du Carrousel, Louvre, in Paris, which was designed in collaboration with Mr. Carrère.

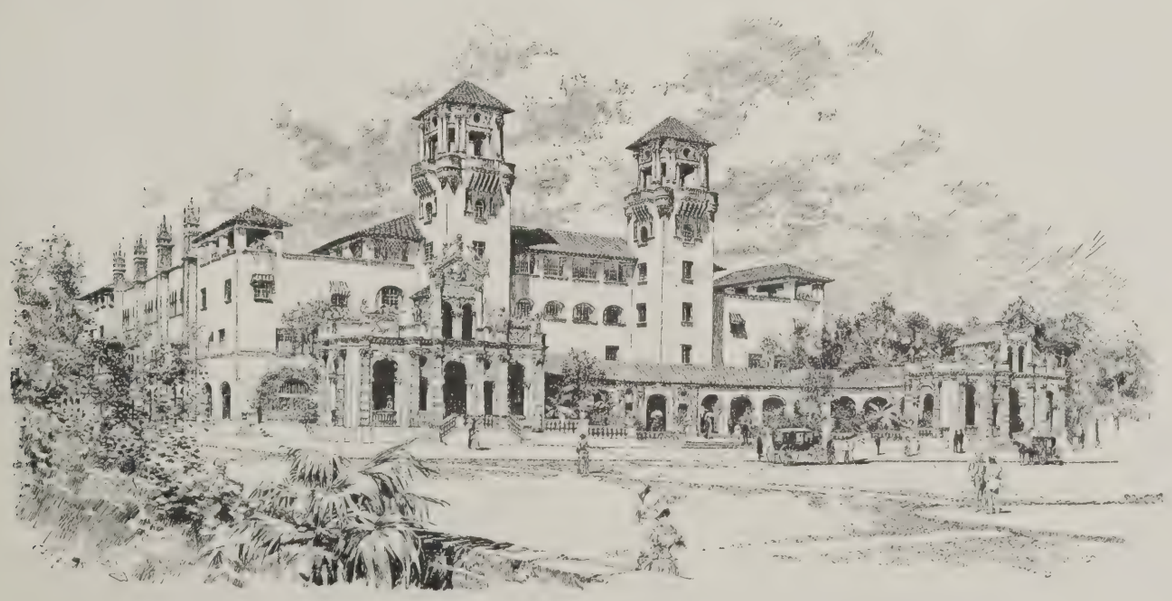


OFFICE OF THE CARNEGIE INSTITUTION, WASHINGTON, D.C. CARRÈRE AND HASTINGS, ARCHITECTS.

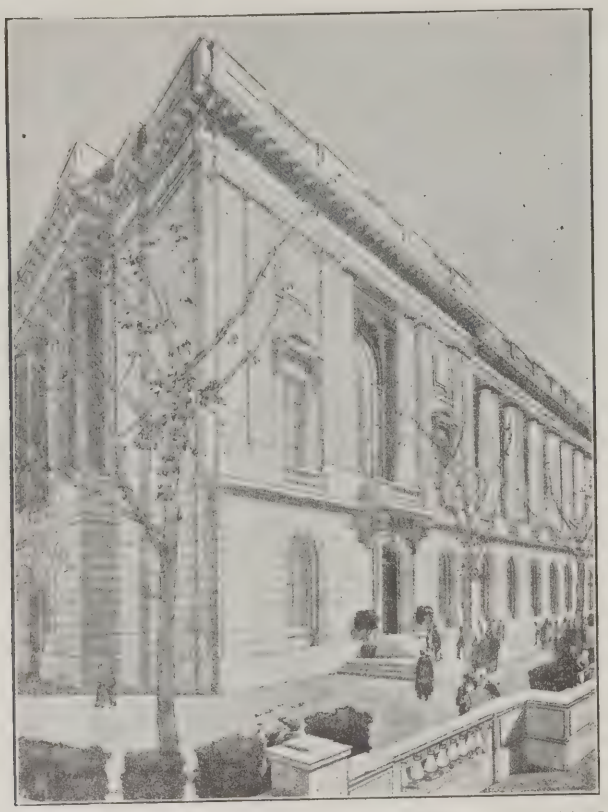
Similarity of Ideals.

It will be seen from the above notes that each of the partners has had practically the same training and experience, that the ideal of each is classical, that the special form of expression of that ideal is through a development of the forms of the advanced Renaissance styles, and that each has a preference for the work of the same period. It is therefore assuming equal natural artistic instincts, that they should think alike and work alike, and that it is impossible to dissociate the works of one from those of the other. All is collaborative, with perhaps the exception of the two annexes to the United States Capitol, for which each designed a building separately, and produced two buildings one of which was the counterpart of the other, proving that they could not do their work without consulting each other and arriving at exactly the same conclusions—except in trifling details. Even in the task of educating the public and the younger men both have pulled together. Only in matters in which exceptional force and individual energy has been required has one appeared alone, and for such emergencies Mr. Carrère has always come to the fore.

Mr. Hastings has worked along the more quiet and gentle path of direct personal instruction. Mr. Carrère has led the strenuous life so dear to and so parallel with—in its way—that of the Ex-President Roosevelt. It has been stormy,



THE ALCAZAR, ST. AUGUSTINE, FLORIDA. CARRÈRE AND HASTINGS, ARCHITECTS.



CORNER OF THE SENATE OFFICE BUILDING, WASHINGTON.
JOHN M. CARRÈRE, ARCHITECT.

trying, fraught with difficulties and jealousies in his way, which have always been overcome—usually by excellent diplomacy—but, when occasion has arisen, with an active force that has impressed upon the memories of friend and foe that this is indeed a strong man. If, and it may be said so, Mr. Hastings was the greatest rival of the late Stanford White in brilliancy of imagination and subtlety of thought in the refining of delicate design, so too may it be said that Mr. Carrère has been for many years the chief rival of the late Charles Follen McKim as the leader in matters of art and its relation to the social fabric of civilisation in America. It is to the position among architects—among artists—held by McKim, Mead, and White that (since the passing away of McKim and White) Carrère and Hastings succeed. So close has been the personal friendship existing between the members of both firms, and so closely allied their aspirations and hopes, that the rivalry was always of the friendliest and most sportsmanlike character. To all intents and purposes they have been members of one family of artists.

Principal Works.

The earliest examples of their work have been indicated—the group of buildings, hotels, churches, etc., at St. Augustine; and their first notable success in a great competition—the design placed first for the St. John the Divine's Cathedral at New York. Among other work which followed, and, because of its scholarly excellence and the remarkable strength of the plans, attracted the attention of other architects, were their successful competitive designs for the City Hall at Paterson, New Jersey; New York Public Library and National Academy of Design; and their competitive design (which all but won), the New York Custom House, which so far as the architecture of the building was concerned was better than the design selected. Considered purely as architecture, this design was in many respects the greatest composition that has been produced by any American architect. More recently their success in the keen competition for the New Theatre has again drawn attention to the exceptional strength of their design. and the originality of the whole conception. It is, however, impossible in this space to more than briefly catalogue the more notable of their very long list of works.

The following is an incomplete list of the other important or characteristic works of the firm completed at this time:—

PUBLIC AND EDUCATIONAL BUILDINGS:—New York Public Library, New York City; Annexes to the U.S. Capitol, Senate Office Building, Washington, D.C., House, Office Building, Washington, D.C.; Borough Hall, Borough of Richmond, N.Y.; Ferry Terminal, Borough of Richmond, N.Y.; Paterson City Hall, Paterson, N.J.; Administration Building for the Carnegie Institution, Washington, D.C.; City Hall, Portland, Maine; fourteen Carnegie Branch Libraries in New York City. Manhattan Bridge and Approaches, City of New York; New Theatre, New York City; Woolsey Hall, and the Memorial Dining Hall at Yale University, New Haven, Conn; Rockefeller Hall and Goldwin Smith Hall at Cornell University, Ithica, N.Y.; Science Hall at Hamilton College, Clinton, N.Y.; McKinley Monument, Buffalo, N.Y.; Pedestal of Lafayette Monument, Paris, France.

CHURCHES:—Methodist Church and Parsonage, St. Augustine, Florida; Presbyterian Memorial Church, St. Augustine, Florida; Central Congregational Church, Providence, Rhode Island; Christian Science Church, New York.

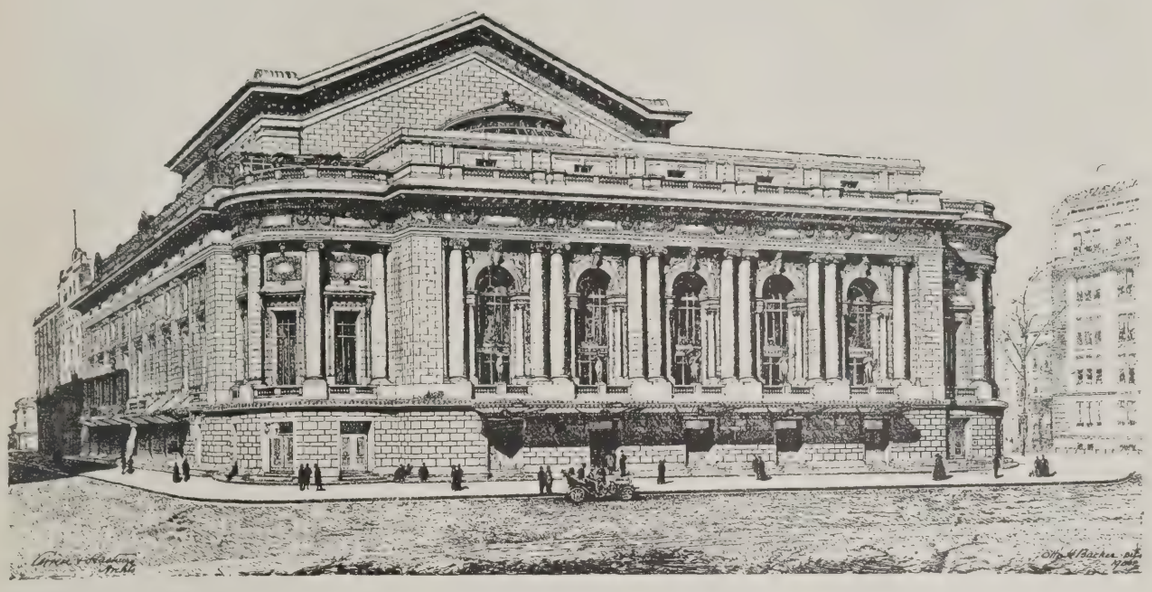
OFFICE BUILDINGS:—Mail and Express, New York City; Pierce Building, New York City; Blair Building, New York City; Royal Bank of Toronto, Canada; Traders Bank in Toronto, Canada; Pan American Exposition, Buffalo, N.Y.; St. John's Park for the City of New York; Hamilton Fish Park for the City of New York.

COUNTRY ESTATES:—E. C. Benedict, Greenwich, Conn; C. Ledyard Blair, Peapack, N.J.; E. H. Harriman, Arden, N.Y.; Murray Guggenheim, Elberon, N.J.; Otto H. Kahn, Morristown, N.J.; Whitehall for Henry M. Flagler, Palm Beach, Fla; Giraud Foster, Lenox, Mass; Mrs. Richard Gambrill, Newport, R.I.; Walter Jennings, Cold Spring Harbor, L.I.; Colonel Oliver H. Payne, Esopus, N.Y.

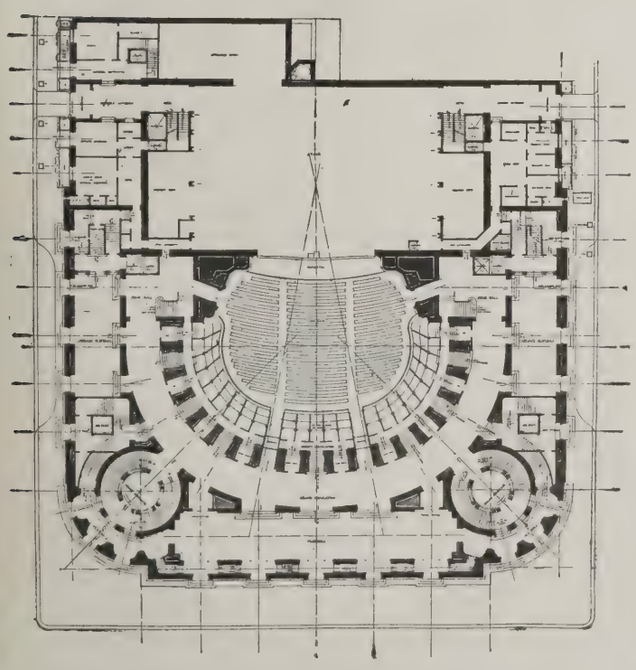
CITY RESIDENCES:—Mrs. Richard Townsend, Washington, D.C.; Mrs. Ralph Ellis, Washington, D.C.; Honorable Elihu Root, New York City; Honorable George L. Rives, New York City; Doctor C. A. Herter, New York City; Charles F. Hoffman, New York City; Burrah Hoffman, New York City; Richard M. Hoe, New York City; Doctor E. K. Dunham, New York City; John H. Hammond, New York City; Frank H. Goodyear, Buffalo, N.Y.



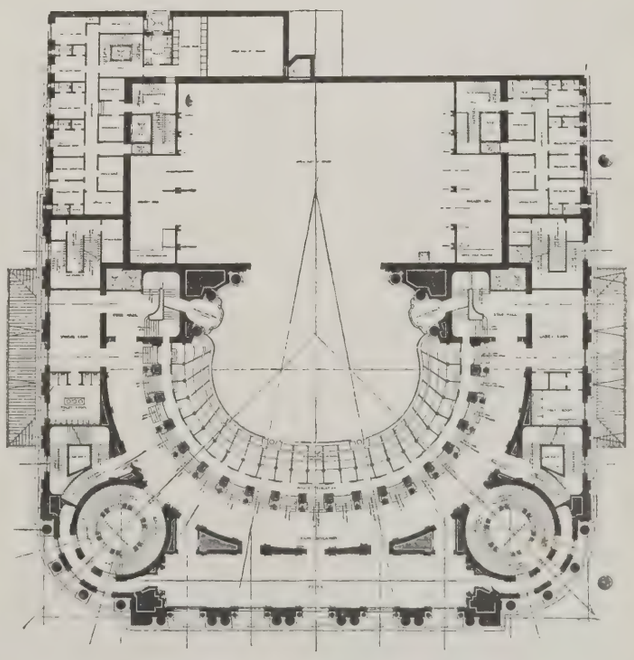
MAIN ENTRANCE, "BLAIRSDEN," FAR HILLS, N.J.
CARRÈRE AND HASTINGS, ARCHITECTS.



NEW THEATRE, SIXTY-SECOND AND SIXTY-THIRD STREETS, AND CENTRAL PARK WEST, NEW YORK CITY.
CARRÈRE AND HASTINGS, ARCHITECTS.



GROUND FLOOR PLAN, NEW THEATRE, NEW YORK CITY.
CARRÈRE AND HASTINGS, ARCHITECTS.



FOYER FLOOR PLAN, NEW THEATRE, NEW YORK CITY.
CARRÈRE AND HASTINGS, ARCHITECTS.

NOTES AND NEWS.

The "Unenterprising" (?) British Builder.

It is suggested that because certain works on French soil are being carried out by French contractors, Englishmen are not sufficiently enterprising. The proposition loses much of its daring, however, when the explanation is added that the land and the houses concerned in it are the property of Englishmen. At Le Touquet, a correspondent of the "Financial News" took note of several fine houses being built for Englishmen by French contractors; while "a big hotel in the forest," which must have cost from £60,000 to £70,000, and is, it is understood, financed by a combination of English and French capital, is being built by contractors from Paris. Moreover, while all the land in Le Touquet was acquired by an English syndicate. some six or seven years ago, and its very extensive development has been "necessitated" by very extensive English advertising, in only a few instances has any of the work been done by Englishmen. The writer made enquiries as to the names of the English architects who designed the few buildings erected by English people at Le Touquet, and found that they included Mr. T. E. Collcutt, Mr. W. D. Caröe, and Mr. A. Blomfield Jackson. No doubt there are others, and the capitalists have probably found it easier to engage British architects than to employ British contractors, materials, and labour. While, therefore it is perhaps, as our contemporary remarks, "a pity that some of our English firms do not try to secure some of the business at Le Touquet and Paris-Plage, instead of leaving the field almost entirely to French builders," we can hardly agree that it is merely "want of enterprise" that has kept Englishmen out. There are, it may be assumed, more practical obstacles than the fear of injuring the *entente cordiale*, and even more material difficulties than that of distance from headquarters. The British builder who thinks twice and thrice before venturing to tender for the erection of a small villa in Le Touquet is not to be accused of want of enterprise.

A Fourteenth Century Palace Restored.

Florence now affords the opportunity of seeing a fourteenth century palazzo in what, unless the restorers have erred, is virtually its original condition. This is the Davanzati Palace, in the Via Porta Rossa, a narrow street in the centre of the city, running parallel to the Arno, and extending from the lower end of the Tornabuoni to the Mercato Nuovo. The palazzo was built early in the fourtenth century by the wealthy Davizzi family, who, sinking to poverty, sold it in 1578 to Bernardo Davanzati, a man of wealth and a translator of Tacitus. In 1830, the last representative of this family, Carlo di Giuseppe, threw himself from a high window in this palace, which even before then had begun to lose all its character. "It underwent," says a "Times" correspondent, "the fate of most of the great Florentine houses. It was broken up into a score of tenements. The frescoed walls were plastered over, the fine wooden ceilings were covered with innumerable coats of whitewash, and joists, beams, and windows fell into a state of ruinous decay." In 1904, Signor Elie Volpi, an art expert and dealer, bought the palace, and he is said to have spent 42,000 lire on the restoration, including more than 50,000 lire for steel girders and beams, which, happily invisible, have made the building solid and strong. The old ceilings, fireplaces, and fresco decorations are now "just as they must have appeared to the Davizzi," many of the old decorations having been revealed in excellent condition when the plaster was removed. "The adornments of the frescoed rooms are for the most part simply decorative—diamond-shaped red panels, enclosing *stemme* or heraldic beasts; but there is a good St. Christopher on the first landing, and in the best bedroom, the *camera di sposa*, a deep frieze has been laid bare containing a whole painted story in some twenty scenes"—apparently a variant of the Romeo and Juliet theme. At the fifth floor there is a fine sixteenth-century loggia, "commanding a glorious view of Florence, and Signor Volpi has supplied many pieces of appropriate unrestored furniture associated with the earlier period.

Puddletown Church, Dorset.

Mr. Thackeray Turner, the secretary of the Society for the Protection of Ancient Buildings, has addressed a letter to the Bishop of Salisbury, in the course of which he says:—"The case for restoration seems a singularly weak one. To say that this church would gain in beauty by a modern patch would be preposterous, and we believe no one has ventured this plea. The ground of utility is equally lacking, for we learn that the church is larger than the parish needs. . . A very loose-thinking sentimentality has widened the circle of approval. There are two appeals to sentiment. First, the chancel once was longer and should therefore be rebuilt as it was before. Those who reason thus do not stop to consider that we do not know what the older chancel was like, and that if we did we could not raise from the dead the Middle Ages or bring to birth from a corpse a living work of art. The other appeal to sentiment depends on a belief that stones from the church were used in a house in the parish. It is proposed to kill two birds with one shot—to destroy a chancel built in 1576 and a house of about the same date in order to recover some stones which have lost their vital significance as architecture. Further, it is intended to move the pulpit so as to expose the rood stair doorway; but the former existence of rood screens is now so familiar that it is quite unnecessary, and the proposed new sounding board would lessen the feeling of genuineness which is part of the charm of the place. For the proposal to lengthen the north aisle there seems no excuse, and it certainly involves the pulling down of an old wall, and another disturbance of the peaceful beauty of the church. Some repairs are no doubt needed, but if these were carried out under an architect who could be on the spot the whole time the building need lose little of its charm." It will be understood that our reproduction of these extracts from Mr. Thackeray Turner's letter does not necessarily imply that we are in sympathy with all that it contains; but as we have already given a statement of the case for restoration, it is only fair to afford the other side a hearing.

Public Health Exhibition.

The second Municipal and Public Health Exhibition, which was held at the Royal Agricultural Hall last week, showed what is being accomplished by the municipalities in the direction of improving public health and comfort. Every department of municipal work was represented. The visitor could see the latest triumphs of sanitary engineering, and the part that electricity plays in the home, the newest devices affecting gas and water supply. A striking feature of the exhibition was the alleyway devoted to the display of road and paving materials. Ten different kinds of roads were laid down. They were constructed with the knowledge that the motor-car is increasing in popularity, for it is claimed that each is dustless. In the centre of the hall an attempt to deal with the housing problem, especially in the country districts, took the form of a model municipal cottage, which combined cheapness with comfort. It comprised a large living-room and scullery-bathroom on the ground floor, and three bedrooms on the first floor, and, it is stated, can be built anywhere at a cost of £175. During the exhibition conferences and lectures of special interest to the delegates from the local authorities were held in the afternoons, while in the evenings popular lectures for the instruction of the public in matters affecting local government were given.

St. George's Chapel, Windsor.

The first step towards getting St. George's Chapel ready for the solemn ceremonies of the 20th inst. consisted in clearing all the benches out of the nave. A large number of workmen were engaged during the day in this work, under the direction of Mr. A. Y. Nutt, clerk of works at Windsor Castle. As soon as that was completed, carpenters were set to work erecting a staging in the nave for the accommodation of the

privileged spectators who will attend the funeral ceremony. This structure will rise at an easy slope from near the western end of the choir, and will accommodate about seven hundred persons. It will be draped in dark purple, tied with silver-white bands. The choir and Garter Stalls will be draped in fabric of a similar mourning tint, and from the west door to the altar steps a similar floor cloth will be laid down. The staging will rise on either side of the central passage up the nave, the passage being, of course, kept clear for the conveyance of the coffin to the bier. The Royal mourners, foreign Sovereigns, and their representatives will be seated in the choir, where the Knights of the Garter will occupy their stalls. Others entitled to be present will have seats reserved for them on the structure now being erected in the nave. These arrangements are practically the same as those observed at the funeral of Queen Victoria. It has now been definitely decided that the mortal remains of his late Majesty shall rest in the Royal vault beneath the Albert Memorial Chapel, and not in the vault in St. George's Chapel. The Albert Memorial Chapel vault was prepared by George III. to serve for generations as a resting-place for the Royal line of England. When King George set about completing the repairs to the Wolsey Chapel, as the Albert Memorial Chapel was then called, he found that the foundations of the building went down to the solid chalk, and he conceived the idea of underpinning the walls and excavating a Royal vault. It is in this vault, says a "Times" special correspondent, that George III. was laid, and here nearly all his descendants have since been buried. The Royal vault was formerly a very dark and gloomy apartment, with long stone tables, upon which the coffins rested. During the later years of Queen Victoria's reign, and in the first few years of that of King Edward, a series of alterations was made. Round the walls three tiers of wide stone benches were erected for the reception of the Royal coffins. These benches were divided into compartments, each large enough for a single coffin, and their fronts were enclosed by a handsome grille of artistic hammered ironwork. The masonry-filled entrance has been replaced by an open stone screen, and the vault and passages fitted with an electric-light installation. The last interment which took place in the Albert Memorial Chapel was that of the late Duke of Teck, who was buried on Jan. 27, 1900.

An Art Palace for London: "An Alluring Dream."

Mr. Walter Crane, having been asked by the editor of the "Daily News" for his opinion on what he (Mr. Crane) describes as "this alluring dream of Sir Hubert von Herkomer's of an Art Palace for London" (to which reference was made in our columns last week), says that he thinks it magnificent, and he declares that if there existed any real enthusiasm for art, or for the adequate housing of art among our people, such a dream would be realised to-morrow. Munich already contains several such palaces, giving impartially equal opportunities both to the old and the new schools to appeal to the public; while in London the centre of the wealthiest Empire of the world, we get poorer and poorer in the matter of public art galleries. Paris has its Grand Palais! Why not London? Sir Hubert's scheme for giving ample opportunities and exhibition space to societies of artists now practically homeless, and, Mr. Crane presumes, chances to unattached artists to place their works before the public, shows a large and generous spirit, although he naturally clears the main stage for his own body, the Royal Academy, which, alone among our Royal societies of artists, enjoys already a splendid mansion rent free. A visitor to the Royal Academy Exhibition, Mr. Crane observes, would hardly realise that any form of art other than painting in oil was of much account. We want a Grand Palais in which all the arts and crafts of design could be shown in their proper relation on a truly national scale and in a truly national spirit. Sir Hubert's words, "individual brilliancy is plentiful, yet collectively we are allowing art to sink into the gutter, instead of making it the glory, and, in a sense, the religion of life," are admirable, and exactly express the present position of art. Hyde Park would no doubt be a splendid site, but one would be a little reluctant to further encroach on London's greensward—unless the present site of the police barracks could be utilised. Where there's a will there's a way, and Sir Hubert Herkomer (Mr. Crane declares) has done good service in appealing to our sense of the importance of art in its bearing on life and as the highest means of national expression.

Dr. Johnson's Statue in the Strand.

Hidden by its white covering, the statue of Dr. Johnson in the churchyard of St. Clement Danes will for the present continue to be an object of unsatisfied curiosity to passers-by, the unveiling by Princess Louise, Duchess of Argyll, which was to have taken place last Saturday, having, of course, been postponed owing to the King's death. The statue, as we have already stated, is the work of Mr. Percy Fitzgerald, who has presented it to the rector, the Rev. J. J. H. S. Pennington. It represents Johnson facing Fleet Street, and his familiar haunts, with a book in his hand, and the avidity of his literary research suggested by others strewn at his feet. The statue is 6ft. high, and stands on a pedestal of similar measurement, so that placed as it is, at the east end of the churchyard, it forms a bold and conspicuous memorial of the genius of the locality. Those who have seen it pronounce it to be a very characteristic presentment of Dr. Johnson. On the pedestal there are medallions recalling incidents of his life. The position is the more appropriate since Dr. Johnson was a regular worshipper in the church, where his pew above the pulpit is still shown at a small charge to defray the balance of cost of the stained glass window to his memory unveiled by Princess Henry of Battenberg last year. The date of the unveiling ceremony remains uncertain.

The site is perhaps the most appropriate that could be found for a statue of Dr. Johnson. One has always felt that Bacon's rather ridiculous effigy of him in St. Paul's is somewhat out of place, taking him rather further east than he was wont to venture, except when bent on business visits to the booksellers. When out for pleasure or worship, he usually went west.



CARNEGIE INSTITUTION, WASHINGTON, D.C. CARRÈRE AND HASTINGS, ARCHITECTS.

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NEWS IN BRIEF.

Mr. George Macfarlane, who is a prominent member of the National Federation of Building Trades Employers of Great Britain and Ireland, has been appointed by the Chancellor of the Duchy of Lancaster to the Commission of the Peace for Manchester.

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Mr. John Belcher, R.A., is the architect for the new premises of Messrs. Whiteley, in Queen's Road, W.

* * *

Mr. Nandy Hoskins, in winding up his course of lectures on sanitary science and engineering at the Borough Polytechnic Institute, delivered a lime-light lecture giving a résumé on the subjects dealt with during the session. At the conclusion of the lecture, Mr. Percy Hawkins, on behalf of the students, presented Mr. Hoskins with a silver-mounted umbrella, and referred in eulogistic terms to the great service rendered by the lectures to the students, who had benefited by the clear and concise way in which Mr. Hoskins had brought the matters before them. He had often gone out of his way in furnishing material for their instruction, and had taken the greatest care that each student should receive more than a superficial knowledge of the subjects dealt with.

* * *

Mr. R. Frank Atkinson, F.R.I.B.A., of 8, Sackville Street, W., has been appointed by the Midland Railway Company architect for the proposed works to the Adelphi Hotel, at Liverpool.

* * *

Messrs. Patman and Fotheringham, Ltd., of 100 and 102, Theobald's Road, W.C., have obtained the contract for the erection of the Labour Home in Marylebone Road for the Church Army, under Mr. G. A. Lansdown, architect.

* * *

At a meeting of the Ipswich District National Association of Operative Plasterers, the following resolution was passed: "That this meeting urges the necessity of the Government reintroducing the Shops No. 2 Bill at the earliest possible moment with the following amendments: 1, Universal 60 hours' week (inclusive of meal-times); 2, weekly half-holiday at 1 p.m.; 3, Adequate meal-times." A copy of this resolution has been sent to the Prime Minister, the Home Secretary, and the local Members of Parliament. Much seems to turn on the definition of "adequate meal-times."

* * *

A conference of members of the Appeal and Assessment Committee of the Metropolitan Water Board with representatives of the London County Council and of the Rating Authorities of London was held last week at the offices of the Metropolitan Asylums Board, when the Chairman of that Board, Mr. E. B. Barnard, who presided, explained that the object was to see if means could not be devised for avoiding litigation between the rating authorities and the Board in connection with the forthcoming quinquennial assessment, and consequent waste of the money of the ratepayers. The Water Board, having nothing to conceal, was ready to throw the cards upon the table—a huge sum had to be paid by the Board in rates, but it was thought the expense might be avoided in the matter of the division of the money. Mr. C. G. Musgrave, the Chairman of the Appeal and Assessment Committee, moved that with a view to avoiding litigation and the expenditure of public money it was expedient that the valuation of the Water Board's undertaking, as a whole, should be made by an independent valuer, "acting on behalf of the Metropolitan Assessment Committees and the Water Board." As the result of an amendment, however, the words quoted were struck out, and Mr. Musgrave said that in those circumstances he could not advise his Committee to incur the expense involved unless the rating authorities would agree to accept the figures arrived at.

* * *

The Coventry Martyrs' Memorial, which is being executed by Messrs. George Maile and Son, is an old style Celtic cross which, with the steps, reaches a height of 20ft. It will be executed in silver grey Cornish granite, with the laurel wreath and arms of Coventry in solid gun-metal. The inscription will mention the following: "In 1510, Joan Ward. On April 4th, 1519, Mistress Landsdail (or Smith); Thomas Landsdail, hosier; Master Hawkins, skinner; Master Wrigsham, glover; Master Hochett, shoemaker; Master Bond, shoemaker. In January, 1521, Robert Selkeb (or Silksby). On February 8th, 1555, Laurence Saunders. On September 20th, 1555, Robert Glover and Cornelius Bongey."

* * *

The Ecclesiastical Commissioners have consented to accept the new Lady Chapel of the cathedral now in course of erection at Liverpool in lieu of the present cathedral. As soon as the Lady Chapel is completed, the services proper to the cathedral church will in future be carried on there. Meanwhile, the arrangements for the dedication on St. Peter's Day are being matured. In the building of Liverpool Cathedral a sum of £53,000 has already been expended on the main fabric—inclusive of the site and foundations—and £40,000 on the Lady Chapel, or £93,000 in all. A further sum of nearly £100,000 is in hand, but another £50,000 will be required to complete even the first portion of the scheme.

* * *

The "Little Theatre," which is being built for Miss Gertrude Kingston on the site of the old bank buildings of Messrs. Coutts and Co., will seat about 400 persons, and is now rapidly nearing completion. Mr. A. B. Hayward, the architect, has stated to an interviewer that it has long been Miss Gertrude Kingston's desire to have a miniature theatre in London in the style of those in Berlin and Munich. One of the features is that the six boxes, with the Royal box in the centre, all face the stage, and are at the back of the stalls. There will be no pit or gallery, only stalls and boxes. The stage will be the same breadth as that of the St James's Theatre, but not of equal depth.

* * *

The erection of twenty-four churches or mission buildings in Plymouth, Devonport, and Portsmouth, in which dockyard towns there has been, owing to "the exigencies of public policy," a rapid increase of population—to the extent, it is estimated, of some 80,000 inhabitants—is advocated in a letter which has been addressed to the Press by the Bishops of Winchester, Exeter, and Southampton, and is also signed by other influential Churchmen. The joint appeal is for £100,000. The organising secretary of the appeal is the Rev. Stanley P. Scott, Church House, Dean's Yard, Westminster.

A special report on dangerous or injurious processes in the smelting of materials containing lead, and in the manufacture of red and orange lead and flaked litharge, has been issued in the form of a Parliamentary White Paper. The author of the report, Dr. Collis Browne, states that it is the result of an inquiry made into the various industries in which furnaces are used for the extraction of metals from materials containing lead, or in the preparation of oxides of lead. The industries concerned are the smelting of ores containing lead, which includes the extraction of lead, silver, or zinc in the form of spelter, from such ores, and the production of red and orange lead and of flaked litharge. The result of the inquiry is that further precautions, beyond those of the special rules, are needed in lead smelting, and that regulations are required for zinc spelter manufacture; for the manufacture of red and orange lead very little beyond the requirements of the present special rules seems necessary, but they should be extended to the manufacture of flaked litharge. It is estimated that the regulations recommended will apply to thirty-four lead smelting factories, eight spelter works, seventeen factories where red and orange lead are manufactured, and to eight factories where flaked litharge is manufactured.

* * *

The Mayor of Southwark unveiled last week two handsome mosaic panels commemorating Chaucer's connection with Southwark, which adorn the external walls of the Library, past whose site the Canterbury Pilgrims passed on their way out of Southwark from the Tabard Inn close by. The ceremony was informal in character, his Worship addressing a few words on the need for art to brighten London's streets.

* * *

An appeal is to be made for funds for the repair of Southwark Cathedral, which is perhaps better known still as St. Saviour's, Southwark, although its earlier name of St. Mary Overie is almost forgotten. About £7,000 is needed.

* * *

The City Corporation has decided to spend £20,000 on new public slaughter-houses at Islington Cattle Market. The idea is to meet not only present requirements but increased demands which will be made in the near future, as private slaughter-houses in the northern districts of the Metropolis have been abolished.

* * *

Mr. F. W. Speaight writes: "One already notices on all sides that black is being very extensively used for the decoration of buildings in connection with the death of the late King. Before further money is spent on material, may I be pardoned in pointing out that purple, not black, is the correct colour, and that on January 29th, 1901, at the time of Queen Victoria's death, an official statement to this effect was published by order of the late King."

* * *

Rochdale Town Council, after consideration of a "£17,000 scheme" for extension of the town hall, has decided to spend only £2,000 on the work The common sense of the matter was pithily expressed by Alderman Ashworth, who said he would not spend £2,000 in patching up, a thing they had been doing for years. Let them tackle the job in a proper way—the hall was patched up enough." What is

worse, it is alleged that the clerks are actually suffering in health for want of proper accommodation.

* * *

Announcement is made of the appointment to the Local Government Board of chief engineer and of architect, under the new arrangements. Mr. J. Walker Smith, Burgh Engineer, Edinburgh, has been appointed chief engineer, and Mr. John Walker, assistant to Mr. Dick Peddie, architect, Edinburgh, has been appointed to the position of architect. Mr. Smith, who has occupied the post of Burgh Engineer for less than two years, is the author of a book upon the construction of dustless roads, and has had a very successful career. He studied the elements of his profession with the Borough Engineer of Willesden, with whom he acted for three years as assistant. For four years he was chief assistant to the Borough Engineer of Burton-on-Trent, after which he was appointed Borough Engineer of Barrow-in-Furness. After occupying that position for eight years he went to Edinburgh. Mr. Walker Smith is a member of the Institution of Civil Engineers, of which institution he is medallist and prizeman; he is a Fellow of the Surveyors' Institution, a member of the Institution of Mechanical Engineers, and a member of the Council of the Association of Municipal and County Engineers. Mr. Walker, who will now take up the duties of architect to the Local Government Board, is joint author of a publication recently issued on the architecture of the Grand and Petit Trianon at Versailles.

* * *

During ploughing operations in a field near the village of Bratton, Westbury, Wiltshire, the plough struck what proved to be the cover of a leaden coffin. The coffin has been examined by Mr. B. H. Carrington, the Curator of the Wilts Archæological Museum, who states that the coffin without doubt belongs to the period of the Roman occupation. The place where it was found is about a mile from the site of a large Romano-British village. The coffin is 6ft. 8in in length, its width varies from 1ft. 6in. to 1ft. 4in., and its depth is 7in. Large iron nails 4½in. long indicate that when interred it had a wooden outer covering, but that has perished, as have the bones interred, except the leg bones, the pelvis, and the lower jaw; there is no trace of the skull. Two pieces of lead form the bottom of the coffin, but the cover is one piece. It was only about 12in. below the surface of the ground, which is on the slope of the hill, and has been continuously cultivated for some time.

* * *

The Toronto "Contract Record," issued recently, gives a most interesting review of building operations in Canada for the first three months of the year. The figures are especially instructive regarding the great increase of building in Western Canada. Winnipeg stands third on the list for the three months, Vancouver and Toronto leading by £60,000 and £20,000 respectively. Winnipeg during the month of March gained an advantage over the other two cities, having permits to the value of almost £400,000 more than Vancouver and £200,000 more than Toronto. For the first quarter of the year Winnipeg has an average increase in building over last year of 183 per cent. The most prominent feature of the table is the progress which Western towns and cities are making.

CURRENT PHASES OF CONTRACT LAW.*

Very opportunely, considering the agitation that is afoot with regard to several questions that are at issue between contractors and those who employ them, Mr. Alfred A. Hudson, of the Inner Temple, Barrister-at-Law, President of the Tribunal of Appeal under the London Building Acts, has issued, as a supplement to the third edition of his "Law of Building, Engineering, and Shipbuilding Contracts," a thin volume dealing with three cases which have an important bearing on the rights and liabilities of contractors and employers, as well as on the duties and obligations of engineers and architects.

In the case of Patman and Fotheringham, Ltd., v. Pilditch, which was tried in the High Court of Justice (King's Bench Division) in May, 1904, before Mr. Justice Channell, without a jury, the question of lump-sum contracts was raised. The subject of the action was a block of flats in Bloomsbury, and the work was to be done for a lump sum "according to the plans, invitations to tender, specification, and bills of quantities." The item in dispute was a sum of £1,669 19s. 10d. in respect of alleged errors in the quantities. Defendant denied the errors, and pleaded that, even assuming them to exist, he was not liable on that account. Plaintiff's counsel contended that the quantities defined the amount of work to be included in the contract price, and that anything beyond must be paid for. Defendant's counsel contended that "whatever is necessary to complete the works must be done for the contract price quoted."

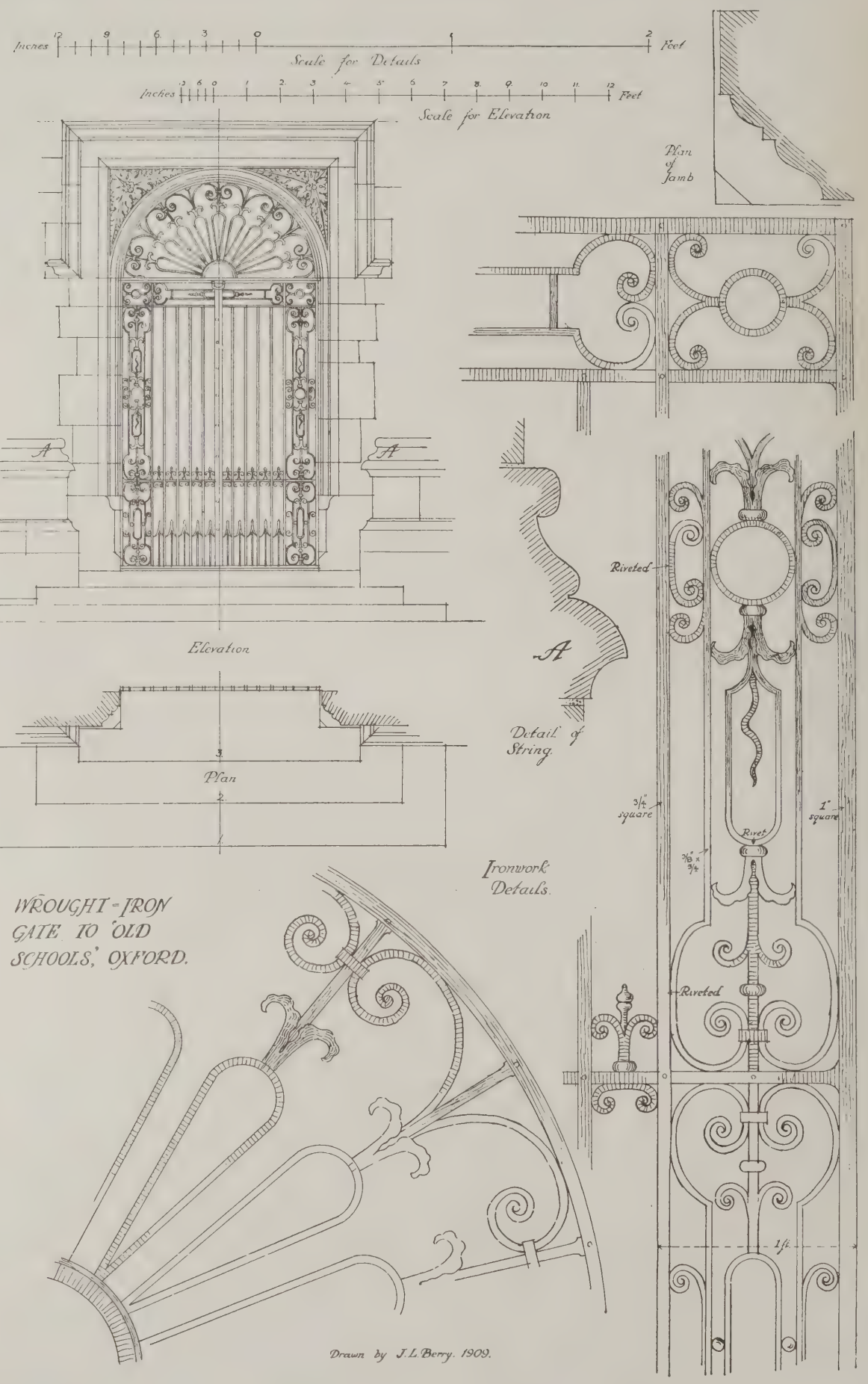
Mr. Justice Channell took the view that, in given circumstances, "the quantities provide the amount of the work; and if in the course of doing the work the contractor is directed to exceed that amount of work for the purpose of making it accord with what it is desired to have in regard to the building, I think that then that is an extra, subject, of course, to the further things in the contract as to the mode in which it is to be done, and so on." His view was, he further explained, that "the whole of the quantities are introduced into this contract as part of the description of the contract work, and that therefore if he [the contractor] is required, in order to complete the work, to do more work than is in the quantities, he is entitled to have that as extra." "But," he was careful to add, "I should have to deal specifically with the cases of things that everybody must understand are to be done, but which happen to be omitted in the quantities." His final utterance was: "Upon the construction of the contract I decide that the bills of quantities are part of the description of the contract work, and that the whole of the documents must be construed together upon that footing." The upshot of the decision was that the plaintiffs were paid, over and above the contract sum of £12,338, for all work that they did beyond what was stated or understated in the bills of quantities. There was no appeal.

In the case of William Kennedy, Ltd., v. The Mayor, Aldermen, and Burgesses of the Borough of Barrow-in-Furness, which was heard in the Court of Appeal on July 14th, 1909, the work concerned was the construction of a masonry concrete dam. The judge in chambers had, on the application of the Corporation, stayed the action of the contractors (who were suing the Corporation for work done, etc.) on the ground that a clause in the contract provided for submission to arbitration. A clause in the contract stated that "The certificate of the engineer shall have the force and effect of an award, and may be made a rule of His Majesty's High Court of Justice, or any Division therefore, at the instance of any party thereto." In the Appeal Court, Lord Justice Vaughan Williams held that there was no arbitration clause whatever in the contract, and therefore no ground for staying the action, and he conveyed, rather than expressed, his general objection to arbitrators who are also, in a sense, parties to the contract. Lord Justice Buckley pointed out that, in the terms of the contract, "the engineer is to control the work, and the work is to be done to his satisfaction. In doing those acts he is representing the Corporation for whom the work is to be done." His lordship thought that the words "the engineer shall be the exclusive judge," meant nothing beyond the execution of work; did not mean that he is an arbitrator, or acting in a judicial capacity at all. It may perhaps be fairly inferred from these remarks that the objection to contractual referees was then gradually taking form in the judicial mind.

As in the foregoing case, the appeal of Robert W. Blackwell and Co., Ltd., v. The Mayor, Aldermen, and Burgesses of the Borough of Derby (July 29th, 1909) was from an order of the judge in chambers ordering the action to be stayed under a clause in the contract providing for submission to arbitration The clause made the engineer the arbitrator in disputed matters. Lord Justice Fletcher Moulton expressed the opinion that "where the nature of the dispute arising from facts which were subsequent to the contract is such that we are of opinion that the tribunal is not likely to be able impartially to deal with the dispute, it is open to us, and it would usually be the duty of the Court, to refuse to enforce the arbitration clause. . . . Corporations are, in my opinion, often too fond of putting officers of theirs in the position of engineers under a contract, and they forget that, as they are performing other duties to the Corporation, there may arise a conflict between their duties in these other offices, and their duties as engineers under the contract, which may give rise to unfair treatment to the contractor by reason of the zeal with which the officers perform their other duties." Lord Justice Buckley, speaking on the general question, remarked that "the worst possible reference on the question of unreasonable conduct is the person who is accused of being unreasonable. How could you expect him to say, if a person of any character at all, that the acts which he did were unreasonable acts?" That is, of course, just the attitude which builders take on the question of contractual referees; and, like his lordship, they, in putting forward this view, are always very careful—and justly so—to disclaim any merely personal reflection. The objection is not to the person but to the position.

In the book under notice, the cases at which we have glanced, and from which we have ventured to glean a few sentences, are set forth succinctly but adequately; and the notes upon them are admirably clear and concise. We commend it to the attention of all who are interested in the exceedingly important problems upon which it sheds so illuminating a light.

*Supplement to the Third Edition of the Law of Building, Engineering, and Ship Building Contracts. By Alfred A. Hudson (of the Inner Temple, Barrister-at Law), President of the Tribunal of Appeal under the London Building Acts; Author of "The Law of Compensation," and Joint Author of "The Law of Light and Air." London: Sweet and Maxwell, Ltd., 3, Chancery Lane, Law Publishers. 1910. Price 3s. 6d. net.



WROUGHT-IRON GATE TO QUADRANGLE, OLD SCHOOLS, OXFORD.
MEASURED AND DRAWN BY J. L. BERRY.



There are two of these gates, similar to one another, on each side of the quadrangle. The ironwork, of eighteenth-century date, is notable for its simplicity, the side panels being especially good in design. The carved stone spandrels are the original work, but the hood mould and the other stonework around are modern, having been restored about twenty-five years ago (we believe under the direction of Mr. T. G. Jackson, R.A.).

WROUGHT-IRON GATE TO QUADRANGLE, OLD SCHOOLS, OXFORD.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

TOWN-PLANNING TOPICS.

Aesthetic Impotence.

At a recent meeting of Wigan Borough Council, Councillor Dickinson referred to an item on the minutes as to plans and sections of a certain shop. He understood that this was a corrugated building, and thought it was quite time the Council took some action in regard to putting up corrugated buildings. He thought it was wrong that people should be allowed to put up corrugated buildings in main thoroughfares, and he was rather surprised that plans for such buildings were passed by the committee. Alderman Ashton said the committee endeavoured to stop the erection of this corrugated iron building, and refused to pass the plans at the first meeting, but the plans came back, and as they complied with the by-laws the committee had no option but to pass them. There was no doubt about it that it was against the best interests of the town that corrugated iron premises should be erected in the main thoroughfares, because they were not only eyesores but they were detrimental to other business premises in the vicinity, which were heavily rated, while such corrugated iron premises could be put up at a smaller cost and might do just as much business as the buildings that had cost five or six times as much.

An Exhibition at Berlin.

A very interesting exhibition has just been opened in Berlin; unique, too, of its kind, as nothing like it has been attempted in any other country. It is, as described by the Berlin correspondent of the "Observer," an assemblage of all that can direct the makers of cities in the laying-out, building, and organisation of an ideal place of residence for populations, large or small. Plans, pictures, photographs, and models of parks, streets, and houses are to be seen, and not alone of the Greater Berlin of the future, which is even now engaging municipal attention in the German capital, but of cities like London, New York, Paris, Boston, and Chicago. It is recognised in Germany that a great, and perhaps the chief, glory of the nineteenth century is the public awakening, which occurred during its last quarter, to the so-called "social question," and particularly that part of it which is concerned with the organisation of towns with a view to dwelling, to transport, and to the exploitation of the town's natural surroundings for keeping strong and healthy its inhabitants of every class down to the poorest. The city fathers of Berlin are enthusiastic on the subject, and are powerfully encouraged by the Kaiser in their efforts to prepare for the health and happiness of future generations, as well as to secure the same, so far as money and technical skill can do it, for the present one. Situated, as their city is, in the middle of Europe, and with a steadily growing influx and passage of merchandise and traffic, they offer prizes for the most promising plans and most practical suggestions with a view to realisation later. They are satisfied that their system of communications is on a sound basis, and that the same may be said of their water supply. They are now principally concerned about the dwelling question and the utilisation of the woods and park-lands and water surfaces round the city. In respect of the first they look with envious eyes towards Vienna and Boston, while to Chicago they turn for ideas regarding public gardens and playgrounds. The exhibition is being held in the large annexe at the Zoological Gardens.

Liverpool Housing Committee.

At a meeting of the Liverpool Housing Committee, held in the Municipal Offices, Dale Street, Mr. G. Kyffin-Taylor in the chair, considerable time was spent in dealing with matters which arose owing to the operation of the Housing and Town Planning Act, 1909. The new statute confers on the committee the power to make closing orders, formerly made by the magistrates, in respect of property proved to be insanitary. The committee thus exercise judicial functions. Before coming to any conclusion in regard to property of the class indicated, they hear the evidence of the medical officer of health and the owners or agents of the premises in question. At the meeting under notice they had a number of cases before them in which closing orders were asked for. After the medical officer, on behalf of the Corporation, and the owners or agents of the property, had given evidence, they made a number of closing orders and postponed several applications. A report, prepared by the Town Clerk, was submitted as to the new Act. The document clearly set forth the powers of the Housing Committee in dealing with insanitary property and workmen's dwellings, whether under the statute law of local Acts. The committee ordered the report to be printed for distribution amongst the members of the City Council. Amongst other business which came before the committee was a joint report of the surveyor and medical officer of health in relation to proposed building schemes in the Pit Street district of St. Peter's Ward. It was moved by Mr. Thomas Shaw, and seconded by Mr. B. W. Ellis: "That the surveyor prepare plans with a view to a building scheme, and that the Town Clerk advise as to the proper procedure to be adopted." It was urged by some members in the discussion that such a proposal would not be following out the past policy of the committee, which has been chiefly to confine itself to the removal of insanitary property and to the rehousing of the dispossessed, whereas the property concerned in the proposed scheme was principally composed of sanitary premises. Upon being put to the meeting, the motion was defeated. Ultimately it was decided that the matter be postponed *sine die*.

Conference of Municipal Engineers.

At the general meeting of the Incorporated Association of Municipal and County Engineers, held at the Royal Agricultural Hall last Wednesday, in connection with the Municipal and Health Exhibition, Mr. R. H. Haynes, the author of a printed paper, introduced the question of town planning, his view being that the Local Government Board intended to leave the subject in a great measure to the discretion of local authorities, and that municipal engineers must take a leading part in the work, though they would need the professional assistance of architects and others. Mr. C. J. Jenkins dwelt on the importance of conferring with landowners in carrying out the provisions of the Town Planning Act. Much might be done by moral suasion in convincing owners that co-operation with the local authority was to their own advantage. Traffic and the position of the main roads must always govern town planning. Mr. T. H. Mawson considered the artistic aspect of the subject, remarking that there was always a tangible something that a city said. Glasgow expressed commerce, but no one could enter Edinburgh without feeling that he was on classic ground. Unless the civic spirit were expressed, municipal planning must be a failure. In this country there seemed to be a dislike of orderly arrangement. Buildings were not staged with a regard to effect one with another, and here we were far behind the Continent. Mr R. H. Campbell thought that there were greater possibilities of carrying out a consistent scheme in the provinces than in large towns with crowded districts. The limitation of the number of houses to the acre would be most useful, but how it would be enforced could not be known until the issue of the regulations which they were awaiting. Mr. S. D. Adshead congratulated municipal engineers on the great opportunity conferred on them by the Act. They were the right men for the work, but he hoped they would not rush into it without realising the enormous responsibility cast upon them. Mr. E. Nesbit Blair, the chairman, said that while the artistic side of town planning was of great importance, municipal engineers would be required to do a great deal of practical work which would be hidden underground, such as the laying of the main lines of drainage. This should be fundamental to any scheme. Grass verges for footways, the position of railway stations, and the establishment of a civic or architectural centre were among the matters discussed in relation to the subject.

Gardenless Cottages.

Mr. H. R. Aldridge, secretary to the National Housing and Town Planning Council, has addressed the conference of the West Riding District Council on the possibilities of District Council administraton in regard to practical town planning. While, he said, we had been spending large sums of money in making crooked places straight, in widening roads, and giving greater traffic facilities; while we were painfully and at great public cost undoing the evil that past generations had done, we were at the same time permitting slums and overcrowded areas to be created. The old model by-laws permitted about 40 houses to the acre. The result had been that even in country districts surrounded with fields there were long rows of gardenless cottages and gardenless back yards. Unless they could give human creatures room to breathe and room to live, they did not get the best results from human life. If they could make the home magnet of sufficient strength to fight magnets of less value outside, they would do much more than they knew to build up a better home life in England. Discussing the details of the Act, Mr. Aldridge suggested that a reasonable figure for density of population was 20 houses to the acre, not counting roads. He urged all District Councils to study the Act and understand what powers should be given them. Each Council should appoint a Town Planning Committee to go thoroughly into the matter. Public taste was growing very rapidly in this matter, and it would pay to develop districts on the right lines. When the Act began to operate it would give to localities a much greater pride and interest in themselves and their surroundings. Once we got better methods of town planning, England would lead the world in regard to housing reform. No finer piece of municipal service could be done than that of preparing a plan, modest in its aim, fair in its judgment, and in which they could take a pride. They would then have taken the first step in the making of a more beautiful town or village. Experience in Germany showed that the cost of a "general idea plan" would be about 6s. 8d. per hectare ($2\frac{3}{4}$ acres).

IS CINDER CONCRETE FIRE-RESISTING?

Is Cinder Concrete Fireproof? An account of the behaviour of a cinder concrete wall of a floor testing building used by Professor Ira H. Woolson (U.S.A.) will be welcomed as being a very practical contribution to the controversy that has arisen as to whether or not what he calls "cinder concrete" is a satisfactory fire-resisting material.

The outside dimensions of the testing house are 18ft. by 22ft., the height being 12ft. It is supplied with six suitable chimneys at the top and draft openings through the walls at the bottom. A fire-grate covering the whole inside area of the building is placed about 3ft. above the ground. A pair of doorways are provided through which the fire is fed with cord-wood fuel. This much of the building is permanent construction. The floor to be tested forms the temporary roof of the structure. After each test is finished the floor is removed, and the building is then ready for the installation of some other type of floor construction. A load of 150 lbs. of pig iron per square foot is in place on the floor, and the kindling distributed ready for lighting. The walls of the building are 1ft. thick, and are made of cinder concrete reinforced with rods and expanded metal. The chimneys are similarly reinforced, but are only 4in. in thickness.

The Composition of the Concrete. The concrete was a 1-2-5 mixture of Portland cement, bank sand, and ordinary unsifted hard coal boiler cinders. Care was taken to have the aggregates thoroughly mixed before water was added. Sufficient water was used to cause it to float the surface of the concrete when well tamped. The cinders were in no way superior to the common run of such material, and were used just as delivered. Owing to a scarcity of cinders at the time the building was erected, it became necessary to collect them from several different manufacturing plants, and a considerable portion of them was considered quite inferior in quality, owing to a high percentage of unburned coal and fine ashes which they contained. They were used because of the difficulty of obtaining anything better at that time. These details are mentioned because they are supposed by some to have an important bearing upon the fire-resisting qualities of the concrete.

The Fire Tests. The building was erected two years ago, and has been subjected to five fire tests of four hours each (20 hours in all), at an average temperature of 1,700 degrees Fah. During at least half of that time the temperature varied from 1,800 to 1,900 deg. Fah. These higher temperatures are always necessary to effect the low heat during the early part of a test. An average of 1,700 degrees for the whole test is thus secured. At the end of each 4-hour test a 1⅛in. stream of water at 60lbs. nozzle pressure is played back and forth over the ceiling for 10 minutes, while the ceiling and the walls are still red-hot. The nozzle is held close up to the doorway openings, and the water striking the ceiling under such pressure sprays off against the side walls with considerable force. Continued repetition of this treatment constitutes a most severe punishment of the walls—far more trying than any fire ordeal they would have to withstand in ordinary building construction, because it is extremely doubtful if any such building would contain enough inflammable material in any one room to maintain an average temperature of 1,700 deg. Fah. for more than two or three hours, with no possibility of a repetition.

Ordeal Survived. In spite of this very severe treatment the walls of this test chamber are practically as good to-day as they were when new, with the exception of the rear wall, which has been scored by the water to a depth of ½in. to 1in. for two or three feet near the top. This wall has suffered most from water because it gets the direct stream a portion of the time at each test, and always receives the deflected stream for the full ten minutes of application (at the end of the 4-hour fire test). The 4in. chimneys which carry off all the products of combustion from the fire chamber are as smooth on the inside to-day as when first made. So far as can be seen, the structure is good for an indefinite number of further tests. The only repairs necessary will be an occasional plastering of the portion of the wall surface washed away.

The Inference. A duplicate of this building sustained seven 4-hour tests at 1,700 degrees Fah. before circumstances necesitated its removal. At that time the walls were as good as those above described. This and other similar experiences have convinced the professor that we have no better fire-resisting material than properly made cinder concrete. He is also positive that any ordinary hard-coal boiler cinders will make good concrete if correctly proportioned and mixed. Contrary to general belief, he is firmly of the opinion that within reasonable limits the percentage of coal and the amount of fine material that such cinders carry have very little, if any, effect upon their fire-resisting qualities. He believes that sifting and washing the cinders as was proposed in the revised code would be a useless expense, and injurious to the cinders as aggregate for concrete. The pieces of coal that came next the surface of these walls have burned to an ash, but remain in place and act as an excellent non-conductor of heat. It is a remarkable fact that plenty of particles of pure coal can be found in these walls less than two inches beneath the surface, which has withstood an average temperature of 1,700 degrees Fahr. for 20 hours. He does not wish to be understood as an advocate of cinder concrete for all types of construction, for it has its limitations, but when it is properly made he knows of no better fire-resisting material.

OBITER DICTA.

The Feuing System In England a man who wants a site on which to build a house usually buys it and pays its full price to the proprietor. . . In Scotland, however, a site can be acquired without paying the price by simply taking it on feu, subject to the payment of an annual feu-duty—which is really interest on the unpaid price. In fact, the landowner (called in Scotland the "superior") practically lends the price of the ground to the feuar at a rate of interest fixed for all time. He can never increase the amount of the feu-duty, nor can he ever force the feuar to pay up the capital value of the ground. If he wants the money he can only get it by selling his right to draw the feu-duty. This feuing system enables the feuar in Scotland to borrow easily a large part of the money required for the purpose of building houses, the lender knowing that the prior burden of feu-duty is definite and unchangeable. The feuar may sell his property at any time, without consulting the superior; and, if it increases in value, the feuar gains the profit, but the superior gets no increase of feu-duty. Obviously, the Scottish system enormously encourages and facilitates the development of building, as compared with the English system, and its most direct advantage to Scotland has been to permit of large expenditure in providing housing accommodation for a rapidly increasing industrial and commercial population.—*Robert Gray in the "Glasgow Herald."*

The Svastika. How many people, in whose eyes they are familiar objects, know the meaning of the Egg and Tongue pattern, or of that ancient symbol of mystery the Svastika? We see them, or their derivatives, daily surrounding us in the most commonplace conditions, but for the majority they have lost their significance, except as the scarce-noticed basis of some flourishing system of bloated curves and sprawling strokes that may serve as modern house or restaurant decoration.—"*Morning Post.*"

[The Svastika, as our readers will not have failed to notice, has been adopted in forming the border round the title of this journal on the first "leader" page. According to the Rev. Dr. Cobb, of the Church of St. Ethelburga the Virgin, Bishopsgate Within, E.C., "the Svastika is one of the most ancient symbols in the world. From the Vedas we learn that it was sacred to Agni, the god of fire. Like the cross with Christians, it is marked on the foreheads of young Buddhists. Dr. Schliemann found it at Troy in strata dated B.C. 2500. It is on the dress of Diogenes the digger in the catacombs at Rome. It is found on the surcingle of the figure of Bishop Edington, in Winchester Cathedral, and on the gigging-strap of the oldest monumental brass in England, that of Sir John d'Abernon, at Stoke d'Abernon, in Surrey. It is a solar emblem. The arms of the Isle of Man are an allied form of it."]

The Skyscraper and the Aristotelian Precept. The early tall buildings were a series of architectural experiments. It seemed as though the sudden enablement of a greater height than had before been feasible had driven out of the minds of the designers the fact that these new and portentous structures were as amenable to architectural laws as the older and more commonplace; that, in particular, the Aristotelian law as completely applied to them, and that every artistic building must have a beginning, a middle, and an end. A confusion of variety came in before the steel frame came in to aggravate the altitude the elevator had made possible, and the transitional buildings, if one may call them so, between the old maximum of five storeys and the new of a maximum number yet undetermined, were really Babelish, almost Bedlamite, in the variety of the theories upon which their designers proceeded. At last came the consensus upon which every designer of skyscrapers acts to-day. The analogy of the column was accepted, of a base of a storey or a group of storeys, a shaft of a number of storeys almost or quite identical in treatment, and a crowning capital which might again be a group of storeys.—*Montgomery Schuyler, in the "Architectural Record" for May*



ENTRANCE TO THE THIRD CHURCH OF CHRIST SCIENTIST, CURZON STREET, MAYFAIR.
LANCHESTER AND RICKARDS, ARCHITECTS.

(Royal Academy Exhibition.)

CORRESPONDENCE.

[The Editor declines responsibility for the statements made or opinions expressed by correspondents.]

The Strength of Steel Beams.

SIR,—Will you pardon me for pointing out a printer's error in the above article on page 396 of the issue No. 795. The top line of the left column should read

$$\frac{BD^3}{12} \text{ not } \frac{BD^2}{12}$$

W. LEICESTER.

Percentages off Quantities.

SIR,—I am glad to see the reply by "A.G.W.," in your issue of April 27th, has attracted the attention of "W.W.D." in your issue of this week.

Although the method of dealing with this question by "W.W.D." is perhaps more correct, it seems to me to amount to much the same thing as taking 10 per cent. off the whole account.

I almost invariably have friction with contractors in treating this question. Their one idea seems to be 10 per cent. off additions and 10 per cent. off omissions, which, as far as I see, practically wipes out whatever percentage they take off their original estimate to secure a contract job.

It strikes me contractors, in estimating for contracts in these days of low prices, are more inclined to adopt this method, but this is obviously not doing justice to clients, who are quite innocent parties.

Unless a surveyor is extremely careful in dealing with this subject, there is no easier way of arriving at arbitration or a law suit.

Personally, no contractor will in future secure a contract under my supervision who adopts this method of estimating, unless he first produces a clean bill which totals the amount of the tender.

E. H. D.

London, S.W.

Licentiate R.I.B.A.

SIR,—The letters which two anonymous Associates of the R.I.B.A. have addressed to you on the above subject seem to call for a protest from some other members of the Institute who dissociate themselves entirely from the spirit of pettiness which appears to animate the letters already published.

It would, indeed, be disastrous to the object which the majority of Institute members has in view, should these letters be taken as indicative of the general attitude of Associate members towards those gentlemen who are desirous of joining the Licentiate class. Such a drastic change in the by-laws was not arrived at without ample opportunity being given to every member of the Institute to voice his opinion, and the fact that the majority of members were in favour of the proposed class of Licentiates should, surely, silence the objections of every loyal member, albeit he may not be in sympathy with the change which has now become an accomplished fact.

This is not the time for cleavage, but unity within the walls; the time for cavilling is past; it now becomes all members—Fellows or Associates—to join together in welcoming those Licentiates whose presence at Conduit Street will doubtless strengthen and expedite the Registration Bill which is so earnestly desired.

Yours faithfully,

H. SETON-MORRIS, A.R.I.B.A.

SIR,—The three letters on this subject in your last three issues are of great interest, and I am sure that the question asked by "Ad Rem," in the second of these letters, is clearly answered by the spirit shown by the two Associates R.I.B.A. who are your first and third correspondents.

May I, however, point out to these Associates that Licentiates will not be able to describe themselves as "L.R.I.B.A." or even "Lic. R.I.B.A.," but only as "Licentiate R.I.B.A.," as provided in the new charter.

Assuming that the R.I.B.A. will be able to get Parliamentary approval of some scheme for legalising the standing of its members, your correspondent "Ad Rem" proves, I think, the absurdity of the age limit, and the great injustice this measure would be to many able and rising members of the profession, as it may be taken as fundamental that age is not necessarily a test of merit in architectural ability.

The R.I.B.A. is preparing a Bill, and this is not the time to criticise its action beyond this one point, but it is worthy of notice that the R.I.B.A. will have to apply for yet another revision of its charter before it will be able to admit any architects who remain outside after the expiry of the one year allowed for the admission of Licentiates. Your Associate correspondent of this week refers to the admission of Licentiates thus: "The practical result of this alleged reform is to place upon a level with, and at the expense of, Associates, those unqualified and unprofessional competitors who for many years past have been the most unscrupulous poachers." This is hardly a welcome to the candidates, and somewhat uncomplimentary to the Selection Committee of the Institute and to the members of the profession outside the Institute, and the letter as a whole (to me at least) demonstrates that the qualifications necessary for Associateship R.I.B.A. do not include any knowledge of, or natural aptitude for, the liberal arts and sciences which lie outside the mere utilitarian knowledge required for the practice of architecture as a business. I trust that a greater width of view will characterise the Bill of the Institute, and that any measure of registration to be brought forward will be advanced in a spirit which will put the Profession on a sound, reasonable, and logical basis, and free from the anomalies of the medical profession.

I am not a member of the R.I.B.A., and shall, I trust, not be until the Institute justifies its high position by carrying through some measure of Protection or Registration, which in my opinion shall be for the well-being of the whole profession and every existing bona-fide member of it.

May I, in the meantime, assure "Ad Rem" that although he is ineligible under the age limit for Licentiateship R.I.B.A., his interests will be looked after in the event of any proposal vital to the interests of the profession being made by any institute or society? I enclose my card.

Yours faithfully,

H. G. T.

London, E.C.

SIR,—I entirely agree with the statements of "Ad Rem" in his letter [see "A.B.J." April 27]. It is rather hard that the architect or principal draughtsman, who has been at the study of architecture for, say, 10 or 12 years, and has carried out many important works, and is 28 years of age, should be debarred because he happens to be two years younger than the man who is 30 years of age, and who has one or two second-rate works to his credit, and who can, because he is 30, submit a few drawings for approval. I am sure there are many promising architects between the age of 28 and 30 who are in a like position, and I hope they will take the matter up.

ASSOCIATE OF LOCAL INSTITUTE.

MAGAZINES & REVIEWS.

Art Serials.

The "Art Journal" commences with an article on "Gruyères," by Sir Martin Conway, illustrated by Mr. A. R. Quinton, who makes a charming composition of the white tower of St. Theodore, cutting through the lines of the hill behind. "Summer Visitors," with illustrations by Miss Callis, is a paper on the treatment of birds in art. Among the illustrations are reproductions of two of Méryon's etchings of Paris, "Notre Dame" (a very well-known one) and "La Pompe, Notre Dame," an old building by the bridge, erected on a mass of timber construction rising from wooden staging at the water-level; a very curious relic of old Paris, and a very favourable subject for the art of etching.

The "Burlington Magazine" has an article by Mr. Cecinsky on "The Educational Aspect of Irish Chippendale," from which title one expected something like a critical estimate of Chippendale furniture, but it is merely a kind of collector's article on the question of authenticity of certain specimens or types. This is, of course, interesting to collectors, but it would seem to us of more importance to point out that the four examples figured, whether "genuine" or not, are very bad art. Unfortunately, this is a matter little considered from the usual collector's point of view. A thing is genuine Chippendale or genuine something else, or it is not. If it is genuine it has a dealer's and collector's value; whether it is good design or not does not seem to be considered.

To the "Antiquary" Mr. Tavenor-Perry contributes one of his interesting and carefully prepared historical articles on an ancient building, this time the Abbey of Pontigny. Mr. Fothergill's article on things "Round and About the Raby Castle Estate" (Durham) is interesting, both in respect of text and sketches.

The "Architectural Record" (New York) gives an article to the work of Messrs. N. le Brun and Sons, who have erected a mighty campanile at New York for the Metropolitan Life Insurance Building—practically a "high building" with offices on many floors, but a great deal better than the average high building in an architectural sense—and a classical cathedral at Philadelphia, the interior of which is not a bad echo of St. Paul's. The description and illustrations of "A Fifth Avenue Mansion" are of considerable interest, as giving a full analysis of what goes to make a first-class city mansion according to the latest American idea. Considering that it is stated to be a condition that "a house of this type should not only be costly but should look so" (a very American ideal!), the exterior is dignified and quiet enough, and recalls the general aspect of a Pall Mall club; the exuberance of treatment is internal rather than external. Mr. J. Gamble Rogers is the architect. Under the title "The Wild Men of Paris," Mr. Gelett Burgess gives a delightful description of the absurdities of "Salon des Indépendants" at Paris. The illustrations of some of the works exhibited are almost beyond belief in their grotesqueness.

English Magazines.

In the "Edinburgh Review," "Art and Practice" is a thoughtful article on the

relation between current art and current thought or speech about art. There is some sound criticism in it, especially as regards some of the vagaries of the ultra modern artist, who "endeavours to draw like a child and to colour like a spectroscope. . . . It is noticeable that as often as not he does not endeavour to eliminate his unsuccessful attempts. He leaves his misfires upon his paper in order to accentuate the successful effort when it has come, and, by displaying the process, to make clear the result to which the process has led." The same issue contains a long article on "Minoan Crete," intended as a general review of the whole subject at the tenth year after the discovery of Knossos; such a summary is very useful and well-timed; but the artistic and architectural importance of Knossos is very much exaggerated. It gave us an unexpected knowledge of an art and a civilisation older than that of Periclean Greece, and has affected our historic conceptions as to Greek art; but to compare the finding of the Minoan relics with the discovery of the Parthenon sculptures, as an artistic "find," is an absurd exaggeration. Minoan art is barbarous in comparison with that.

The "Quarterly Review" contains an article of great interest to students of architectural history, by that intrepid traveller, Miss Lowthian Bell, under the title "A Palace in the Syrian Desert." A great part of the article is what might be called light reading, description of incidents by the way, etc.; but the remains of the Palace of Kheidar, a building which may have been Sassanian, but was probably later and of Sassanian tradition, are carefully described and illustrated by photographs. The subject was treated some months ago by Miss Bell in an admirable lecture at the Hellenic Society.

The "Nineteenth Century" contains an article by Mr. W. Scott Durrant, "New Art to Social Reform," which is a somewhat out-of-date laudation of Ruskin as an art critic, who ended as a reformer and a preacher of a new political economy, or what he thought such. Everyone who has studied Ruskin's ideas on political economy should know that they have been long condemned as absurd; nor even as an art critic is he a person now to be taken seriously as a guide in regard to architecture and painting. His real merit consisted in the fact that he cared for these things, and by dint of his eloquence induced others to care for them; but it is no use attempting at this time of day to resuscitate him as a critic in the true sense of criticism, which means sound judgment. His enthusiasm was splendid, but erratic, and there is hardly a direct statement about art in his pages which is not open to question.

The American Magazines.

In the "Century" Mr. Hichens continues his articles on Palestine and its neighbourhood, the present number taking us "from Nazareth to Jerusalem." Mr. Guérin's illustrations, some of them printed in colour, furnish the architectural interest of the article. It is rather an unexpected incident to find, in a view in Samaria, a row of classical columns along the side of a narrow lane. The capitals are gone, but the fillet of the necking is in evidence—the trace of the hand of Rome in the Holy Land. Needless to say that Mr. Hichens's descriptions are full of picturesqueness and local colour. The Paris floods are commemorated by a number of very effective sketches by Mr. Castaigne, which give a vivid idea of some of the streets in Paris under water.

"Scribner" contains a noteworthy article on "City Building in Germany," by Mr. Frederic C. Howe. He speaks strongly in regard to the great energy and activity which has been shown in city improvement in Germany during the last twenty years, and especially as to what he calls "The bigness of vision, boldness of execution, and far-sighted outlook on the future," which characterises the German city work. "A large area is undertaken at once. The city is not made to conform to the grade of the district; the district is made to conform to the grade of the city. I have seen great areas of from one-half to a mile square, in which a fill was required of from eight to fifteen feet. Tracks are made from the neighbouring railway to make the fill, and the streets are constructed high in the air." Perhaps, in regard to this kind of energy, there is another point to be considered—whether it altogether makes for beauty in a city to destroy its natural undulation of ground, unless to avoid an inconveniently steep gradient. Otherwise, it would seem to us that the beauty of a city is better promoted by making the most of the suggestion given by natural incidents of site, than by wiping them out. The number contains an illustrated article on America's most eminent miniature painter, Edward Greene Malbone, born at Newport in 1777. The reproductions from his miniatures show that he was an admirable artist in his line.

COMPETITIONS.

Watford Grammar School Competition.

Mr. Ernest Newton, the assessor appointed in the above limited competition, has awarded the first place to the design of Messrs. Russell and Cooper; the second to that of Messrs. Spalding and Myers, and the third to that of Mr. C. P. Ayres.

Extensions to the Swansea Hospital.

At a meeting of the Board of Management of the Swansea General Hospital, held on May 6th, the plans for extensions to cost between £20,000 and £25,000, prepared by Mr. Glendinning Moxham, F.R.I.B.A., were unanimously approved.

LIST OF COMPETITIONS OPEN.

MAY 31. MUNICIPAL OFFICES, KARACHI. Particulars given in our issue March 16th.

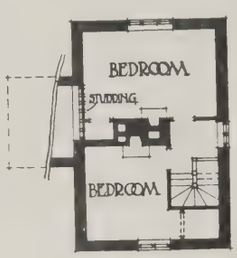
JUNE 11. COVENTRY. ENLARGEMENT OF SCHOOL at STOKE. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

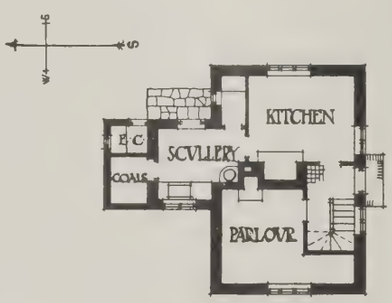
JUNE 15. ELEMENTARY SCHOOLS, ACTON. Particulars given in our issue of March 16th. The Royal Institute of British Architects has requested architects not to compete.

JUNE 20, YSTRADGYNLAIS SEWERAGE SCHEME. The Rural District Council will pay £20 for the most suitable scheme for sewering Ystradgynlais Lower. Competitors to state terms for full detailed plans and specifications, and for carrying out the scheme they submit. Particulars from Mr. T. Watkins, surveyor to the Council Ystradgynlais.

JULY 9. PROPOSED USHER HALL, EDINBURGH. Particulars given in our issue of April 20th. Inquiries to be addressed to Thomas Hunter, Town Clerk, City Chambers, Edinburgh.

AUGUST 31. COVENTRY. NEW ELEMENTARY SCHOOL in Centaur Road. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.





NEW LODGE, BEECHLAW, PUTTENHAM, SURREY.
FORSYTH AND MAULE, ARCHITECTS.



This lodge has recently been built on the Hog's Back, just above the village of Puttenham. The materials used are Bargate hammer-dressed stone, hand-made roofing tiles, oak frames, casements and leaded lights.

NEW BUILDINGS.

PROPOSED.

Hawarden.—It has been decided that a memorial to the late Canon Drew shall take the form of completing the work in connection with the schools of the parish by attending to buildings at Hawarden which may necessitate the erection of new schools. The estimated cost of the work is £3,000.

Keighley.—For some years the question of additional accommodation at Keighley Institute has been talked of, and at last the Education Committee have provisionally sanctioned a scheme which is estimated to cost between £6,000 and £7,000.

Reading.—The town clerk has received from the Local Government Board the draft of the Provisional Order of the scheme for the extension of the municipal borough. The draft order will have to be returned to the Local Government Board within fourteen days, and will then be laid before Parliament. The scheme includes the incorporation of Caversham, and the construction of a new bridge at an estimated cost of £25,000 or £30,000. It also proposes to bring a portion of the parish of Tilehurst within the borough boundaries.

Sheffield.—A scheme is on foot to erect a new Presbyterian Church in the Pitsmoor district, on a site at the corner of Abbeyfield Road and Scott Road. A spire 100ft. in height is proposed to be built, and the estimated cost of the whole block of buildings, inclusive of manse, etc., is about £5,500. Mr. H. L. Paterson, A.R.I.B.A., of Sheffield, being the architect. It is intended to make a start at once with that portion of the scheme which comprises church hall, class-rooms, and vestries, leaving the church proper until such time as the trustees can see their way to complete the scheme.

IN PROGRESS AND COMPLETED.

Birmingham.—The Bishop of Birmingham has consecrated the new church dedicated to St. Benedict at Bordesley, which will seat about a thousand persons, and with the site has cost about £9,000, of which £3,000 remain to be found. Built from the designs of Mr. G. Salway Nicol, of Messrs. Nicol and Nicol, architects, the church occupies an excellent position in the Hobmoor Road. In style it suggests the Romanesque order, and is constructed chiefly of brick.

Boston.—The foundation stones of the new Wesleyan Chapel, in place of the one destroyed by fire last June, have been laid. The style of the new building is Renaissance, and seating accommodation will be provided for 1,100 people, Messrs. Gordon and Gunton, London, being the architects. The entire scheme of the restoration of the school and re-building of the chapel and organ will cost upwards of £13,000.

Chorley.—The Highways and Buildings Committee of the Town Council has approved the following plans:—Bakehouse off Gillibrand Street; motor house, greenhouse, etc., to Kirby House, Gillibrand Walks; pantries to Nos. 15 and 17, Paradise Street; House in Queen's Road; stable at 186, Eaves Lane.

Dorchester.—The Earl of Shaftesbury has laid the foundation stone of St. Mary's Church, which is in course of erection from the designs of Mr. C. E. Ponting, F.S.A., of Marlborough, at a cost, exclusive of the tower, of £10,000. The church, when completed, will accommodate 745 worshippers.

Edinburgh.—The erection of a new Roman Catholic School in Restalrig, on a site at the rear of St. Ninians Presbytery, has been commenced, and will cost about £1,000, Mr. Archibald Macpherson being the architect.

Edinburgh.—A new First Church of Christ Scientist is about to be erected at Inverleith Terrace. The church will be of stone, and the architecture of a simple character. It will have a gallery, and will accommodate 630 people. Underneath there will be a hall to hold 180, and on the same level there will be accommodation for libraries, reading-rooms, and school-rooms. A large tower will be placed at the entrance end with two flanking staircase turrets. Mr. Ramsay Traquair is the architect.

Edinburgh.—The Dean of Guild Court has approved the following plans:—10 flatted villas at Mayfield Road and M'Dowall Road; excavations and foundations for a villa at Succoth Avenue; alterations and additions at Castle Mills, Fountain Bridge.

Eton.—The Rural Council has approved the following plans:—New house, Stoke Corner, Stoke Poges Lane; alterations and additions to Dipping Well, Farnham Road; new house, Bulstrode Way, Gerrards Cross; alterations to Vine Cottage, Farnham Common; new bungalow, Bell Weir, Wraysbury, as a temporary building; new house, Orche Hill Avenue, Gerrards Cross; alterations at the Brickmakers' Arms, Burnham; two villas in Willoughby Road, Langley Marish; new house, Sidwell, Fulmer Waye, Gerrards Cross; additions to the Firs, Stoke Poges; new stables and motor garage, Foxborough Lodge, Bath Road, Langley Marish; two pairs semi-detached cottages, Swallow Road, Iver; new house, Stoke Poges Lane.

Glasgow.—The following plans have been approved by the Dean of Guild Court:—Alterations and additions to buildings in Commerce Street; double villa in Mannering Road, near Shawlands Station; eleven tenements of four-storey dwelling houses in Allison, Hollybrook, and Bankhall Streets; four tenements of dwelling houses four storeys in height at Onslow Drive, Cumbernauld Road, and Ingleby Drive; tenements of dwelling houses in Allen Street and Woddrop Street.

Hampstead.—The church of St. Jude-on-the-Hill, of which the foundation stones were recently laid, is to be erected on a site on the highest part of the Hampstead Garden Suburb, given by the Hampstead Garden Suburb Trust (Limited), and is to be built in the Renaissance style from the designs of Mr. E. L. Lutyens, F.R.I.B.A., at a cost of £12,304.

Horley (Huddersfield).—The foundation stones of the new Congregational Church, which is in course of erection at a total cost of about £4,500, have been laid. The building to be faced with stone and is designed in the Decorated style of Gothic architecture, with a spire at one corner, and provides accommodation for 417 worshippers. Messrs. W. J. Morley and Sons, of Bradford, are the architects.

Litherland.—The foundation stone of the Willox Memorial Church has been laid, and the edifice, when completed, will provide seating accommodation for 650 people. The exterior of the building, including the tower, will be faced with the St. Helens "rustic" bricks, with dressings of Ruabon red patent bricks and terra cotta; while the tracery in the window heads will be of Runcorn stone. The interior will be faced with Ruabon red bricks, and the columns and dressings will be of flecked Runcorn stone: while the roof will be constructed with selected pitchpine timber and covered with green slates. Early Decorated is the style of architecture, and the builders are Messrs. W. Thornton and Sons, of Toxeth Park, Liverpool, the architect being Mr. J. Francis Doyle.

Stranraer.—The Dean of Guild Court has approved the plans of the new secondary school, which is to be erected by the School Board on a site in Lewis Street, with accommodation for 260 pupils, at an estimated cost of £9,000.

Tibshelf (Derbyshire).—The Duke of Devonshire has laid the corner-stone of the extension to the Parish Church, which will comprise the building of a new south aisle, an extension of the nave by one bay eastward, and the erection of a new chancel, vestries, and organ chamber, involving an expenditure of £3,000. Messrs. Currey and Thompson, of Derby, are the architects for the extensions, which, when completed, will provide accommodation for 150 more worshippers than formerly.

Herne Bay.—The following plans have been approved by the Urban Council:—House at corner of Grand Drive and Grafton Rise; house on plot 48, Pier Avenue, Central Estate; addition of greenhouse to house in Oxenden Park; reconstructional drainage of Danehurst, Margate Road.

Hockley (Birmingham).—The foundation stone of the new mission church and Sunday schools of St. Simon, has been laid. The buildings, which are to stand on a site adjoining the Ickfield Street Council School, will be of two storeys in the Gothic style, and will comprise a mission room on the first floor, providing accommodation for 300 persons, with school and class rooms below accommodating a similar number of scholars. Mr. W. Hawley Lloyd is the architect, and it is expected that the cost of the buildings will be £3,324.

Ilford.—The Lord Mayor has laid the foundation-stone of the Ilford Emergency Hospital, which will cost about £10,000, and is situate on a site close to Newbury Park Station.

Kilwinning.—The School Board of the parish of Kilwinning have accepted offers for an addition to Fergushill Public School at a probable cost of £600.

London.—Operations have already commenced on certain portions of the Polytechnic Institute, Regent Street, which is to be entirely rebuilt, at an estimated cost of £60,000. The scheme includes the erection of an entire new front to the existing buildings, and will afford increased accommodation, with laboratories and workshops.

Southend-on-Sea.—The Town Council has approved the following plans:—Motor house, The Leas; conservatory and stable, 12, Plas Newydd; alterations to urinals, Golden Lion Hotel, North Street; two houses, Sandown Avenue; bungalow, Branksome Road; w.c.'s, three urinals, and drainage, Western Esplanade; twelve houses, Shaftesbury Avenue; six houses and shops, Leigh Road West; two bungalows, Cliffsea Grove; warehouse, Elmer Place; four houses, McDonald Avenue; three houses, Westborough Road; stable, Leigh Road East; conversion of two houses into one, Pembury Road; alterations, White Lodge, St. Vincent's Road; two houses, Shaftesbury Avenue; one house, Ramuz Drive; urinal, Nelson Hotel, H. W. Line; fourteen houses, Maplin Road; one house, Boston Avenue; three houses, Hainault Avenue; addition, Grosvenor Road; additions, Eastwood Lane, Albany Electric Laundry Company; addition, 5, Palmeria Avenue; addition, 2, Weston Road; one house, Brook Road; two houses, Shaftesbury Avenue; one house, Westcliff Park Drive; bottling store, High Street; house and drill-hall, Northview Drive; eight houses, Electric Avenue and Southview Drive; one house and shop, Station Road; motor garage, Victoria Avenue; one house, Highcliff Drive; two houses and workshop, Whitegate Road; and Welcome Club, Station Road.

Stirling.—The Directors of the Stirling Royal Infirmary have resolved, owing to the £12,000 asked for to make a large extension to the Infirmary building not having come in, to abandon the larger scheme, and to proceed at present with a new wing to cost £4,300. The smaller scheme will fit in with the larger proposal, for which it is hoped the money will yet be obtained.

Swanage.—The Urban Council has approved the following plans:—Alterations to "Cliff Side." Ulwell Road: additions to "Purbeck View"; four cottages, Victoria Avenue; addition to house in Highcliffe Road; addition to house in Durlstone Road; additions to "Wyborne," Ulwell Road; summer-house at "Gables": and shed at back of dairy, near Taunton Road.

Haslingden Grane.—The erection of a hall in Grane Road, which will serve the purposes of church, institute, and Sunday School, and cost over £1,000, is about to be commenced. The new hall will be in the lower part of the parish, where the population has increased.

MODERN METHODS OF BRICKMAKING.

By A. B. SEARLE, Ph.D.

[At the Royal Society of Arts Dr. Searle has recently delivered four Cantor lectures on modern methods of brick-making, of which abstracts are given below. The lecturer, who is one of the foremost authorities in the United Kingdom on these and similar subjects, has contributed numerous notes and articles in recent years to "The Architects' and Builders' Journal."]

First Lecture.

In the earliest times, the lecturer stated, clay was used as a writing material, but later its significance in this direction was diminished, as its value as a building material increased.

In comparison with stone, it had the advantage of greater ease in manipulation, as any carving was made on the plastic material instead of being carved in the hard stone, and this led to marked advantages in many directions. Well-made bricks were also found to be more durable than many kinds of stone used for building purposes, and were generally far cheaper.

Passing to the methods of manufacture in ancient and modern times, the lecturer described the processes adopted in primitive countries, where the mud is pressed into rough moulds, turned out again, and allowed to dry in the sun. The rough bricks thus produced may be either baked in the sunshine or they may be heated in kilns.

The lecturer distinguished between dried, baked, and burned bricks, and added that many modern brickmakers still fail to realise that to obtain the maximum durability a brick must be properly burned, and not just "heated through." Insufficiently heated bricks are porous, soft, and far from durable. Further heating of these bricks makes then dense, hard, and extremely lasting, but the process is accompanied by many risks, as numerous clays lose their shape when heated to more than a bright red heat.

Touching the materials used for the manufacture of bricks, the use of slags, sand, and other special materials was mentioned, but attention was chiefly concentrated on clays, or, as they are preferably termed, "brick earths." The term "clay" is so comprehensive as to be capable of serious misunderstanding, and moreover it does not really include shales, of which many modern bricks are made.

A few hints on the selection of materials for brickmaking were given, but the lecturer warned intending manufacturers from relying too much on their own knowledge, and advised the consultation with experts who possess a special knowledge of this kind of work.

A detailed description of the method of making bricks by hand, as largely used in some districts, was given, particular attention being paid to the production of "London stocks." A slight comparison between hand-made and machine-made bricks, to the advantage of the former, was given, but a fuller consideration of the value of bricks made by machinery was reserved for a subsequent lecture.

Second Lecture.

This lecture dealt chiefly with the methods in use for manufacturing bricks by machinery according to two methods, in both of which a plastic clay paste is used. In the first method, by means of machines of the open pugmill type, the clay is mixed into a paste and forced into moulds. Any surplus clay is cut off and the contents of the moulds are turned out on to boards, the resulting bricks bearing a close resemblance to sand-faced bricks made by hand. This type of machine is more popular in the United States than in this country, though several machines of various designs are in use here, particularly in the South, where suitable clays are more abundant than in the Midlands and North.

The second type of machine described was the "wire-cut" brick machine, in which the clay is mixed with water, in what is practically a huge sausage machine, and is given the shape of a series of bricks side by side by forcing it out through a specially shaped mouthpiece. The band of clay thus produced is then cut into separate bricks by means of wires stretched at a suitable distance from each other on an iron frame.

The lecturer described the various parts of the plant in full detail, showed where many brickmakers are not getting as satisfactory results as they should do, and gave numerous useful hints to those engaged in the purchase or use of such plant.

He pointed out that where the clay is of such a nature as to permit of machines of this type being used, the manufacture of bricks in enormously greater quantities than was possible by hand is made a relatively easy matter, and showed how the material may be crushed into a suitable size or may be cleaned and freed from stones and some other impurities in an almost automatic manner by means of special "clay cleaners"—machines which have only been used during recent years and some of which have not yet been introduced into this country, though employed with great success for some time on the Continent.

The lecture concluded with descriptions of the chief methods of drying bricks made of plastic clay, the relative advantages of the ordinary chamber dryer and the more modern tunnel dryers being explained.

Third Lecture.

The third lecture, which was illustrated by a large number of lantern slides, was devoted chiefly to three methods of brick manufacture—the stiff-plastic process, the semi-dry process, and the dust process. These derive their names from the consistency of the material used, the first-named machines working with a clay paste, the second with a slightly dampened material, and the third with ground material or "dust." The lecturer explained that these terms were by no means ideal, but they had acquired fairly definite meanings in the course of time, and could, consequently, be readily understood without difficulty by those engaged in the manufacture of bricks. In the stiff plastic process of brickmaking, the chief object is to obtain a brick with most of the characteristics of hand-made bricks, or of those of the "wire-cut" type, but without the cost of removing so large a quantity of water in drying as when the material is made into a completely plastic paste. This process may also be used for a variety of materials which develop but little plasticity and may be regarded as the most economical process yet discovered, where the plasticity of the clay is used. The principal machines used were fully described, and their chief differences explained. The semi-dry process (sometimes known as the semi-plastic) consists in the use of a material which is naturally rather damp (or to which a small quantity of water has been added), but in which but little plasticity has been developed. It is much used for certain shales, as at Accrington and Peterborough, where the material is specially suitable for this purpose. The shale is ground to a powder, and is pressed in powerful machines into the shape of bricks, many precautions being necessary before a satisfactory article is produced. As little or no water is used, the drying of the bricks becomes unnecessary, and the cost of mixing into a paste and of drying is entirely avoided. In this way a notable reduction in the cost of production is obtained. The bricks made by this method are very accurate in shape, but are different in many physical characteristics from those made of a more plastic material. The manufacture of bricks from a dry powder was also described at length, though it does not differ materially from the semi-dry method. It is not used to a large extent for clay bricks, but is the method employed for sand-lime bricks and for those made of sand and other non-plastic materials. The relative advantages and disadvantages of the various methods of brickmaking were described and compared.

Fourth and Concluding Lecture.

The lecturer devoted most of this lecture to kilns, and described the various forms of furnace now used for burning bricks and making them resistant to weather.

He pointed out that for really efficient work it is necessary to study accurately the temperature of the kilns at different stages in the burning and urged manufacturers to employ some form of pyrometer and a draught-gauge. The lecturer described several of these instruments, and an appliance for ascertaining the composition of the gases passing to the kiln chimney, and considered that before any proper estimate could be obtained as to the best means of burning bricks, the results of the use of these instruments must be studied.

The clamp kiln—for temporary use—and the up and down draught and Newcastle kilns for small outputs were described and illustrated, and their advantages pointed out. For more economical working, however, the lecturer recommended the erection of a continuous kiln of modern type, as this requires less than half the fuel needed by single kilns.

The disadvantages of the original Hoffmann continuous kiln have been quite overcome, and terra cotta and glazed goods of first-class quality can now be burned in continuous kilns at a fraction of the cost formerly required.

The various methods of drying bricks in the kilns by means of hot air were described and compared, and the advantages of a fan in place of a chimney to produce draught were explained. In this connection the remarkable results obtained by the Buhrer kiln were mentioned—a speed of fire travel ten times as great as in other kilns being readily obtained.

The lecture concluded with a brief reference to the economic side of brickmaking, and urged the necessity of thorough and ample study of the whole subject, if bricks of a satisfactory quality are to be made at a remunerative cost.

[The lectures will shortly be reprinted in book form, and applications for the same should be made to the Secretary of the Royal Society of Arts, Adelphi, W.C.]

SOCIETIES' REPORTS.

R.I.B.A.

The following additional nominations for the annual elections have been made under by-law 33:—

As mbers of Council.—Maurice B. Adams; A. W. Brewill; C. Fitzroy Doll; H. P. Burke Downing; F. R. Farrow; W. J. Hale; A. R. Jemmett; G. E. Neild; Paul Ogden; C. Stanley Peach; Sydney Perks; Professor Beresford Pite; W. Gillbee Scott; Lewis Solomon; Sir A. Brumwell Thomas; Percy B. Tubbs; W. Henry White; W. G. Wilson; William Woodward.

As Associate-Member of Council.—C. E. Hutchinson.

As Member of the Art Standing Committee. Hippolyte J. Blanc.

As Members of the Practice Standing Committee.—G. E. Neild; S. Perkins Pick; Percy B. Tubbs.

As Associate-Member of the Practice Standing Committee.—K. Gammell.

As Associate-Member Science Standing Committee.—Arnold S. Tayler.

Institution of Mechanical Engineers.—An extra general meeting will be held in the Institution House, Storey's Gate, St. James's Park, on Friday evening, 27th May, at 8 o'clock. Professor J. O. Arnold will resume the discussion upon Mr. Shipley N. Brayshaw's paper on "A Research on the Hardening of Carbon and Low-Tungsten Tool-Steels." A paper will be taken, if time permits: "Comparison of the Tensile, Impact-Tensile, and Repeated-Bending Methods of Testing Steel," by Mr. B. Blount, Mr. W. G. Kirkaldy (M.), and Captain H. Riall Sankey, Member of Council.

TRADE AND CRAFT.

The Fire at the London Works of Vulcanite, Ltd.

Messrs. Vulcanite, Ltd., state that it has come to their knowledge that since the fire on the 31st March last one or two roofing contracts have passed them owing to the architect being prejudiced against Vulcanite roofing, in consequence of the fire at their London works. They add that, as a well-constructed wooded roof covered with their patent Vulcanite roofing forms an effective fire-resisting roof, as already proved by actual fires and official tests, they naturally wish to remove any misconception that may have arisen owing to the fire. The fire broke out in a store, and spread through the portion of the works destroyed entirely internally: the failure of the roofs was solely owing to the iron constructional work buckling, causing the structure to give way. A great part of the Vulcanite roofing from the destroyed buildings, found after the fire, had not been damaged at all by fire, and the portion partly consumed was found in places where everything else had perished owing to the fierceness of the fire, which was to a very large extent attributed to the high wind storm blowing at the time. Where there has been any misunderstanding with regard to this, they trust that this notice will remove all possible prejudice.

A Model Municipal Cottage.

We give an illustration below of a cottage specially designed for and erected at the second Municipal and Health Exhibition at the Royal Agricultural Hall last week. It has been erected under the auspices of Mr. James Cornes, the author of "Modern Housing in Town and Country," and Mr James A. King, the owner of Highams Park Estate. The architect is Mr. E. C. P. Monson, F.R.I.B.A., architect to the Sutton Trust, who is developing the Highams Park Estate as a modern village on Garden City principles for Mr. King. The external walls, internal partitions, as well as the ceilings, are fire-resisting and vermin-proof, built of "Mack" fireproof plaster slabs—manufactured solely by J. A. King and Company, 181, Queen Victoria Street, London, E.C. (works at Hayes, Middlesex, Pawcliffe, Yorks, etc. They occupy only one-half of the floor space that an ordinary brick or lath and plaster partition would, thereby reducing the cubical cost of the buildings and saving considerable frontage where several houses are erected. They have been tested by the British Fire Prevention Committee to a temperature of 2,250 deg. Fahr., with the best result on record. The cottages can be built in pairs or in blocks of four, with a back entrance opening in the centre; the design shows the end of a block or one of a pair. The accommodation provides living-room, 14ft. 6in. by 17ft.; scullery-bathroom, 11ft. by 8ft. 3ins.; larder, coalstore, w.c., and several cupboards, and three bedrooms on the first floor, 13ft. by 9ft. 1½ins., 17ft. 6in. by 8ft. 3ins., and 10ft. by 8ft. 1½ins. respectively. The cottage is estimated to cost from £160 to £175 according to position and facilities for building.



THE MODEL MVNICIPAL COTTAGE

E.C.P.MONSON F.R.I.B.A. F.S.I. ARCHITECT

COMING EVENTS.

Thursday, May 19.
R.I.B.A.—Literature Committee meets.
Saturday, May 21.
EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Broomhall, Fife.
R.I.B.A.—Last day for receiving notices of questions for discussion at meeting on June 6th.
Monday, May 23.
R.I.B.A.—Mr. E. A. Rickards on the Art of the Monument. 8 p.m.
Thursday, May 26.
THE SURVEYORS' INSTITUTION.—Country Meeting at Liverpool.
Friday, May 27.
ROYAL SANITARY INSTITUTE.—Provincial Sessional Meeting at Town Hall, Hereford.
THE SURVEYORS' INSTITUTION.—Country Meeting at Liverpool.
Saturday, May 28.
R.I.B.A.—Last day for receiving voting papers. Election of Council and Committees.
ROYAL SANITARY INSTITUTE.—Provincial Sessional Meeting at Liverpool.
Saturday, June 4.
NORTHERN ARCHITECTURAL ASSOCIATION.—Visit to Sunderland.
Monday, June 6.
R.I.B.A.—General Business Meeting. 8 p.m.
Tuesday, June 7th.
SURVEYORS' INSTITUTION.—Special Certificate Examination commences and continues to the 9th June inclusive.
Thursday, June 9.
R.I.B.A.—Science Committee meets.
Saturday, June 11.
EDINBURGH ARCHITECTURAL ASSOCIATION AND GLASGOW INSTITUTE OF ARCHITECTS.—Joint visit to Colinton.
ARCHITECTURAL ASSOCIATION.—Sports at Bickley.
Monday, June 13.
R.I.B.A.—Preliminary Examination for probationership and Intermediate Examination for studentship commence and continue until Friday, the 17th June.

FEDERATION NEWS.

Bradford.

The annual meeting of the Bradford Local Conciliation Board was held at the Builders' Exchange, Bradford, on Monday, May 2nd, Mr. Taylor, president, occupying the chair. Mr. T. E. Taylor was re-appointed chairman, Mr. F. Firth vice-chairman, and Messrs. J. Davidson and J. H. Hopkinson joint secretaries for the ensuing year. Considerable satisfaction was expressed that during the four years the Board had been established it had not been necessary to call the members together to deal with any trade question or dispute.—J. DAVIDSON, Secretary.

West Hartlepool.

Mr. J. A. Tweddle, who has decided to commence business at Edmonton, Alberta, Canada, has been presented with a gold watch as a parting gift by his friends of the West Hartlepool and Tees-side Associations.

Leeds Conciliation Board.

The annual meeting of the Leeds Conciliation Board was held at the offices of the Leeds Association, 38, Boar Lane, Leeds, on Thursday, May 5th. In the absence of Mr. W. Irwin, chairman, Mr. T. W. Newlove, vice-chairman, presided. Mr. Newlove was appointed chairman, Mr. W. H. Dews vice-chairman, and Messrs. J. Davidson and T. C. Heal, joint secretaries, for the ensuing year.—J. DAVIDSON, Secretary.

National Association of Master Plasterers.

The annual general meeting of this association took place at the Builders' Exchange, Leeds, on Thursday, April 28th, the President, Mr. T. Lindley, presiding. Mr. E. Johnson, of the firm of Messrs. S. Johnson and Son, Mirfield, was elected President; Mr. F. Mountain, Leeds, vice-president; the other offices being retained by the past officials.

Upon the question of the proposed conference of the Confederated Associations of Master Plasterers, Plumbers, and Slaters, to be held in the near future, it was decided that it be an instruction to our delegates to see that such matters as separate tendering, sub-contractors' agreement, and payments of sub-contractors' accounts should be items in the agenda for discussion and passing of resolutions. Opinion was expressed that it would be advisable for the executive Council of the Confederated Associations to have a meeting at an early date, to make final arrangements for the conference

It was decided to hold the next half-yearly general meeting at Nottingham.—GEO. SOALL, Secretary.

Scottish Building Trades Federation.

The half-yearly meeting of the Scottish Building Trades Federation was held in Lamb's Hotel, Reform Street, Dundee, on Friday, April 29th, Mr. Hector MacVinish, Inverness, presiding. It was agreed to record in the minutes an appreciation of the services rendered by the late Mr. David Mekie, and a resolution of sympathy with the members of his family.

Reports on the state of trade recorded general depression, with slight indications of improvement in Edinburgh and Glasgow.

The financial report was submitted by the secretary and approved. It was agreed that each secretary send in to the chief secretary, Mr. Cameron, a full list of the members in their respective associations.

It was reported that the associations in Perth and Dumfries were practically defunct owing to the bad state of trade.

The secretary reported that he had been in correspondence with a firm of builders in Wick with a view to a builders' association being started there.

The secretary urged the advisability of forming a Parliamentary Committee, and the following gentlemen were duly elected to act in that capacity:—Mr. David Wilson, J.P., Mr. John Lownie, and Mr. James Cameron, solicitor and secretary, Edinburgh; Mr. Hector MacVinish, Inverness; Mr. T. C. Stocks and Mr. John Scott, Dundee; and Mr. James Leslie and Mr. James Farquharson, Aberdeen.

A request was made by the Aberdeen Building Trades Federation for a definition of cabinetmaking work as distinguished from joiner work, as it was contended that there had been improper competition of cabinetmakers for work which should properly fall to joiners. It appears that certain cabinetmakers, while competing for joiner work, are able to do it by cabinetmakers, whose wages are lower than those of the joiners. The delegates present from other centres stated what their experience was, and from the information supplied the Aberdeen delegates hope to put matters on a proper footing in their centre.

It was agreed to hold the annual meeting in Edinburgh on September 9th.—JAMES CAMERON, Secretary.

COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about **five days** or longer after the date of this issue. Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders. The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

May 19—June 6. **SHOTLEY BRIDGE (Gateshead).** — Four cottages for children at Shotley Bridge. Send names on or before May 19. Quantities and further information will be forwarded in due course. Plans, etc., may be seen at the offices of the architects, Newcombe and Newcombe, 89, Pilgrim Street, Newcastle-on-Tyne. Tenders to be delivered to George Craighill, Union Clerk, Poor Law Union Offices, Gateshead.

May 21. **ABERCANAID (Wales).**—Erection of a new church. Drawings and specifications can be seen at the office of T. Edmund Rees, architect and surveyor, Merthyr Tydfil. Tenders to be sent to the Rev. Peter Williams, The Vicarage, Troedyrhiw.

May 23. **CARDIFF.**—(See "Engineering.")

May 23. **ST. CLEMENT'S (near Truro).**—Erection and completion of two dwelling houses. Plans specifications, and conditions of contract can be seen by appointment at the office of the architect, A. Ernest Harris, 28, Boscawen Street, Truro. Tenders to be sent to J. Jeffery, The Knoll, Truro.

May 23. **NEWARK.**—Erection of five almshouses, off Hospital Lane, for the Trustees of St. Leonard's Hospital. Plans and specifications can be inspected at the offices of Sheppard and Lockton, architects, Bargate, Newark, and bill of quantities obtained. Tenders to be sent to R. F. B. Hodgkinson, clerk to St. Leonard's Hospital, Newark.

May 24. **PENIEL (Welshpool).**—Alterations to Peniel Congregational Chapel, near Llanfair, Welshpool. Plan and specification and further information may be obtained on written application to R. W. Davies, M.S.A., Architect and Surveyor, Severn Street, Welshpool, to whom tenders are to be delivered.

May 24. **HALIFAX.**—Erection of business premises on the Wards End Estate, Halifax (various works required). Plans and specifications may be inspected and bills of quantities obtained at the offices of Clement Williams and Sons, architects, Post Office Buildings, Commercial Street, Halifax, to whom tenders must be delivered.

May 24. **BRISTOL.**—Reconstruction of the roof of, and alterations to, an engine shed, for the Directors of the G.W.R. Plans and specification may be seen, and forms of tender and bills of quantities obtained, at the office of the Engineer at Bristol Station. Tenders to be sent to G. K. Mills, Secretary, Paddington Station, London.

May 24. **HESSLE.**—Erection of two sanitary conveniences, in brick, with drainage and water supply, in their recreation ground, in Park Avenue, Hessle, for the U.D.C. Plans and specifications may be seen and quantities obtained on application at the Parish Hall, Hessle. Tenders must be delivered to William Coulson, Clerk to the District Council, Parish Hall, Hessle.

May 24. **LISCARD (Cheshire).**—Erection of new public library, Earlston Park, Liscard, in accordance with drawings prepared by MacColl and Tonge, Architects, of Bolton and Southport, for the Libraries Committee of the Wallasey U.D.C. Copies of bills of quantities and general conditions, with form of tender, may be obtained on application, on or before May 11, from J. Brierley Preston, Surveyor, Central Buildings, 41, North John Street, Liverpool, on deposit of £1 1s. The drawings may be seen at the Librarian's Office (which adjoins the site), Earlston Hall, Earlston Road, Liscard, Cheshire. The contractor will be required to enter into a bond, with approved sureties, for the due performance of the contract. Tenders are to be addressed to H. W. Cook, Clerk and Solicitor, Public Offices, Egremont, Cheshire.

May 24. **WEDNESBURY.**—Erection of Holyhead Road Council school, for the Education Committee of the Borough. Plans of the proposed buildings may be inspected, and bills of quantities obtained, not later than May 10, at the office of the Architect, C. W. D. Joynson, Springhead, Wednesbury, on a deposit of £2 2s. Tenders to be sent to E. Foster Knowles, Secretary to the Education Committee, Education Offices, Wednesbury.

May 25. **MONEA (Ireland).**—Erection of the new Devenish school, Monea, according to drawings and specification to be seen at the office of Thomas Elliott, 37, Darling Street, Enniskillen, to whom tenders must be sent.

May 25. **LONDON, E.C.**—(See "Sanitary Engineering.")

May 25. **QUEEN'S COUNTY (Ireland).**—Erection of a building and other alterations, at the Infirmary, for the Committee of Management. Plans and specifications to be had at infirmary.

May 25. **LYMINGE (Kent).**—Erection of four cottages at the workhouse, for the Guardians of Elham Union. Plans and specifications can be seen at the office of R. Lonergan, clerk, 29, Bouverie Square, Folkestone. Tenders to be sent to the Clerk.

May 25. **LAVERNOCK (Cardiff).**—Erection of attendant's cottage and valve chamber, for the Cardiff Corporation. Contract drawings and deed of contract may be inspected, and form of tender, specification, and bill of quantities obtained, at the City Engineer's Office, City Hall, Cardiff, upon deposit with the City Treasurer of the sum of £2. Tenders are to be delivered at the office of the Town Clerk, City Hall.

May 25. **LANCASHIRE AND YORKSHIRE RAILWAY.**—Construction of additional opening under Crosby Road, and other works; construction of overhead booking hall, etc., at Waterloo. Plans can be seen, and copies of tender, quantities, and specification in each case obtained on application at the Engineer's Office, Hunt's Bank, Manchester. Tenders to be sent to R. C. Irwin, Secretary, Hunt's Bank, Manchester.

May 25. **CROYDON.**—Erection of two isolation pavilions and additions to Administrative Block, etc., at the Borough Hospital, Waddon, for the Croydon Corporation. Plans and specifications can be seen, and bills of quantities and form of tender obtained, at the office of the Borough Engineer, Town Hall, Croydon, upon deposit of £1 1s. Tenders to be sent to F. C. Lloyd, Town Clerk, Town Hall, Croydon, at which office the conditions of contract can be seen.

May 25. **WEST DERBY.**—Erection and completion of a new hospital at Alder Hey, West Derby, for the Guardians. A set of quantities can be obtained from Harris P. Cleaver, Union Clerk, Brougham Terrace, West Derby Road, Liverpool, on deposit of £5 5s. Specifications and drawings to be seen at the office of the architect, C. H. Lancaster, Brougham Terrace, West Derby Road, Liverpool. The contractor whose tender is accepted will be required to enter into an agreement, under seal, with security as named in specification and quantities, for the due fulfilment of the contract. The acceptance of any tender is subject to the approval of the Local Government Board, whose disapproval of the scheme would cancel any contract the Guardians may have provisionally entered into, and the contractor or contractors would have no claim for compensation. Tenders must be delivered to the Union Clerk.

May 26. **ABERBEEG (Abertillery).**—Erection of a Council school for mixed and infants at Ty'r Graig, Aberbeeg, for the Abertillery Education Committee. Drawings and specifications may be inspected at the office of the architects, Speir and Beavan, Borough Chambers, Wharton Street, Cardiff, and at the Council Offices, Abertillery. Bills of quantities supplied by the architects on deposit of £2 2s. The contract agreement will contain clauses indemnifying the committee against claims for damage caused in carrying out the work, and under the Workmen's Compensation Acts, and a clause binding the contractor to pay union rates of wages. Tenders to be sent to N. J. Llewellyn, secretary, Council Offices, Abertillery.

May 27. **WALTON.**—Erection of Walton new Council school (builder, joiner, slater, plumber, plasterer, painter, whole or separate tenders), for the West Riding Education Committee. Plans may be seen, and specifications, etc., obtained on application to the Education Architect, County Hall, Wakefield. A sum of £1 must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield.

May 28. **ARGOED (Mon.).**—Erection of 24 houses for the Argoed Workmen's Building Club. Plans and specifications may be seen at the office of A. F Webb, architect and surveyor, Blackwood and Tredegar, to whom tenders must be delivered.

May 28. **MERTHYR TYDFIL.**—Alterations to windows and floors of Treharris boys' and infants' schools, for the Education Committee. Particulars can be obtained from the Deputy Surveyor, Town Hall, Merthyr Tydfil. Tenders to be sent to E. Stephens, clerk to the Education Committee.

May 28. **BRADFORD.**—Erection of Sunday schools and assembly-hall, for St. Columba's parish. Plans may be seen and bills of quantities obtained at the offices of T. H. and F. Healey, architects, 42, Tyrrel Street, Bradford, to whom tenders must be sent.

May 28. **WELSHPOOL.**—Erection of a Drill Hall at the Armoury, Welshpool, for the Montgomeryshire Territorial Force Association. Plans and specification may be inspected and further information obtained on written application to R. W. Davies, M.S.A., Architect and Surveyor, Severn Street, Welshpool, to whom tenders are to be delivered.

May 30. **PINXTON.**—Erection of four cottages by the Pinxton Co-operative Society, Limited. Plans and specifications can be had from the architect, John Tomlinson, South Normanton, or the Secretary, Ashville, Pinxton, on the deposit of £1 1s. Tenders to be sent addressed to the Secretary.

May 30. **CHELMSFORD.**—Alterations and additions to King Edward VI. Grammar School. The drawings and specifications may be seen on application to the architects, Charles and W. H. Pertwee, Chelmsford. A deposit of £5 is required. Quantities will not be supplied. Tenders to be delivered to William Stunt, solicitor, Clerk to the Governors, 71, Duke Street, Chelmsford.

May 30. **BARNSLEY.**—Erection and completion of new wards, to accommodate 38 beds, a new block for kitchens and offices connected therewith, new sterilizing and store rooms, new electric lift, and reconstruction of corridors and renovations to central block, at Beckett Hospital. Plans and specifications may be inspected on application to the architects, G. Moxon and Son, Central Chambers, 26, Church Street, Barnsley. Bills of quantities may be obtained on deposit of £3 3s. Tenders to be delivered to R. F. Pawsey, hon. secretary, 8, Regent Street, Barnsley.

May 30—June 15. **DUNSTABLE.**—Erection of a new Council school, for the Bedfordshire C.C. Drawings, specifications, and form of contract may be inspected at the office of Gotch and Saunders, architects, Kettering. Builders desirous of tendering must send their names and addresses to the architects on or before May 30, together with a deposit of £1 1s., when a copy of the bill of quantities and form of tender will be forwarded to them. The contractor will be required to find sureties for the due performance of the contract. The acceptance of a tender will be subject to the approval of the Local Government Board. Tenders must be sent to W. W. Marks, Clerk of the County Council, Shire Hall, Bedford.

May 31. **CROYDON.**—Additions and alterations and general repairs at "Crosslands" and "Lindens," 218 and 220, London Road, for the Guardians. The specification and conditions of contract may be seen, and bills of quantities and form of tender obtained, at the office of Henry Berney, architect, 104, George Street, Croydon, surveyor to the Guardians, upon deposit of £5 5s. The contractor will be required to enter into a contract and bond and give two sureties, to be approved by the Guardians, for the due performance thereof. Tenders are to be addressed to Harry List, Clerk to the Guardians, Union Offices, Mayday Road, Thornton Heath, Surrey.

June 6. **MANCHESTER.**—(See "Miscellaneous.")

June 17. **WARWICKSHIRE.**—Alteration of the premises at the Aston Lower Grounds to fit the same for the requirements of the Territorial Units who will be there located, for the Warwickshire Territorial Force Association. Bills of quantities, form of tender, etc., may be obtained from the architects, James and Lister Lea and Sons, 19, Cannon Street, Birmingham, on deposit of £3 3s. The plans and conditions of contract may be seen and all further particulars obtained at the architect's offices. The contractor shall pay rates of wages and observe hours of labour not less favourable than those commonly recognised by employers and trades societies in the building and allied trades in the Birmingham district. Further, the conditions of employment generally accepted in the Birmingham district in the trade concerned shall be taken into account in considering how far the terms of the fair wages clauses are being observed. The contractor shall be prohibited from transferring or assigning to any person or persons whatever any portion of his contract without the written permission of the Association. The contractor shall be responsible for the observance of the fair wages clause by the sub-contractor. Tenders should be delivered at the offices of the Association, 46, High Street, Warwick.

(*Continued on next page*)

ENGINEERING.

May 23. **CARDIFF.**—Construction and maintenance of a skew bridge, consisting of two spans of 41ft. 6ins. each, by 50ft. wide, over the River Ely, in lieu of the existing masonry bridge, which is to be removed; and for the execution of certain road works, in connection therewith. The new bridge is to be constructed with masonry abutments, centre pier, and wing walls, and is to have a steel and concrete superstructure and iron parapet railings. Contract drawings and deed of contract may be inspected, and forms of tender, specification, and bill of quantities obtained at the City Engineer's office, upon deposit with the City Treasurer of £3. Tenders are to be delivered at the office of the Town Clerk of Cardiff, in the City Hall.

May 24. **KIDDERMINSTER.**—(See "Iron and Steel.")

May 24. **SHANKLIN, I.O.W.**—Chillerton Auxiliary Water Supply (Contract 3 and 4).—Carting, excavating for, and laying of 9,928 yards lineal of 9in. cast-iron supply main from Whiteley Bank along main roads via Godshill, Rookley, and Highwood Lane, and across certain lands, to the high level reservoir at Chillerton; also for the laying of 1,320 yards lineal of 9in. cast-iron rising main from the pumping station at Rome Meadow, Chillerton, to the high road level reservoir; and 885 yards lineal of 4in. cast-iron main in Chillerton Street; and 570 yards lineal of 3in. cast-iron main in Godshill village; and 25 subsidiary supply main systems along route of main, including all bends, connections, and wash-out pipes, and fixing the necessary sluice valves, air valves, and hydrants, etc., required, for the U.D.C. The work to be tendered for in two half-distance contracts, and as apportioned by the specifications. Plans, specifications, and conditions may be seen and forms of tender obtained at the Council Chambers, Shanklin. The successful contractors will be required to enter into formal contracts, and to give bonds with approved sureties for the due performance of the contracts. Tenders for each separate contract to be sent to John Marsh, Clerk to the Council, The Council Chambers, Shanklin, I.O.W.

May 25. **LANCASHIRE AND YORKSHIRE RAILWAY.**—(See "Buildings.")

May 28. **LONDON, N.**—Sinking and equipment of a deep tube well, for the Finchley U.D.C. Conditions, specification, and form of tender may be obtained at the office of the electrical engineer, E. Calvert, Electricity Works, Squire's Lane, Finchley, N., on deposit of £1 1s. Tenders must be sent to E. H. Lister, Clerk, Church End, Finchley, N.

June 1. **SOUTHAMPTON.**—Reconstruction of a portion of the town quay, Southampton (contract No. 4), such tender being based upon proposals to be submitted by the persons tendering, and the particulars supplied by the Harbour Board. Specification, conditions, and copies of the general drawings may be obtained upon application to E. Cooper Poole, A.M.Inst.C.E., Engineer and Surveyor to the Board, at the Board's offices, from 10 a.m. to 12 noon, upon deposit of £5. Tenders must be delivered to Harbour Board Offices, Town Quay, Southampton.

SANITARY ENGINEERING.

May 23. **WALTON-UPON-THAMES.**—Construction of the following lengths of sewers, together with manholes, etc., for the U.D.C.:—113 yards lineal 9in. cast-iron pipe sewer, 537 yards lineal 7in. cast-iron pipe sewer, and 323 yards lineal 7in. stoneware pipe sewer. Drawings and specification may be seen and forms of tender obtained on application to R. Wilds, surveyor, Council Offices, Walton-on-Thames. Tenders must be delivered to Percy H. Webb, Council Offices, Walton-on-Thames.

May 23. **ILFORD.**—Supply and construction of the following sewers, manholes, etc., in:—Blind Lane, Barkingside, about 450 yards 9in. pipes; Hatch Lane, Ilford, about 418 yards 9in. pipes; for the U.D.C. Plans may be seen and specification and form of tender and full particulars obtained, on application to H. Shaw, M.I.C.E., Engineer and Surveyor to the Council, Town Hall, Ilford, on deposit of £2 2s. Tenders must be delivered to Adam Partington, Clerk and Solicitor to the Council, Town Hall, Ilford.

May 23. **SOUTHAMPTON.**—Supply, erection, and setting to work, etc., (1) pneumatic sewage ejector, with cast-iron chamber, near Millbrook Station; (2) pneumatic sewage ejector in existing chamber at Rochester Street, for the Corporation. Plans, specifications and conditions may be inspected and forms of tender obtained at the Borough Engineer's Office on production of the Borough Treasurer's receipt for a deposit of £1 1s. for each contract. Tenders must be delivered at the Town Clerk's Office, Municipal Offices, Southampton.

May 23—June 10. **NEW MILLS (near Stockport).**—Sewerage and sewage disposal works at Birch Vale, for the Hayfield R.D.C., comprising:—1,520 lineal yards of earthenware pipes, 9in. diameter; 150 lineal yards of steel tubes, 9in. diameter, on rubble piers; and 35 lineal yards of cast-iron pipes, 9in. diameter, under railway, with all manholes, lampholes, flush tanks, and ventilators. Also extensions to the existing disposal works, including precipitation and stormwater tanks, percolating filters, and revolving sprinklers (55ft. diameter), dosing tank, carriers, distributors, etc. Plans and specifications may be seen at the offices of the engineers (John Newton, Son and Bayley, civil engineers, 19, Cooper Street, Manchester), and copies of bills of quantities and form of tender may be obtained from them or from J. R. Bowden, clerk, 16, High Street, New Mills, near Stockport, on deposit of £1 1s. Contractors proposing to tender are requested to send their names to the Engineers by May 23. Tenders to be delivered at the Rural Council Offices, 16, High Street, New Mills, by June 10.

May 24. **HESSLE.**—(See "Buildings.").

May 25. **LONDON.**—Reconstruction of the convenience in Byward Street, E.C., for the Streets Committee of the Corporation, in accordance with the terms and conditions contained in specifications, which may be obtained at the office of the Engineer on deposit of £2 2s. Persons tendering must give the names and addresses of at least two substantial sureties, who will be required to enter a bond for the due performance of the contract. Tenders must be addressed to the Town Clerk, Public Heath Department, Guildhall, E.C., and delivered at the office of the Hallkeeper in the Guildhall.

May 27. **PRESTWICK.**—Construction of a 12in. stoneware sewer in Bury New Road, near Hilton Lane, within the district for the U.D.C., subject to general conditions of contract, which can be inspected at the Surveyor's Office, Chester Bank, Prestwick, any morning between the hours of 9 a.m. and 11 a.m., where the plan, specification, and quantities of the proposed works will be open for inspection. Copies of the bills of quantities and any further information that may be required can be obtained from the Surveyor on deposit of 10s. Tenders must be delivered to Lewis A. Orford, Law Clerk to the Council, Council Offices, Prestwick, near Manchester.

May 28. **WIGSTON MAGNA (Leicester).**—Construction of sewage works:—Contract No. 1, sewers, pumping station, and outfall works; the construction of about 1¾ miles of concrete, brick, and stoneware pipe sewers, varying from 6ft. by 4ft. to 9in. diameter, the laying and jointing of about ¼ of a mile of 13in. cast-iron pumping main, the construction of a pumping station, tanks, two continuous filters, distribution, and other works. Contract No. 2, cast-iron pipes: the supply and delivery of about 190 tons of coated cast-iron pipes and specials, varying in diameter from 18in. to 4in. Contract No. 3, sewage ironwork: the supply, delivery, and fixing of two rotary sewage distributors, 7oft. in diameter, floating arm, screen with power rake, and the supply and delivery of about 130 various sluice valves, air valves, and penstocks. Drawings may be seen at the offices of the engineers, Everard, Son and Pick, 6, Millstone Lane, Leicester, from whom conditions, specification, quantities, and form of tender may be obtained on deposit of £2 2s. for each contract. Tenders upon the form supplied to be sent to A. H. Burgess, Clerk, 2, Wycliffe Street, Leicester.

May 30. **OSSETT.**—Tenders for the laying of about 300 yards of 9in. earthenware pipe sewers, the construction of ejector chamber, air compressing station, and other appurtenant works at the Healey sewage disposal works, for the Ossett Corporation. The plans may be seen and specification and bill of quantities obtained at the office of the Borough Engineer, Town Hall, Ossett, on deposit of £1 1s. Tenders to be sent to the Town Clerk, Ossett.

May 30. **WAKEFIELD.**—Alterations and additions to existing precipitation tanks, etc., the construction of about three acres of percolating filters, containing approximately 31,000 cubic yards of filtering material, effluent settlement tanks, liming and ferric sulphate houses, offices, mess-room, culverts, carriers, drains, and other appurtenant works at Calder Vale, for the Corporation. The contract drawings may be seen, and specification, bill of quantities, and form of tender obtained at the office of the engineer, J. P. Wakefield, A.M.I.C.E., city surveyor, Town Hall, Wakefield, on deposit of £5 5s. (Bank of England Note). Tenders must be delivered to W. W. Greenhalgh, Town Clerk.

May 31. **SALFORD.**—Sewering, paving, and flagging works, for the Corporation. The plans may be seen and forms of tender with quantities obtained at the Borough Engineer's Office, Town Hall, Salford. Tenders must be delivered to L. C. Evans, Town Clerk, Town Hall, Salford.

May 31. **LONDON, N.W.**—Construction and maintenance for twelve calendar months of 3,215ft. lineal or thereabouts of brick sewers of various dimensions, and 555ft. lineal of pipe sewers, together with manholes, gauging chambers and other works incidental thereto at Stonebridge, in the parish of Willesden, for the Willesden D.C. Quantities and specifications may be obtained upon application to O. Claude Robson, M.I.C.E., engineer, Public Offices, Dyne Road, Kilburn, N.W., and deposit of £5 5s. Tenders to be delivered to Stanley W. Ball, clerk, Public Offices, Dyne Road, Kilburn, N.W.

May 31. **LONDON, S.E.**—Construction of about 1,564ft. of 3ft. 6in. brick and concrete culvert in Hither Green Lane and Verdant Lane, Lewisham, for the Lewisham B.C. Plans and specification may be seen and forms of tender obtained at the Town Hall, Catford (Surveyor's Department). Copies of the specification may also be had on payment of 5s., which will not be returned. Tenders must be delivered at the Town Hall, Catford, and placed in the box there provided for the purpose. The works are to be proceeded with immediately on acceptance of tender and execution of contract, and the contractor must employ local labour as far as practicable in carrying out the work. Rate of wages, etc., clause to be observed.

June 20. **YSTRADGYNLAIS.**—Schemes and estimated cost for sewering the Parish of Ystradgynlais Lower, for the R.D.C., who will pay a sum of £20 for the scheme which they consider most suitable, and the decision of the Council must be accepted as final. Competitors to state their terms for full detailed plans and specifications, and for carrying out the scheme they submit. Particulars of the area to be drained and any other information may be obtained from T. Watkins, Surveyor to the Council, Ystradgynlais. Schemes to be sent in to D. L. Moses Evans, Clerk to the Council, Commercial Street, Ystalyfera.

IRON AND STEEL.

May 23. **CARDIFF.**—(See "Engineering.")

May 23. **LONDON, N.**—Supply and delivery, within one month of the date of the acceptance of the tender, at Lower Edmonton station on the Great Eastern Railway, and, if so required, the fixing in situ of about 500 yards in length of unclimbable iron or steel fencing, for the Edmonton U.D.C. Forms of tender and full particulars may be obtained of G. Eedes Eachus, M.I.C.E., engineer, Town Hall, Edmonton. Tenders to be delivered at the office of Wm. Francis Payne, clerk of the Council, Town Hall, Edmonton. Rate of wages, etc., clause to be observed. The firm whose tender may be accepted will be required to enter into a proper contract, and to provide such sureties as the Council shall direct.

May 24. **MANCHESTER.**—Supply of:—(a) Steel girder tramway rails; (b) granite setts; for the Tramways Committee of the Corporation. Specifications and forms of tender may be obtained on application to J. M. McElroy, General Manager, Corporation Tramways, 55, Piccadilly, Manchester. Applications for specifications for (a) steel girder tramway rails must be accompanied by a deposit of £1 1s. Tenders are to be addressed to the Chairman of the Tramways Committee, 55, Piccadilly, Manchester.

May 24. **KIDDERMINSTER.**—Laying and jointing of approximately 3,760 yards of 3in., 4in., and 5in. cast-iron pipes, together with the supply and fixing of the requisite special pipes, fittings, and accessories, for the R.D.C. Plan sections and detail drawings may be seen and specification and bills of quantities obtained at the offices of the engineer, William Fiddian, F.S.I., Old Bank Offices, Stourbridge, on deposit of £1 1s. Two sureties will be required for the due performance of the contract. Tenders to be sent to Fredk. Burcher, Clerk to the Rural District Council, Kidderminster.

May 25. **BOLTON.**—Supply of 374 lineal yards of steel rails for a portable tramway, to be delivered at Bromley Cross Station, near Bolton, for the Turton U.D.C. Specification and form of tender may be obtained on application to V. W. Laithwaite, Surveyor to the Council, Bromley Cross, near Bolton. Tenders to be delivered to J. B. Goulburn, Clerk to the Council, Council Offices, Bromley Cross, near Bolton.

May 30. **DARLINGTON.**—Corrugated iron roofs to tar macadam sheds, for the Corporation. For all particulars apply to George Winter, Borough Surveyor, Town Hall, Darlington.

PAINTING.

May 23. **LEEDS.**—Painting work required in various parks and recreation grounds, for the Parks Committee of the Corporation. Specifications may be seen and forms of tender for any or all the contracts obtained at the office of W. T. Lancashire, City Engineer, Municipal Buildings, Leeds. Tenders must be received at the Town Clerk's Office.

May 24. **GRIMSBY.**—Painting and cleaning the schools as under:—(1) Holme Bill, exterior, senior boys', junior boys', girls' and infants' departments; also cookery and handicrafts centres, and caretakers' house. (2) Harold Street, interior, senior, junior and infants' departments; also cookery, laundry, and handicraft centres. (3) Edward Street, exterior, senior boys', junior boys', senior girls', junior girls' and infants' departments, for the Borough Education Authority. Specifications and full particulars may be obtained at the Education Offices. Tenders, giving the price of each school, must be addressed to Douglas Chandler, Clerk to the Education Authority, Education Offices, Grimsby.

May 24. **LONDON, S.W.**—Cleansing, repainting, tar-varnishing, etc., of Chelsea Suspension Bridge, for the L.C.C. Specification, bills of quantities, form of tender, etc., may be obtained on application to the chief engineer of the Council, Maurice Fitzmaurice, C.M.G., County Hall, Spring Gardens, S.W., upon deposit to the cashier of £1. Full particulars of the work and conditions of contract may be obtained at the County Hall before the payment of this fee. Rate of wages, etc., clause to be observed.

(Continued on page xii.)

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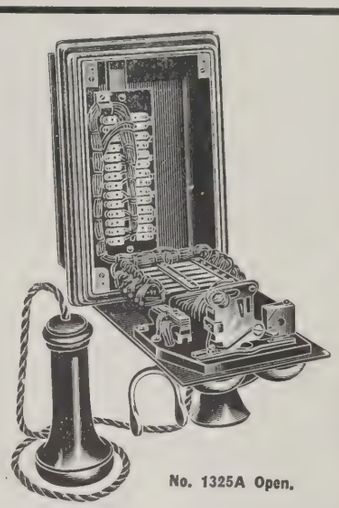
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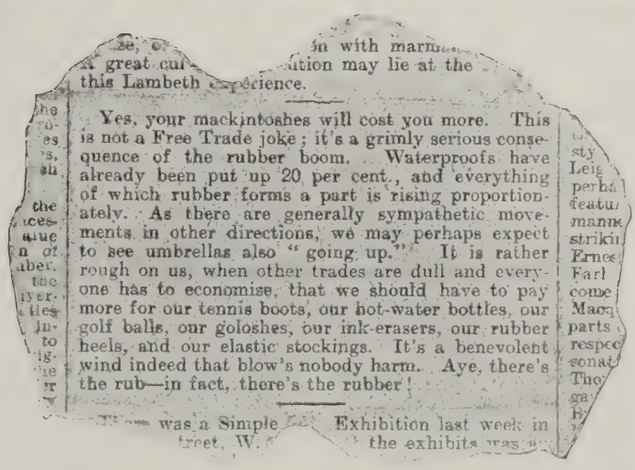
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May 24. **GREAT WESTERN RAILWAY.**—Cleaning and repainting stations, bridges, etc., for the Directors:—Contract No. 30, stations at Pontypool, Pontllanfraith, Llanhilleth, Newbridge, Blaengwynn, Blaen Rhondda, and Duffryn Rhondda; 31, stations at Bedwyn, Burbage, Bathampton, Box, Corsham, Great Somerford, Hungerford, Kintbury, Marlborough, and Wylye; 32, Locomotive Department Buildings at Chippenham, Bath, Pilning, Bristol, Weston-super-Mare, Marlborough, Frome, Westbury, Warminster, and Salisbury; 33, bridges in Swindon, Chippenham, Bath, Bristol, Cheddar, Hungerford, Trowbridge, Westbury, and Frome districts; 34, bridges in Hereford and Ross districts; 35, portion of roof of Paddington passenger station; 36, bridges in Shrewsbury, Woofferton, and Leominster districts; 37, bridge on the Roath Dock Branch, Cardiff. Specifications may be seen and forms of tender and bills of quantities obtained at the office of the engineer at Newport Station for Contracts Nos. 30 and 37; at Bristol for Contracts Nos. 31 to 33; at Gloucester for Contract No. 34; at No. 7, Eastbourne Terrace, Paddington, W., for Contract No. 35; and at Shrewsbury for Contract No. 36. Tenders must be sent to G. K. Mills, Secretary, Paddington Station, London.

May 25. **HANDSWORTH.**—Painting and cleaning of the public elementary schools during the summer holidays, 1910, for the Education Committee. Apply to J. F. Ingram, Education Offices, Soho Hill, Handsworth, Staffs, for specifications and conditions of tender.

May 25. **LONDON, N.**—Cleaning and painting works and repairs at the Northern (Convalescent) Fever Hospital, Winchmore Hill, N., for the Metropolitan Asylums Board, in accordance with conditions of contract and specification prepared by W. T. Hatch, M.I.C.E., M.I.M.E., engineer-in-chief. Conditions of contract, specification, and form of tender may be inspected at the office of the Board, Embankment, E.C., and can be obtained upon deposit of £1. Tenders, addressed as noted on the form of tender, must be delivered at the office of the Board.

May 28. **MIDDLESBROUGH.**—Painting, etc., at several of the public elementary schools in the Borough (tenders from persons having business premises in Middlesbrough), for the Education Committee. Specifications may be had on application to J. S. Calvert, secretary, Education Offices, Middlesbrough, to whom tenders are to be forwarded.

May 28. **BERKHAMSTED.**—Painting, etc., at the Workhouse, for the Guardians:—Men's infirmary, inside and outside painting, etc.; workhouse buildings, external painting, etc., in accordance with specification prepared by C. H. and N. A. Row, architects, Berkhamsted, to whom application must be made for copies of such specification and full particulars of the work required. Tenders must be delivered at the office of A. W. Vaisey, clerk, 207, High Street, Berkhamsted.

ROADS AND CARTAGE.

May 23. **WAKEFIELD.**—Supply and delivery of hand-broken granite, or whinstone macadam, machine broken limestone chippings, Elland edge stone setts, flags, and kerb pitch and creosote oil, for the Corporation. Forms of tender may be obtained at the office of the City Surveyor. Tenders must be sent to W. W. Greenhalgh, town clerk.

May 23. **BRIGHTON.**—Supply of dressed granite kerb and channel:—2,000ft. run 6in. by 10in., granite edge kerb; 4,000ft. run 12in. by 6in., granite flat kerb; and 2,000ft. run 12in. by 6in. granite flat channel, for the T.C. Specification and form of tender may be obtained on application at the office of the Borough Surveyor, Town Hall, Brighton. Tenders must be addressed to Hugo Talbot, town clerk, Town Hall, Brighton.

May 23. **PORTSMOUTH.**—Laying compressed asphalte pavement in Queen Street, Portsea, and part of King's Road, Southsea, and maintaining the same in thorough repair for two years, from completion, for the T.C. Specification, form of tender, and schedule of prices, may be obtained on application to G. Hammond Etherton, Town Clerk, The Town Hall, Portsmouth, on deposit of £2 2s. Tenders must be sent to the Town Clerk.

May 23. **LONDON, E.C.**—Paving the carriageways of Gloucester Street (part) and Wynyatt Street with tar slag macadam, and alternatively with any similar material, for the Finsbury B.C. Specifications can be seen and forms of tender obtained at the Borough Surveyor's office, Finsbury Town Hall, Rosebery Avenue, E.C., on deposit of £1 1s. Tenders must be delivered to George Whitehead Preston, town clerk, Finsbury Town Hall, Rosebery Avenue, E.C.

May 23. **STREATHAM.**—Making-up and paving of that part of Becmead Avenue, Streatham, for the Wandsworth B.C. The specification and drawings may be seen, and forms of tender obtained, of the Borough Engineer, at the office of the New Streets Department, No. 56, East Hill, Wandsworth, S.W., upon deposit of £5 5s. Tenders must be delivered at the Council House, East Hill, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose. Persons tendering must in the case of all workmen employed by them pay wages at not less and observe hours of labour not greater than the rates and hours recognised by the associations of employers and employees and in practice obtained in the district where the work is to be executed. If required, the contractor must provide two sureties for the due execution of the contract.

May 24. **MANCHESTER.**—(See "Iron and Steel.")

May 24. **LONDON, W.**—Supply of machine-broken road stone and stone chippings, for the Great Western Railway Co. Conditions of contract and forms of tender may be obtained on application to G. K. Mills, secretary, Paddington Station, London, by whom tenders will be received.

May 24. **GATESHEAD.**—Paving the following streets:—Back Keswick Street West, tar macadam; back Laburnum Gardens East, cement; William the Fourth Yard, for the Corporation. Plans and specifications may be seen and quantities obtained at the office of N. P. Pattinson, borough surveyor, Town Hall, Gateshead.

May 24. **MOUNTAIN ASH (Wales).**—Private street works in the following named streets, for the U.D.C.:—(1) Mount Pleasant Terrace, between Victoria Street and Clarence Street; (2) Mount Pleasant Terrace, between Glyngwyn Street and Victoria Street. Plans and specifications may be seen and forms of tender obtained on application to W. G. Thomas, surveyor, Town Hall, Mountain Ash. Contractors will be required to pay their workmen the recognised trades union rates of wages. Tenders to be sent to H. P. Linton, clerk, Town Hall, Mountain Ash.

May 25. **LONDON, E.C.**—Paving works, for the Corporation, agreeably to specifications to be seen at the office of the Engineer to the Corporation, where forms of tender may be obtained:—Carriageways to be paved with asphalte: New London Street. Carriageways to be paved with granite setts: Seacole Lane (Fleet Lane to railway arch), Fleet Lane (Old Bailey to railway arch), Water Lane (Queen Victoria Street to Playhouse Yard) Pindar Street (west side of Railway Approach to City boundary beneath the L. and N.W. railway bridge), Benet's Hill (lower portion). Footways to be paved with asphalte: New London Street; John Street, Minories (south side); New Street, Gravel Lane; Nettleton Court, Nichol Square; Pilgrim Street (east from Broadway and St. Martin's Court to Ludgate Hill), Seacoal Lane (Fleet Lane to Farringdon Street), Fleet Lane (Old Bailey to Farringdon Street), Aldgate High Street (Mansel Street to L. and N.W. Railway Goods Depot), Stoney Lane (south-east side from Houndsditch to Back Gravel Lane), Hanover Court, Houndsditch; Castle Court, Cornhill; London Wall (Blomfield Street to New Broad Street, both sides); John Street, Minories (noth side). Tenders must be addressed Town Clerk, Public Health Department, and delivered at the Office of the Hallkeeper, Guildhall.

(*Continued on page xvi.*)

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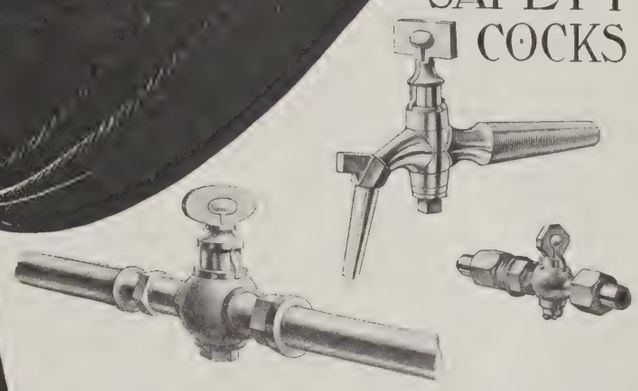
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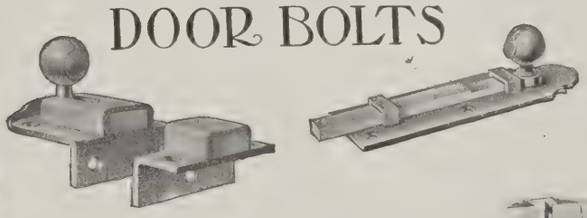
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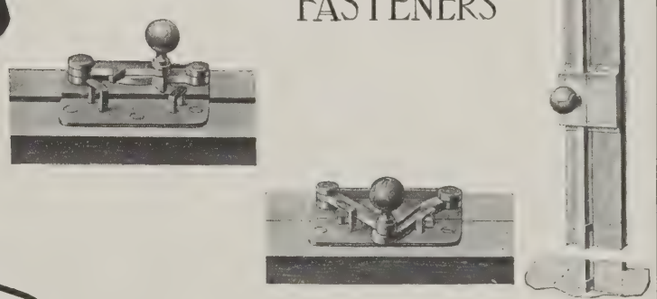
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Cole and Sons, Leicester ...	1,438 16 0
Littler and Son	1,430 0 0

Rest of Hinckley.

(*Tenders continued on page xvi.*)

THE WOULDHAM CEMENT Co. LD.
Telegrams: Enrichment, London. Telephone: No. 1846, Avenue.
RED CROSS BRAND
highest quality. London
PORTLAND CEMENT.
quick medium or slow setting.
LION WORKS, GRAYS. ESTABLISHED 1855.
OUTPUT, 3,000 TONS WEEKLY.
35, GREAT St. HELENS, E.C.

T.N.: 14410 Central. T.A. "Coatostone, London."
Coatostone. LIQUID STONE
NEAL'S PATENT.
Applied as Paint for Coating
Plaster, Cement, Stone or Woodwork
to produce a natural Stone effect.
FOR INTERIOR OR EXTERIOR WORK.
THE COATOSTONE DECORATION CO.,
77, Mortimer Street, Regent Street, W.

For Architects, Builders and Engineers.
TRUE TO SCALE.
BLACK LINE PRINTS.
Permanent. *Done on any Paper or Cloth*
W. F. STANLEY & CO., LTD.,
13, Railway Approach, London Bridge.
Tel. 871 Hop. Telegrams, "Tribrach, London."
Price list free

Telephone—CITY 3094
G. R. PERKINS & Co.
Parquet & Oak FLOORING.
Herringbone 8d. per foot. for quantities.
41, BERNERS STREET, W.

ROOFING SLATES
Velinheli Penrhyn and Westmoreland
SLATE SLAB GOODS
Both Plain and Enamelled.
ALFRED CARTER & CO., LIVERPOOL.

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Trade Mark Sav-o-Spaco, Darby's Patent.

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100, ALBION ST., LEEDS.
Inside and Outside Blinds, Also Casement Curtains. BLINDS
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Telephone: LONDON WALL 6270.
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BRANCHES:

BIRMINGHAM. BRISTOL. CARDIFF. GLASGOW. MANCHESTER. NEWCASTLE. SHEFFIELD. JOHANNESBURG. CAPE TOWN. CALCUTTA, BOMBAY. MADRAS. SINGAPORE. PENANG. RANGOON. SYDNEY. MELBOURNE. TORONTO.

(*Tenders continued from page xiv.*)

Gillingham (Kent).—Accepted for the erection of four dwelling houses in Longfellow Road. R. M. Godden, architect, 1, Gardiner Street, Gillingham, Kent.

G. D. Herridge, Chatham, £657.

Ilkeston.—Accepted for erection of chapels and lodges in the Park Cemetery, for the I.C.

A. J. Penny, £2,680 16s.

London.—For erection of cottages on Tower Gardens section of the White Hart Lane Estate, for the L.C.C.

G. E. Wallis and Sons, Haymarket, W.	£15,904 0 0
F. J. Coxhead, Leytonstone	13,427 10 0
A. Monk, Lower Edmonton	12,300 0 0
Nicholls and Son, Finchley	12,224 0 0
Rowley Bros.,* Tottenham	11,668 0 0

Architect's estimate, £13,330.
*Recommended for acceptance.

London, N.—For new cookery and manual training centres and extension of the sanitary offices at the Finchley County School, for the Middlesex C.C. H. G. Crothall, architect.

Treasure and Son, Ltd.	£1,974
W. T. Batchelor and Sons	1,950
G. Neal	1,943
W. Gibson and Co.	1,934
H. Knight and Son	1,795
W. Lawrence and Son	1,758
Mattock Bros.	1,727
A. Monk	1,727
E. Lawrance and Sons, Ltd.	1,692
J. Stewart*	1,648

*Recommended for acceptance.

London, N.W.—For alterations and additions to the Yorkshire Stingo Brewery, No. 187, Marylebone Road, N.W., to convert same into a Labour Home for the Church Army. George A. Lansdown, F.R.I.B.A., architect, 9, Regent Street, S.W. Quantities by Northcroft, Neighbour, and Nicholson, Chartered Surveyors.

Toten and Willett	£11,215 10 0
Geo. Parker and Sons	11,195 0 0
J. P. Williams	10,460 0 0
F. and H. F. Higgs	10,380 0 0
Higgs and Hill, Ltd.	9,980 0 0
Jas. Carmichael	9,760 0 0
John Marsland and Sons	9,750 0 0
Hall, Beddall and Co.	9,733 0 0
Wm. Johnson and Co.	9,570 0 0
H. and E. Lea	9,555 0 0
Patman and Fotheringham*	9,443 0 0

*Accepted.

Nafferton (Yorks).—For erection of six cottages at Nafferton, for Miss Taylor. Joseph Shepherdson, 91, Middle Street South, Driffield, architect.

J. Hoggard, Kilham	£1,086
H. Sanderson, Brandesburton	1,020
W. Leason and Son, Driffield	825
A. H. Berry,* Nafferton	767

*Accepted.

Shrewsbury.—For erection of stables and depot at Roushill, for the Corporation. A. E. Williams, County Chambers, 12, High Street, Shrewsbury, architect and surveyor.

G. and W. Edwards	£4,792
A. G. Roberts	4,742
J. Pritchard	4,715
W. Bowdler and Co.	4,650
J. Barnsley and Sons, Birmingham	4,024
H. Price	4,580
W. Bowers and Co., Hereford	4,470
A. Pearce, Wellington, Salop	4,398
T. Pace	4,379
G. H. Bickerton	4,355
Treasure and Son, Ltd.	4,304
J. W. Smith and Co., Birmingham	4,247
T. Morris and Sons*	4,180
Turford and Southward, Ludlow, Salop	4,115
J. Dallow and Son, Birmingham	4,080

Rest of Shrewsbury.
*Accepted.

Sunderland.—Accepted for erection of a new Council school at Forest Hall, for the Northumberland Education Committee:—

J. W. White, Sunderland, £4,200.

Sutton Valence.—Accepted for new school at Sutton Valence:—

Wallis, Ltd., Maidstone, between £28,000 and £29,000.

Thetford.—Accepted for building new Salvation Army Barracks, Magdalen Street.

S. Holden and Sons, Station Road, Thetford, £993.

Topsham (Devon).—For erection of a house for R. Farmer. R. M. Challice, 14, Bedford Circus, Exeter, architect.

E. R. Underhill	£807 10 0
W. H. Oliver	711 0 0
J. Tremlett	706 18 0
J. and J. M. Soper	692 7 0
Ham and Passmore	685 10 0
M. T. Sleeman	680 7 0
Woodman and Son	664 6 0
F. E. Sleeman	645 0 0
G. Underhill,* Topsham	634 0 0

*Accepted.

Worthing.—For erection of proposed cookery and manual instruction centre, Richmond Road, for the Education Committee:—

J. Longley and Co., Crawley	£1,588
Bostel Bros., Ltd., Brighton	1,552
Apted, Greenfield and Co.	1,545
J. Linfield and Sons, Ltd., Littlehampton	1,532
F. A. Moat	1,530
H. W. Sandell	1,460
R. Cook and Sons, Crawley	1,385
F. Sandell and Sons*	1,340

Rest of Worthing.
*Recommended for acceptance.

Wrecclesham.—Accepted for building new infants' school, for the Farnham Education Committee:—

Goddard, East Street, Farnham, £2,463.

Yeovil (Somerset).—For extensions to factory at Yeovil, for Ewens, Johnson, and Co. John Petter and P. F. Warren, A.R.I.B.A., Yeovil and Southampton, architects.

Chapman and Pittard	£2,445
J. W. and H. Childs	2,337
T. Stockham	2,149
Bird and Pippard	2,125
C. Bryer, jun.	2,000
H. Pittard and Son,* Langport	1,839

*Accepted.

LATE CONTRACTS.

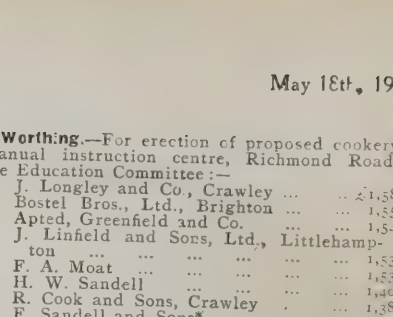
May 25. **RUNCORN.**—Supply of macadam for the R.D.C. Forms will be supplied on application to Geo. F. Ashton, Clerk to the Council, 71, High Street, Runcorn.

May 25. **PRESTWICH.**—Supply of 400 tons of granite setts, 5in. by 4in., for the U.D.C. The prices must include delivery, carriage paid, at Prestwich station. Tenders must be sent to Lewis A. Orford, Law Clerk to the Council, Council Offices, Prestwich, near Manchester, and must be accompanied with samples.

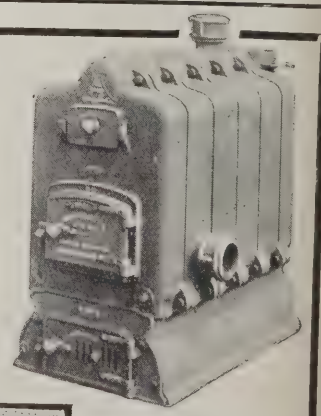
May 26. **ASHFORD.**—Supply of 1,320 cubic yards (more or less) of 2in. gauge broken granite, for the U.D.C., as per form of tender, to be obtained from Wm. Terrill, Surveyor, 5, North Street, Ashford, Kent, to whom tenders (with samples) must be sent.

May 28. **LONDON, N.**—Painting with tar compound of about 27,000 super. yards of 4 yards wide macadam tram margins, also for supply of tar compound for grouting road metalling during lay-

ROBERT ADAMS, ENGINEER & PATENTEE,
Architects' and Builders' Specialist.
PERFECTION IN—
DOOR SPRINGS. FANLIGHT OPENERS.
LANTERN and SKYLIGHT GEARING.
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FIXED IN ONE MINUTE. RELEASED IN LESS.
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We guarantee these points—fireproof—weather proof. For your satisfaction we can refer you to actual users. An important point to note is that "Stoniflex" will not crack on settlement. It keeps its new unbroken surface under all conditions.

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London, E.



Fulwell Hydrated Lime.

A high-class Lime, slaked by a patent process, and packed in bags. Saves the labour of washing and running the lime, will not blow, leaves no waste, may be stored without deterioration and without bursting the bags.

For mouldings and lathwork can be gauged with a much smaller proportion of plaster than ordinary lime.

Converts lime into a safe, reliable and convenient material with the advantages of a bagged plaster.

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Sir HEDWORTH WILIAMSON, Bart.,
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JUST A WORD ABOUT WHITEWASH.

No one denies that the old method of preparing whitewash was both insanitary and wasteful. It is now rendered **obsolete.**

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does away with it.

WHY? Because just mixed with a little clean cold water it forms a **perfect sanitary whitewash** for ceilings and friezes.

When an article of sterling merit has been successfully placed on the market imitations are bound to spring up. Protect your own interests by making sure that you use

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It is made in White Cream, and Ivory, and is packed in casks weighing about 1½cwt. It is sold by all Builders' Merchants and Colour Houses. If any difficulty is experienced in obtaining

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the Proprietors will be glad to furnish the name of their nearest local agent.

Sole Manufacturers:

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(ESTABLISHED 1848),

ST. GEORGE'S WHARF, GRAND SURREY CANAL,
Camberwell, London.

Telephone—1119 HOP. Telegrams—"OGMORIAN," LONDON.

Try "CEELINKOTO." Its great advantages will be at once apparent.

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REGD.

Wood Preservative
Antiseptic
and Disinfectant

Undoubtedly the Best Wood Preservative known

Cheaper and more effective than paint.

Invaluable for the protection of Wooden Buildings, Fences, &c.
Gives a nice nut-brown colour.
Horses will not bite wood treated with it.
Has been proved a success for the last twenty years in this Country and is used regularly on many of the largest Estates.

C. A. PETERS, Ltd., DERBY.

116, NEWGATE STREET, LONDON, E.C.
And 8, CASTLE STREET ARCADE, LIVERPOOL.

Agents for Scotland:
The Glasgow Patents Co. Ltd., 120, Great Wellington Street GLASGOW
Agents for Nottinghamshire and Lincolnshire:
W. Robinson, (Nottingham) Ltd., 7 & 9, Victoria Street, NOTTINGHAM
Agents for Leicestershire:
W. Robinson, (Nottingham) Ltd., Churchgate, LEICESTER

ing, for the Finchley United D.C. Sketch specification, giving particulars, may be seen, and form of tender obtained, on application to the Engineer and Surveyor, Council Offices, Church End, Finchley, N. Tenders to be delivered to E. H. Lister, clerk.

May 30. **FARNBOROUGH.**—Supply of:—Broken granite (British), tar-macadam, Portland cement, pennant kerbing, and hire steam roller and scarifier, for the U.D.C. Specifications and form of tender may be obtained from J. E. Hargreaves, surveyor, Town Hall, Farnborough, Hants.

May 30. **LYE AND WOLLESCOTE.**—Street paving and surface water drainage in their district, for the U.D.C. Plans and specifications may be seen and forms of tender obtained at the office of the surveyor to the Council, H. P. F. Weaver, Bank Chambers, Lye. Tenders may be separately addressed to W. Stanley Mobberley, Clerk to the above Council, Bank Chambers, Lye. Approved sureties will be required for the due performance of the work.

May 30. **CAMBERWELL.**—Kerbing and York paving the footways in Peckham Rye West Side (from Barry Road to Nigel Road); also for roadway paving (patent or otherwise) to specification as submitted by contractors, for the B.C. Full particulars and form of tender can be obtained from Wm. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E. Contractors are invited to state the roadway paving they are prepared to lay and their conditions as to maintenance for a term of years. Tenders to be delivered to the Town Hall, Camberwell, S.E., addressed to the Works Committee.

May 24. **STROUD.**—Supply of Clee Hill stone, Tytherington stone, and Chepstow stone, for the twelve months ending March 31, 1911, for the U.D.C. Tenders should be sent to E. Northam Witchell, Clerk. Samples of the stone to be supplied should be sent to the Council Offices, Town Hall, Stroud, for inspection.

June 25. **LEWES.**—Supply of 600 tons of 2in. broken granite, 150 tons of coarse granite screenings, and 500 tons of broken surface picked flints, for the T.C. Forms of tender and specification may be had and any further information obtained at the Borough Surveyor's Office, Town Hall, Lewes. Tenders must be left at the office of Montague S. Blaker, town clerk, Town Hall, Lewes.

MISCELLANEOUS.

May 24. **ANDOVER.**—Supply of the following, for the T.C.:—Heavy cast-iron coated water pipes, jointing lead, and sundry valves and fittings; 9in. and 6in. Dorset stoneware plain and patent jointed socket pipe and junctions; best quality building bricks, cement, ventilating pipes, macadam, manhole covers, flushing doors, etc.; deal timber and navvy barrows; repairs of wood fencing and repainting of water works engine houses; the overhauling and reseating of pump valves at the waterworks. Each tender is to be in accordance with a specification, which may be seen upon application at the Surveyor's Office, Town Hall, Andover, and is to be accompanied by a cheque for £2 2s. as deposit. Tenders to be sent to T. E. Longman, town clerk, Andover.

May 28. **LONDON, N.**—The following during year ending June 30, 1911, for the Finchley U.D.C. (1) heavy castings; (5), gravel, hoggin, and flints; (6) broken granite; (6a) hardcore; (6b) crushed shingle; (9a) lias lime and Portland cement; (9b) Buxton and grey lime; (10) stoneware pipes and goods—(a) London make, (b) country make; (11) removal of dust and house refuse (for the whole district or separate wards); (12) slab footway paving and tarpaving; (13a) cartage of materials to and from railway stations; (13b) general cartage, including horsing water vans, brooms, scrapers, etc. Forms of tender, conditions, and full particulars may be had on application at the offices. Tenders must be addressed to E. H. Lister, Clerk, Council Offices, Church End, Finchley, N.

May 30. **BRENTWOOD.**—Cleaning and Painting Works at High Wood School, Brentwood, Essex, for the Metropolitan Asylums Board. Contract and specifications prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., Engineer-in-Chief. The conditions of contracts, specifications, and forms of tender may be inspected at the office of the Board, Embankment, E.C., and can then be obtained upon deposit of £1. Tenders must be delivered at the office of the Board.

June 6. **MANCHESTER.**—Supplying and fixing tiled dados at the Brookdale Park Municipal School, Newton Heath, and the Moseley Road Municipal School, Fallowfield, Manchester, for the Education Committee, in accordance with the specification, which may be obtained at the offices in Deansgate, Manchester, on a deposit of £1 1s. Tenders and samples of dados must be delivered at the Education Offices. Cheques to be made payable to the Accountant, Education Offices, Deansgate, Manchester.

June 7. **LONDON.**—Construction of a bridge over the waterworks channel of the River Lea for the L.C.C. Drawings, bills of quantities, form of tender, &c., may be obtained on application to the Chief Engineer of the Council, Maurice Fitzmaurice, C.M.G., at the County Hall, Spring Gardens, S.W., upon deposit with the cashier of the Council of £3. Full particulars of the work and conditions of contract may be obtained at the County Hall before the payment of this fee. The contractor will be bound to pay to all workmen employed by him in and about the execution of the contract, or any part thereof, wages at rates not less, and to observe hours of labour not greater, than the rates and hours set out in the Council's list, and such rates of wages and hours of labour will be inserted in and form part of the contract by way of schedule. Full particulars of the Council's Standing Orders on these matters are given in the L.C.C. Gazette.

TO CONTRIBUTORS.

Owing to the very large number of voluntary contributions submitted to the Editor, it has been found desirable to make the following regulations:—

1.—Intending contributors are advised to send a preliminary letter before forwarding articles and illustrations. The non-receipt of a reply within one week is to be taken as a polite negative. MSS. and drawings in all cases should be accompanied by sufficient stamps to cover return postage.

2.—The Editor declines to take any responsibility for the safety or return of contributions submitted, although every care will be taken where these regulations are complied with.

3.—Each MS. and illustration should bear the name and address of the owner or sender.

THE LONDON DRAWING & TRACING OFFICE (Estd. 1888.), 98, GRAY'S INN ROAD, W.C. (Adjoining Holborn Town Hall.
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Sole Makers of
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Keene's and Parian Cements, Gypsum
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Draycott-in-the-Clay, SUDBURY,
Nr. Derby, M.R.R.
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Telephone: Nat. 544, Derby.
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ROOFING.
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ESTABLISHED 1851.
SOUTHAMPTON BUILDINGS, HIGH HOLBORN, W.C.
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allowed on Deposit Accounts.
2 PER CENT. INTEREST
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OPENING GEAR, LEADED GLASS,
ARCHITETURAL METAL WORK,
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Works:— (Tele: Hop 1980.)
LAMBETH IRONWORKS, 54, Ethelred St.,
Lambeth, S.E.

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TILES (ROOF AND FLOOR)
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WINN NOSTELL.
Tel. No.—
66 WAKEFIELD
Representative—
FRANK TALBOT,
Walton, nr. Wakefield.

THE ARCHITECTS' & BUILDERS' JOURNAL.

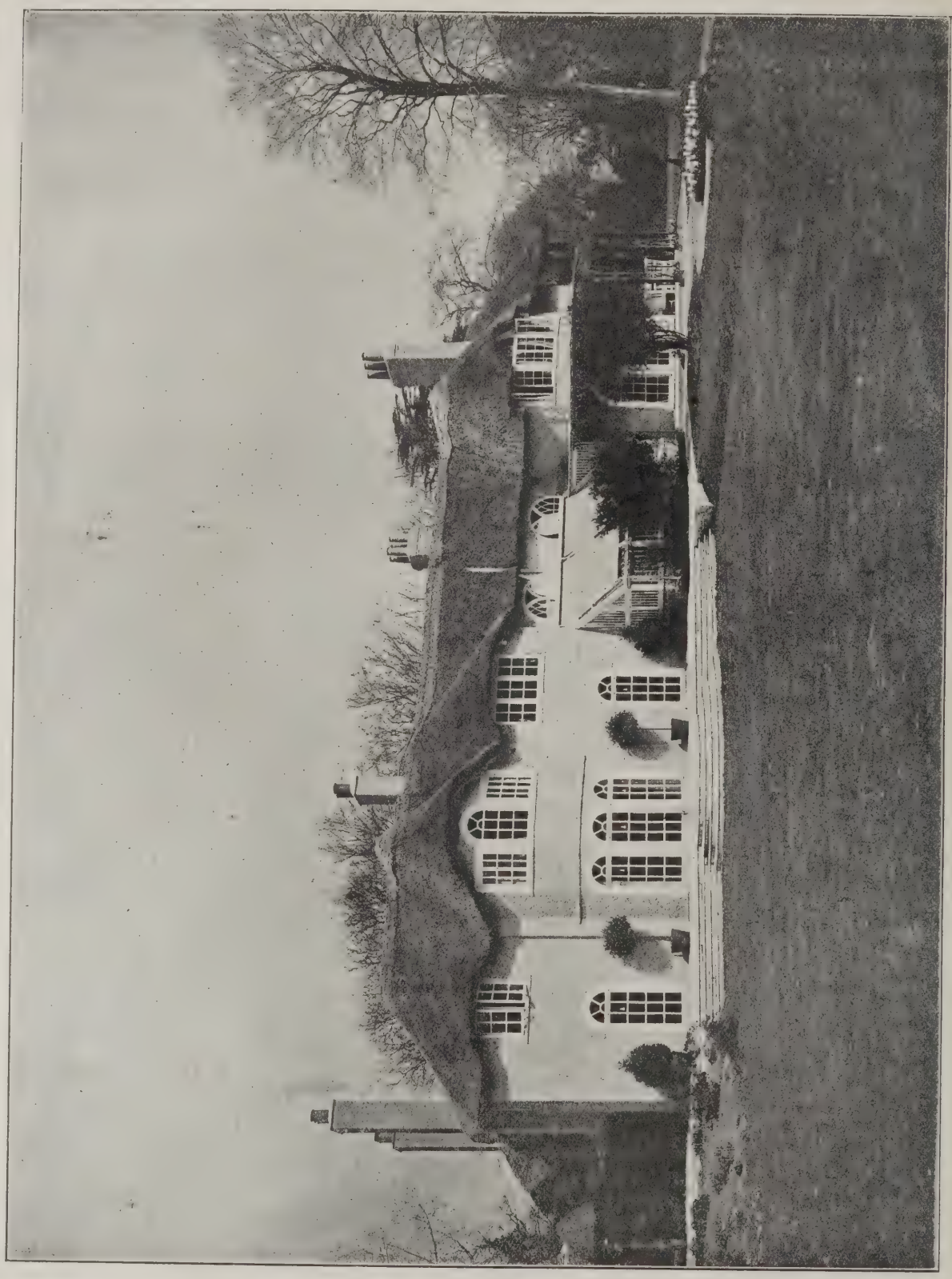
WEDNESDAY,
MAY 25th, 1910.

Volume XXXI. No. 799.



Thin red facing bricks were used for the facings, and the roofs are covered with old tiles and old Horsham "heeling." The woodwork throughout is of oak.

WALSTEAD HOUSE, LINGFIELD, SUSSEX. VIEW FROM THE DRIVE. E. TURNER POWELL, F.R.I.B.A., ARCHITECT.



ADDITIONS TO BLACKBROOK GROVE, FAREHAM. WALTER CAVE, F.R.I.B.A., ARCHITECT.

The additions to this picturesque house consist of a large ball-room, 40ft. long by 20ft. broad, with three bedrooms over. The exterior is finished in cream-white rough-cast, and the roof is thatched to agree with the old building.

THE ARCHITECTS' & BUILDERS' JOURNAL.

MAY 25, 1910. *CAXTON HOUSE, WESTMINSTER.* VOLUME 31. No. 799.

Note: The List of Contents will be found on Page V of the front advertisements in this and subsequent issues.

Japanese and English Art.

THE "White City" has been thoroughly cleaned and brightened up for the Japan-British Exhibition, as it is called, and looks as picturesquely attractive as ever. The doubt we imply in regard to the propriety of the title, so far as the Art portion of the Exhibition is concerned, arises from the fact that, while we may conclude that the Japanese section of the Exhibition represents the best that modern Japanese art can produce, the English portion of the show, as far as the pictures are concerned, is but a kind of second-best exhibition of English painting, a sad descent from the splendid show of the Franco-British year. Sculpture, on the whole, is better represented than painting. Nevertheless, there is sufficient material here to afford matter for a contrast between the exceedingly diverse methods and aims of British and Japanese art; methods and aims so different that one has the feeling that both cannot be right; at all events that interesting questions are suggested as to the objects of the art of painting.

European Movement in Japanese Art.

We may mention at once that one rather curious incident in the exhibition is a small room full of pictures by Japanese artists who are obviously aiming at Europeanising their art. There are landscapes here, not of the first order, but fairly good, which might be found in a London picture exhibition, and which differ absolutely from the typical Japanese landscape in which detail, treated more or less conventionally, is everything, and aerial effect and linear perspective are almost unknown; and there is a half-length portrait of a "Young Poetess," by Mr. Ishibashi, of Tokyo, which looks like a not unsuccessful attempt to imitate the style of Mr. Shannon; while the large, crude picture entitled "Soft Breezes," showing some figures on the deck of a ship, seems to be inspired by the French *plein-air* school. There is even a half-length nude, very delicately painted, a kind of thing absolutely at variance with all our usual associations with the art of the Japanese, who, while from all accounts they exhibit a child-like simplicity and innocence in respect of nudity in real life, seem entirely to ignore it in their national style of painting, in which costume is everything. Considering the manner in which the Japanese are Europeanising their dress as well as other institutions, this kind of attempt to Europeanise their art was bound to come sooner or later. How far it is likely to extend one cannot yet predict; whether it is an advantage or not will depend on the view one takes of native Japanese painting as already existing.

Architectural Exhibits.

Architecture is rather largely represented in the Japanese exhibits; and although a European style and European architects have been employed in one or two recent public buildings in Japan, all the architectural exhibits in the Japanese section are racy of the soil, and, with one exception, are all represented by most beautifully executed wooden models, which, as examples of architectural modelling, are a study in themselves. A number of these are arranged in the Central Hall of the Art building, all to the same scale, and all dated. These are very interesting as examples of the native Japanese style of architecture at different dates. Considering the differences of date, however, the difference or the development in style between buildings of one century and another is not very obvious to the English eye. All have the same high roofs with the hips canted up at the angles, and the same heavy bracketed-out eaves. Possibly to the Japanese eye models of English Gothic of different dates would convey the same impression of general similarity. At all events, there seems to have been a very persistent general character in Japanese building from century to century; an illustration of the prevalent conservatism of the East. It is a somewhat barbaric school of architecture, and it is totally destitute of repose or of monumental character; on the other hand, it has the interest of a style of building arising naturally out of the tastes and habits of life of the people, and the nature of the most available material, timber. Besides the models of ancient Japanese buildings there is, in the side galleries, an interesting set of large-scale working drawings of a design for a modern mansion in Japan. The ground-plan is given in considerable detail, showing the grouping of rooms for residence, for business, and for the children. The plan is arranged with four inner courts for light and air, not symmetrically placed; on the contrary, symmetry of plan seems to be studiously avoided, and the very outline of the plan, with one side continually receding in a series of notches, so to speak, is characteristically Japanese. Another incident to be noted in the plan is the provision, in two or three of the rooms, of a recess marked "decorative shelves," i.e., we presume, shelves for the arrangement of decorative objects, without which, apparently, a Japanese living-room would be incomplete. A hint for English architects might be taken from that. M. Iida, of Tokyo, is the architect.

Vagaries of the Corridor.

As Bacon classed some ideas as "Idols of the Cave," so we may class some of the displays on the long bridge connecting the Exhibition with Uxbridge Road Station as "Vagaries of the Corridor." One of these shows, indeed, is worth a better place, and is the most important of the Japanese architectural exhibits, and should not be missed. This is the very large model, filling a bay to itself, of the great shrine of Itsukashima, on a sacred island the scenery of which is painted in on the walls of the partitions as a surrounding background to the shrine and its extensive architectural dependencies. This, which is not in the catalogue of the art exhibits, is a most beautiful piece of work, which has occupied its author, Mr. Takahoshi, for ten years, and has gained him, apparently, the special thanks and encouragement of his Government. With this exception, the approach corridor in question is not of a kind to encourage the judicious visitor, and when proceeding between a series of panoramic views of Japanese scenes with artificial foregrounds in the round, and panoramic

views of English watering-places, one is tempted to adopt the lines from Southey's ballad—

> "For things like this, you know, must be
> At every famous victory"—

or at every popular exhibition. Another most singular fancy is that two or three large passage rooms are painted all round with full-size elevations of the different classes of Japanese railway carriages, while the window spaces of the carriage-elevations are utilised for small paintings (European style) of Japanese scenes—a most unsatisfactory medley. It is a common thing for foreign countries, at an exhibition of this kind, to exhibit specimens of their national railway rolling-stock; it would have been more to the purpose to have sent some of the actual carriages than to make a mural decoration of their effigies. In one of the artificial scenes the visitor may see a full-size representation of the typical Japanese form of timber bridge, a footway curved in an arch formed upon a framed structure of timber, with uprights driven into the river-bed; a form of timber bridge which may be described as at once the most picturesque and the most unscientific ever imagined. Structurally, it is perfectly childish, requiring (even for a small stream) the driving of piles into the bed of the stream, instead of clearing it with a structure requiring no intermediate supports; and yet it is so picturesque that one cannot help admiring it. Further on the London County Council exhibit models of two of their bridges over the Thames, as examples of English bridge building; it would have been more to the purpose had they exhibited Putney Bridge alone, which is a really fine one, without the inferior and tawdry structure which accompanies it.

Japanese Art Galleries.

In the range of galleries round the Central Hall which are devoted to Japanese art we may endeavour to come to a definite opinion in regard to Japanese *versus* European art. The catalogue seems to be very imperfect, but most of the paintings have written titles affixed. There is a large picture of many figures, entitled "A Surprise," apparently a social function disturbed by an alarm of the approach of some enemy. There is plenty of expression of movement and energetic action among a crowd of figures, who are painted in strong colours, but almost as flat as if they were figures cut out of pasteboard, in a scene of which the attempt at perspective effect is of the most naïve description. It is a totally different sort of thing from what we call a picture in England. Is there anything in it of value that European painting does not achieve? On the whole, we think not. There may be said to be the principle of reducing a scene in life to decorative effect; it may be argued that Greek vase-paintings do the same. But the Greek vase-painting is in one plane, and, moreover, it is really intentionally decorative in spacing and arrangement. This Japanese scene is not: it is a jumble of lines and planes, in which the separate figures are flat and without modelling, but the whole scene is designed in the round. On the whole, we conclude that this is a barbaric manner of representing a scene in painting, and that, under the present conditions of intercourse between nations and the increased prevalence of a European standard of culture, such an art is bound to go before long. The Japanese power of representing life in painting seems to stop short with the animal world; it fails in dealing with human life, or, at the best, it can only portray its grotesque side. Take the sculptures in bronze and ivory, mostly on a small scale. Many of these show the greatest cleverness in modelling, and a power of expressing humorous or simple ideals in figures. The small seated figure of "A Village Maid at Lunch," for instance, is a very pleasing bit of rustic character in sculpture, but it never gets further than that. There is nothing of dignity, nothing of beauty of line, in the sculpture. The ivory statuette entitled "A Beautiful Woman," seems to the English eye, in connection with such a title, only like a bad joke.

As soon as it comes to the painting of animals it is quite different. There we realise the remarkable power of the Japanese in painting both character and detail, and in making animals part of a decorative scheme. And, on the whole, this seems to be a more artistic way of treating animals than that of merely making them into pictures, after the manner of Landseer and Mr. Rivière and Mr. Blinks, and other English painters. And the curious thing is that the animals are splendidly drawn, whereas the power of accurate drawing seems to forsake the Japanese artist as soon as he gets to the human figure. It almost seems that while he takes animal painting seriously, he takes man as a joke.

We must say, also, that we think there is a great deal of nonsense talked about Japanese landscape painting. They do not paint landscape, they paint bits of decorative detail culled out of landscape, sometimes very charming as such. But their conventional representations of clouds and water are the art of the nursery. There is a large piece of work in the Exhibition supposed to represent running or foaming water and trees. The representation of water is absurd, and it has not the merit even of being decorative in effect. The admiration for this kind of thing among some English people is a mere affectation, and will come to the end of all artistic affectations. It is when we come to the purely decorative treatment of such things as textiles and lacquer, where no imitation of Nature can be pretended, that Japanese work is at its highest. There we can all concur in admiration. There is a great deal of splendid applied art of this class in the Japanese Galleries which is well worth a visit. In decorative workmanship they are supreme. It is when they come into touch with human nature, and with the scenery of nature in its broad and poetic aspects, that they fail. In regard to these things they are still a nation of children, and look at man and nature from the point of view of children.

The English Art Galleries.

As already intimated, the English Galleries do not represent English painting of to-day at its highest; a good many of the pictures sent there rather give the impression that they are there more for the good of the painter than of the public. There are some well-known works, however, such as Orchardson's "Napoléon at St. Helena," which we are glad to see again. There is (what is of special interest at the moment) Sir L. Alma-Tadema's portrait of the late Professor Aitchison; Mr. Beaumont's fine and thoughtful picture "Silent Music," at the Academy (under some other title) a year or two back; Mr. Sims's "Island Festival"; and Mr. Wetherbee's "Praise of Spring." Among some pictures that are new to us is a very fine landscape, "Breezy Lowlands," by Mr. James L. Henry, and a painting of the Temple of Concord, at Girgenti, by Mr. A. H. Elphinstone. The Retrospective Section is a fine collection, containing a remarkable Turner, a remarkable Lewis, and a remarkable Constable; one of the finest examples we have ever seen of George Morland; and Burne-Jones's "Mirror of Venus" and some of his sketches and studies, which one is always glad to see. Among some patriotic pictures of old date in one of the small galleries, a picture of the "Death of Nelson" is an odd illustration of the careless way in which painters of a century or two back regarded the realities of a scene. The painter has made quite a lofty apartment of the space between decks, in which, in fact, a man could hardly stand upright. We have become more conscientious than that in the present day, at all events.

The room devoted to architectural drawings is well filled with a representative collection mostly of designs which are already known and have been carried out. The Central Hall contains a large collection of modern English sculpture, the best of which, however, is already known from exhibition elsewhere. Mr. W. S. Frith's large model of "The Fountain, Hever Castle," which fills up one end of the gallery, we have not before seen; it is an important composition rather in the French manner, a fountain basin with Cupids on the rim, behind which a balustrade rises in a curve, with two figures of nymphs seated at the top. It is noticeable as a more

important work of sculptural decoration than one generally meets with in England as a private commission; in France such large decorative schemes are common enough.

The Paris Salon.

We may call attention to the fact that on another page in this issue we have given a short account of the principal attractions of this year's Salon, arranged in such a way as to assist visitors in finding any work they wish to see—often no easy matter at the Salon. We desire to encourage those of our readers who are interested in art generally (and all architects ought to be) to visit the Paris Salon more. Most of us are far too insular in our ideas about painting and sculpture.

The Mausoleum Chariot in the British Museum.

The last issue of the Journal of the Hellenic Society contains a long article by Mr. Knowlton Preedy on the question of the correctness of placing the statues of Mausolus and Artemisia in the chariot, as they now stand at the British Museum. Dr. Murray's decision to place them so was a good deal canvassed at the time; but, on the whole, there is more to be said for it than against it. One of the arguments—that the statues are on a larger scale than the horses—we should call incorrect. As Dr. Murray remarked, in reply to one of his critics, few people realise how very large a horse's head is compared with a man's. It seems to be admitted, even by the objectors, that the position in which the figures were found was in favour of their having some connection with the chariot. One of the objections is that the figure of Mausolus leans somewhat, instead of assuming the upright attitude which would be expected in the chariot position; but the leaning does not amount to very much, and might be explained by the position of the arms and hands, if they were not destroyed. In fact, it may be observed, from Mr. Preedy's own illustration, that the two figures lean slightly towards each other, which would be a natural position if they stood in the chariot together. We are inclined to think that Dr. Murray's solution is still the more probable one, and that, at all events, the reasons against it are weak. But Mr. Preedy's paper is an interesting analysis of the subject, and worth reading.

The St. Paul's Bridge.

We regret to see that there is already evidence that the recommendations of the Institute of Architects in regard to St. Paul's Bridge are likely to have no effect, at all events in respect of the line to be taken by the bridge and the road up to it. The Institute recommended, what everyone with any architectural perception ought to see, that the bridge should be built on an axial line leading up to the centre line of the crossing of St. Paul's Cathedral, so as to have the south transept and its portico, and the dome rising above it, centrally at the end of the vista. It is now pretended by the Corporation that this will "destroy the value of the bridge" in the matter of access to it on the north side, and that the proper line should be to carry the line of Aldersgate Street past the east end of St. Paul's, and so southward, and that this line would take the road on the south side up to the junction of Marshalsea Road with Southwark Bridge Road. Marshalsea Road is a small street, and there is no reason why it should be considered. We have laid down the line of road as proposed by the Institute on the map, and find that, taking the bridge and its approaches at right angles with the centre of St. Paul's will just bring it, on the south side, to the most convenient point for its continuance along Southwark Bridge Road. The objection that the crescent road on the south side of St. Paul's Churchyard is too narrow could be met by purchasing property on its south side, and widening it. The Corporation talk of purchasing street property elsewhere to make their line of road; why cannot they purchase it at the right place, just where it will make a great public improvement? It is too bad that we should be faced with another London blunder in laying out, and lose an opportunity for a grand effect, because the authorities concerned have no perception as to the value of architectural effect, and cannot even understand it when it is pointed out to them.

The Newer New York.

"New York will be a nice town when it is finished." So says the "New York Herald," which ought to know, but which ought not to recall stale jests, even as an introduction to such interesting information as it gives us concerning the changes that have been, are being, or are about to be made in the U.S.A.'s restless capital. The subways brought tremendous influxes of population, and caused swift and unexpected developments. Then, "more bridges were required—more everything." Thirty-fourth and Forty-second Streets, formerly quiet residential quarters, have been added to the busy shopping streets. And now Fifth Avenue, a "staid, respectable old street, where you used to see liveried servants in the doorways of the private mansions, is going to become a Great White Way, to rival Broadway at its gayest point." It is to be "transformed into a boulevard of light." Thousands of powerful street lamps are to make the sidewalks and roadway as light as day, and every store window along the entire distance of nearly two miles will be brilliantly illuminated "by agreement of its merchants." It is anticipated that then thousands of people will throng its sidewalks and promenade up and down after the fashion of Parisians on some of the night boulevards in the French capital. "Seeing Fifth Avenue by night" is to become a recognised pastime. But the avenue "will maintain its dignity." It will not have the ultra-picturesqueness of Broadway; there will be no hideous electric signs advertising whiskeys and petticoats." Apparently the railways will run trips to it. A "double-decked subway" is in contemplation; "the express tracks will be laid in solid rock below the local tunnel, instead of building four tracks on one level." The local railway will follow the undulation of the surface, while the express track will be a straight bore. Then surely the newer New York will be replete with bores of every variety.

The Liability of the Agent.

The old question of the liability of an agent towards a contractor came up again in a county court case heard at Sheffield a few days ago. A builder and contractor sued an engineer for several sums, amounting in all to nearly £60, for work and labour. The defendant denied liability, stating that, as he had in the first instance told the plaintiff, he was acting on behalf of a company. Defendant's counsel, dealing with the point that defendant had sent written acceptance of the contract, argued that in such cases it was the invariable practice for an engineer or architect to transact business in his own name, and that to make such a person liable "would be a very big assumption." For the plaintiff it was argued that by Section 42 of the Companies Acts, 1862, if a person acting on behalf of a company signed an order, and that order did not contain the name of the company, the agent was liable to a fine of £50, and was also personally liable for the goods he had ordered. The judge held that the section quoted did not affect the present case, which merely raised the question of fact. He could find nothing to suggest that plaintiff ever thought of charging defendant up to the time he sent in his bill, which he then sent where he thought he was most likely to get the money. Judgment was given for the defendant. This is the usual termination of such cases. If it were otherwise, the position of intermediaries would be intolerable. The moral for the contractor—who, of course, always has our sympathy when he thus suffers loss upon loss—is that when he is unfortunately compelled to sue for his money, he should take care to bring the right party into court, since it is clear that, in the majority of such cases, the intermediary will not, and cannot, be held liable; and, indeed, it is difficult to see on what principle he should be made to pay for work that is done for the third party, whom he merely represents professionally.

NOTES AND NEWS.

The Late Professor Aitchison.

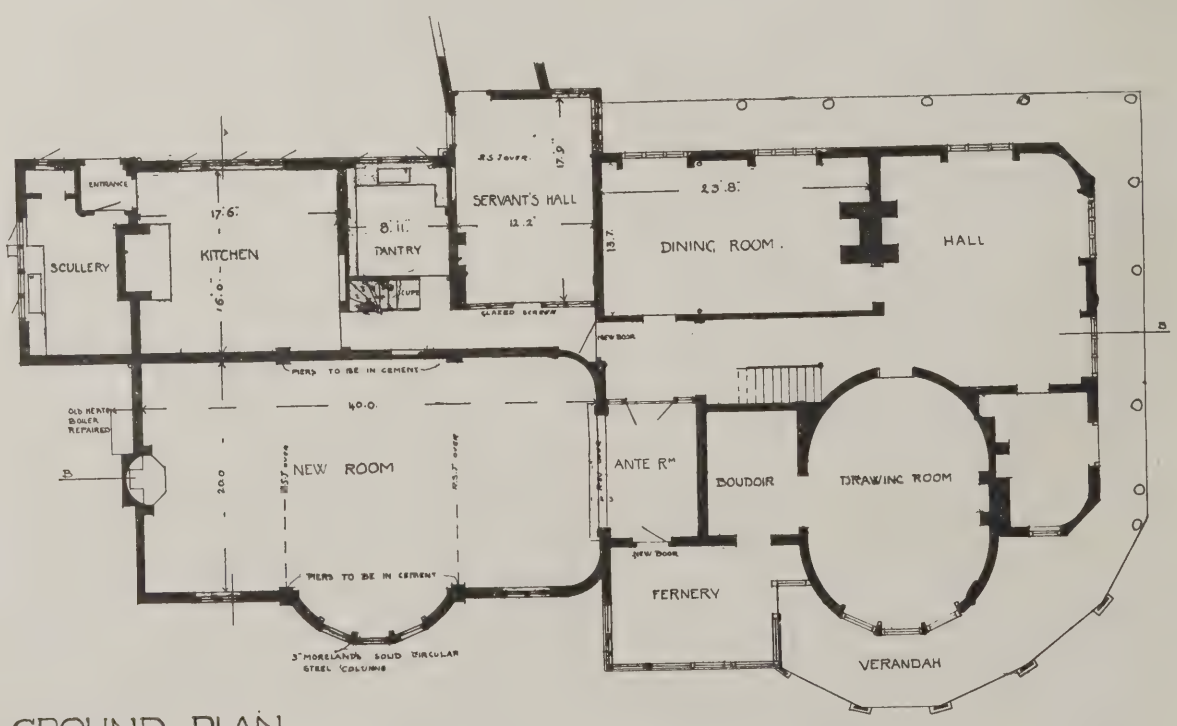
Professor Aitchison had practically retired from active work in connection with architecture for a good many years back; but the news of his death on Monday week, at the age of 85, gives occasion for some remarks in memory of one who filled rather an exceptional place in the profession. The son of an architect who was engaged on work more generally connected with engineering than architecture—his father was architect to the St. Katherine's Dock Company, and a designer of railway stations on what was then called the London and Birmingham Railway—it would not have seemed that he started with any special leaning towards the artistic side of architecture. And yet George Aitchison was, throughout his life, and from an early period, the friend and companion of artists—painters, sculptors, and architects—more than any other class of men. He made, at an early age, an architectural tour with Burges, one of the least professional of architects, and was the lifelong friend of Leighton, for whom he built the "Arab Hall," which is the architectural work by which many people know him best. Professor Aitchison was a student of colour in architecture, especially in regard to mosaic; but he had carried out engineering work for St. Katherine's Dock Company, and was district surveyor for a London district. With these rather diverse acquirements he combined a very extensive knowledge of architectural history and literature, and a special knowledge of the various forms and editions of Vitruvius. Though his executed work in architecture did not amount to very much, as far as quantity is concerned, his varied knowledge and artistic friendships gave him an important position in the architectural world, and led to his appointment as Professor of Architecture at the Royal Academy, where some of his earlier series of lectures, on Roman architecture especially, were of great value, though it cannot be denied that he continued his lectures to a period when his health did not permit of his doing justice to his subjects. He lived a very quiet life in his house at 130, Harley Street, where his study was a room characteristic of the owner, containing shelves of learned works on architecture, specimens of mosaics and other *disjecta membra* of decoration, and piles of drawings and manuscripts which occupied every chair and table in the room. Sir L. Alma-Tadema's portrait of him at the Institute of Architects (of which he had been one of the Presidents), showing him seated with a book (probably the beloved Vitruvius) in one hand, and the other hand with a finger raised as if arguing a point, is not only a good likeness, but is very characteristic of the man, and of the special place which he occupied among the architects of his day.

The Victoria Memorial at Calcutta.

There seems to be rather an unfortunate fate about the great memorial hall which is to be erected at Calcutta from the designs of Sir William Emerson. The architect has already suffered a good deal of annoyance and misrepresentation in regard to some trouble about the foundations, which seems to have arisen mainly from the neglect of his own advice and directions. Now the news arrives that the lowest tender for the erection of the building, £364,662, is considerably in excess of the intended and prescribed limit of £333,333 (or 50 lakhs of rupees, Indian currency), and the Committee have recommended a number of omissions from the original design in order to bring it within the stipulated cost. We do not hear whether these are omissions of features in the building, or omissions of decorative detail; but in either case this course seems most unsatisfactory and most unfair to the architect, and very unlikely to produce a satisfactory result in any case. One member of the Committee has dissented from this view, maintaining that, as the funds were insufficient, it would be much better to erect a smaller building on a design complete in itself, than to spoil the first design by omissions for the sake of economy; and this view seems to have received a good deal of support from public opinion outside the committee. If the requisite amount of money really cannot be raised, a smaller but complete design would certainly be preferable to erecting the original one in the incomplete manner suggested.

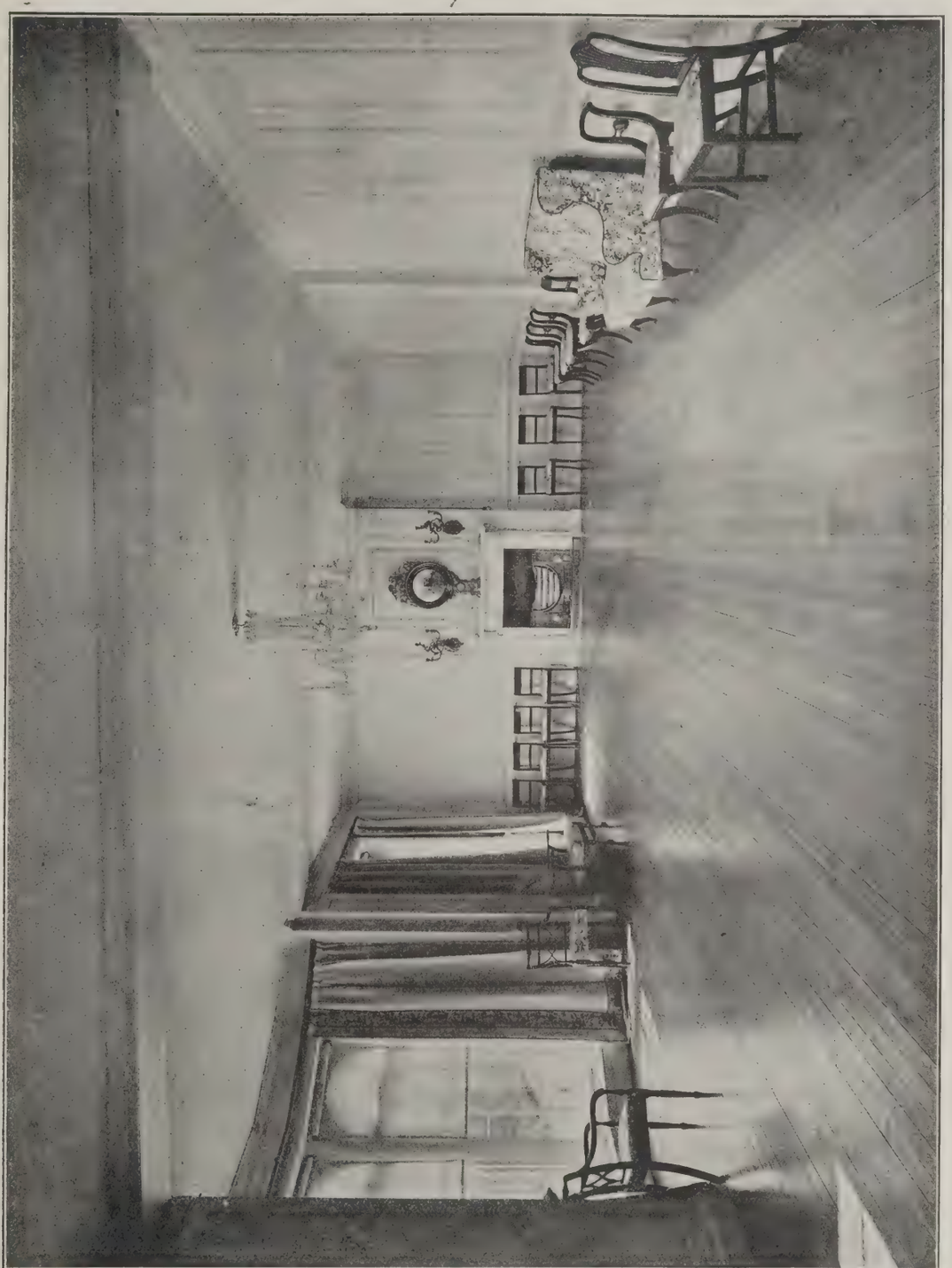
Cambridge Museum of Archæology and Ethnology.

The foundation stone of the Museum of Archæology and Ethnology at Cambridge was laid recently. The new building has been designed by Mr. T. G. Jackson, R.A., to accord with his adjoining buildings, the Squire Law Library, and the Sedgwick Memorial Museum.



GROUND PLAN

ADDITIONS TO BLACKBROOK GROVE, FAREHAM. WALTER CAVE, F.R.I.B.A., ARCHITECT.



The ball-room has an oak floor and a grate and chimney-piece of eighteenth century pattern. The floors are panelled in pine, painted white. The casement doors open on to a new stone-paved terrace.

ADDITION TO BLACKBROOK GROVE, FAREHAM: THE BALL-ROOM. WALTER CAVE, F.R.I.B.A., ARCHITECT.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

A Cottage Hospital, Holkham, Norfolk.

The small cottage hospital illustrated on pages 516 and 517 is being erected by the tenants of the Holkham Estate, in memory of the late Earl of Leicester, K.G. The site adjoining Holkham Park is delightfully situated, and almost ideal for a building of this special character, the subsoil being gravel above chalk, and the ground gradually falling to the south with a road on the northern boundary of the plot. The plan, which is somewhat original in its outline, is in the shape of a "Y," the two wards forming the short arms, while the administrative portion of the building forms the stem, with the main entrance to the north. All the advantages of aspect and cross ventilation are thus gained for the wards, which are 12ft. high, and amply ventilated by the large windows in the end gables, in addition to those at the side of each bed. The verandahs for patients are so planned that whichever direction the wind is, shelter can be obtained. A small duty room is arranged between the wards for supervision, from which there is at the same time command of the main corridor. A "cut off" is formed between the administrative portion of the building and the patients' quarters by the corridor running east and west, with external doors at the ends.

The whole of the ground floor is being laid with patent jointless flooring with core skirtings laid by Messrs. George M. Callender and Co., Ltd. Strict economy, coupled with efficiency, had to be studied in the design and construction of this building, the total cost of which, including fencing, water supply, gas lighting, drives, etc., is under £1,000. The architect for the work is Mr. Leslie T. Moore, A.R.I.B.A., of 3, Raymond Buildings, Gray's Inn, London, W.C., and Mr. James Needs, of Fakenham, is the builder.

LONDON COUNTY HALL FOUNDATION WORKS.

The following memorandum of items noted at a recent visit to the London County Council Hall Foundation Works is contributed by one who has exceptional knowledge of such work, and who has made close observation of the details here described.

The Site.

The L.C.C. acquired the premises between Belvedere Road and the Thames, formerly occupied by (a) Peter Brotherhood's engineering works; (b) Crosse and Blackwell's riverside pickle and jam factory; (c) the Lambeth Borough Council's yards, stables, and premises, which were formerly in the possession of Messrs. Maudslay, the well-known marine engineers; (d) the premises known as Westminster Bridge Wharf; (e) the row of shops abutting on the north side of the eastern approach to the bridge.

Most, if not all, of these premises, stood upon a site known for centuries as Pedlar's Acre, by which name the road itself was commonly known until it was decreed that it should be called Belvedere Road. Legend has it that some 350 years or more ago, a pedlar with his dog appealed for assistance and shelter to the priest in charge of Lambeth Parish Church, and having been kindly treated he demised at his death, in gratitude for this small benefit, some land bordering the river and a little way north of Lambeth Palace and Church. Since that time this land has been the property of the Parish of Lambeth, until its late compulsory acquirement by the L.C.C. for their County Hall site.

In addition to the above-named premises, the Council have acquired, with a view to ultimate extension, the new premises, northwards, at present in the occupation of Messrs. Holloway Bros., Ltd., and beyond them again there are the old L.C.C. Works Department premises, of which the Council are already the freeholders, so that future requirements would seem to be amply provided for.

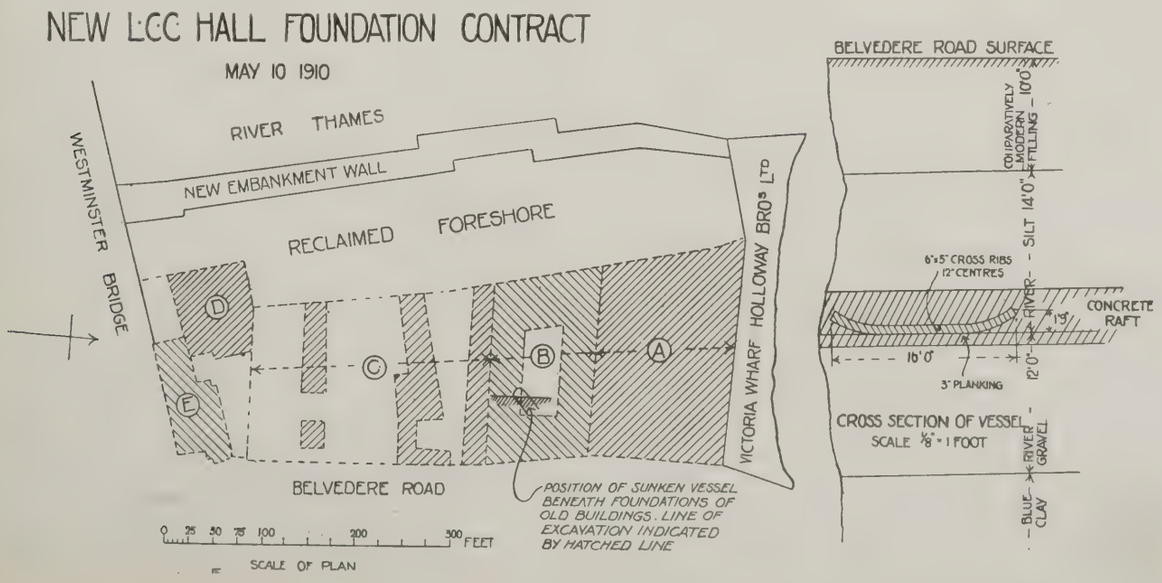
Besides the land area at present involved, comprising a little more than 2½ acres, the Council have reclaimed foreshore to the extent of nearly two acres more, making over four acres as the area of the land to be covered by the buildings now in contemplation, and the embankment wall, etc.

Excavation.

The whole of the site is being removed to a depth of about 25ft. from the street level in Belvedere Road, and the strata dealt with has turned out to be a top layer of comparatively modern rubbish filling of 10ft., followed by 14ft. of river silt, hardened into a clay of the consistency of cheese, at the bottom of which the river gravel is reached, one foot of which is removed, and upon the level thus reached the concrete raft, 5ft. thick, is to be laid, on the surface of which the nine great blocks comprising the greatest town hall in the world will presently be placed.

Discoveries.

Various small objects of interest have been unearthed, but in no case either so ancient or so numerous as might from the situation have been expected. There, however, has come partly to light a sunken ferry barge of exceeding interest, the date of which has not yet been determined, but which probably belongs to the period of the Roman occupation. The point to which the excavation has at the moment proceeded has cut the vessel obliquely, as indicated upon the plan annexed, and the section has revealed a ship 16ft. width by length at present unascertained, and a depth of 1ft. 9in.,





COTTAGE HOSPITAL, HOLKHAM, NORFOLK. LESLIE T. MOORE, A.R.I.B.A., ARCHITECT

having a flat bottom, roughly represented by an inverted ellipse. It has crossribs 6in. by 5in. at 12in. centres, and an outer covering of 3in. planking, all being of oak, black and nearly perished. It is intended shortly to remove the earth down to the level of the sides, and then, under careful inspection, to clear out the remainder, so as to obtain a perfect view of the vessel before its removal, which unhappily cannot be effected otherwise than by demolition, owing to its state of decay. Some articles of interest also may be discovered among its immediate contents.

Its position in the strata above-named is at the bottom of the river deposit, and resting upon the sandy gravel. From this situation it is quite clear that it must have sunk at a time when the full flow of the river was over this spot, since which time the centre of the channel has changed, or been diverted westwards, with the result that the mud began to silt up over it, which process continuing for ages, the 14ft. of accumulation had accrued by the time that the mud bank foreshore was bequeathed by the pedlar to the Lambeth Parish.

Concrete Raft.

About one half of the material to be removed under the contract has been cleared, and the concrete raft has been begun. The Council requires the mixture to be deposited in 12in. layers, and well rammed. The lowest of these layers is being covered with a damp-proof course of washed sand, and cement $\frac{3}{4}$in. thick, above which the remaining four layers are placed, breaking joint vertically where for any cause the work has to be temporarily stopped off.

Composition of the Concrete.

The concrete is composed of broken brick and old concrete, obtained by the demolition of the old buildings and foundations upon the site, adjusted to contain two-thirds coarse and one-third fine material, with Portland cement from Strood, in the proportions of six of the aggregate to one of cement.

Mixing Machines.

It is being mixed in machines of ingenious and novel construction, invented and patented by the contractors, in conjunction with one of their managers. These machines are triangular in form, having hoppers for aggregate and cement at one end of the base, and from these up one of the sides two elevators operate, one placed over the other, the buckets from which fill themselves as they pass through the hopper bottoms, and are immediately struck off by weighted strikers, ensuring accurate measure. When the lower or aggregate bucket reaches its highest level point the cement elevator bucket immediately overhead overturns its contents upon it, whence at once the contents are discharged down the other side of the triangle, which takes the form of a trough in which are four mixing drums, each having four wings or blades, which pick up the material on its descent, and turn it completely over. The first two drums mix it dry, when it encounters a sponge pipe, the remaining two turning it in a wet state. Thence it emerges at the opposite end of the base as mixed concrete ready for depositing in position.

These machines are so placed that their tops are about at the old ground level, and the hoppers are extended upwards, and into these extended hoppers the aggregate and cement are wheeled and tipped, and the concrete is delivered at the foot into contractors' narrow railway trucks, and run away to its destination.

From the architect's and engineer's point of view, the machines appear to afford two great advantages: (1) The mixing of the concrete in small quantities at a time, ensuring the proper and regular distribution in the mass of cement and aggregate; (2) the impossibility, provided the hoppers are kept filled, of errors and irregularity in the proportions of one to the other. The cement buckets can be altered at pleasure, to suit any desired proportion of cement by increasing or reducing the thickness of the packing pieces which are placed on one side of every bucket for the purpose.

The motive power is derived from an electric motor placed on the platform forming the base of the triangle, whence it is applied by a system of belt and pinion wheels, so that all parts of the machine work at the same pace.

The output of each machine continuously worked may be taken at about 150 yards per day, but its capacity is really only limited by the ability to remove the resulting mixture.

All the excavated material unsuitable for manufacture into aggregate is being trucked and craned to the contractors' own jetties, alongside, where it is deposited into barges and taken down the river to filling up low-lying lands bordering the stream at its lower reaches.

NEWS IN BRIEF.

We have been requested by the Secretary of the Society of Engineers (Incorporated), 17, Victoria Street, S.W., to remind our readers that the last date on which essays in competition for the Status Prize can be received is Tuesday, May 31st, 1910.

* * *

New banking premises are about to be erected at Swansea for the London and Provincial Bank, Ltd., the site being opposite their present offices in Wind Street. Mr. Glendinning Moxham, F.R.I.B.A., Swansea, has been appointed their architect to carry out this work.

* * *

With regard to the recent unsuccessful application of the Society of Architects for an injunction to prevent the unauthorised use of the distinctive initials "M.S.A.," we are officially informed that the Council has decided to appeal against the decision then given.

* * *

In the case of the Hopton Wood Stone Firms, Ltd., v. Gething, which was tried in the Chancery Division of the High Court of Justice, before Mr. Justice Parker, on May 14th, plaintiffs sought an injunction to restrain Messrs. T. T. Gething and S. F. Spencer from registering a company with a name including the words "Hopton" or "Hopton Stone"; and an injunction to restrain defendants from selling their stone as "Hopton Wood Stone," or under any description calculated to induce the belief that the stone was the plaintiff company's stone or the product of the company's quarries. His lordship inclined to the view that to architects, builders, and stone merchants, the expressions "Hopton Wood Stone" or "Hopton Stone" denote the character and quality of the stone without any connotation of the seam from which the stone is obtained. He suggested that confusion might be avoided if the defendants formed their proposed company under a name including the word "New," such as the "New Hopton Stone and Marble Quarrying Company, Ltd." Defendants assented to this suggestion.

* * *

The current issue of the "Journal" of the Royal Society of Arts refers to the connection of the late King with that body. In 1863, when Prince of Wales, in response to an address presented by the Council of the society, he intimated his willingness to accept the office of President, "that he might be better able to promote the great and beneficent objects which his dear father had so much at heart, and in which he was so zealously supported by the society." In October of that year an extraordinary general meeting was held, at which his Royal Highness was elected first a member and then President of the society. For 38 years he continued to hold the office of President, and on his Accession to the Throne in 1901 his Majesty, at the request of the Council, consented to become patron of the society. In 1908 he granted it permission to prefix to its title the term 'Royal." In 1901 the Albert Medal was awarded to King Edward "in recognition of the aid rendered by his Majesty to art, manufactures, and commerce during 38 years' presidency of the Society of Arts by undertaking the direction of important exhibitions in this country and the executive control of British representation at international exhibitions abroad, and also by many other services to the cause of British industry."

As we have already recorded, the First Commissioner of Works recently requested Lieut. Sladen, the Chief Officer of the Metropolitan Fire Brigade, to report upon the arrangements for protecting Hampton Court Palace from fire, and his suggestions for perfecting the appliances received immediate attention. During the last 50 years there have only been two fires of any importance at the Palace, and in both cases they were subdued without any damage having been done to the State apartments. For many years there has been an efficient fire brigade at the Palace, commanded for 34 years by Mr. Moorman and manned entirely by employees in the Palace. The advantage of having a brigade composed of men who know every nook and corner in the labyrinth of buildings is obvious. Neither gas nor oil is now allowed to be used in the residential apartments of the Palace, electric light, carefully insulated, being installed throughout. After receiving the report of Lieutenant Sladen, Mr. Harcourt sent a special letter of thanks to the superintendent of the Palace Brigade for his long and efficient services, and spoke in the highest terms of the work of the brigade. The water mains are kept day and night at such a pressure that from any hydrant a jet of water can be thrown without pumping to the highest part of the building. There is also a fine modern steamer and escape, and every part of the Palace is connected by fire alarms with the brigade station.

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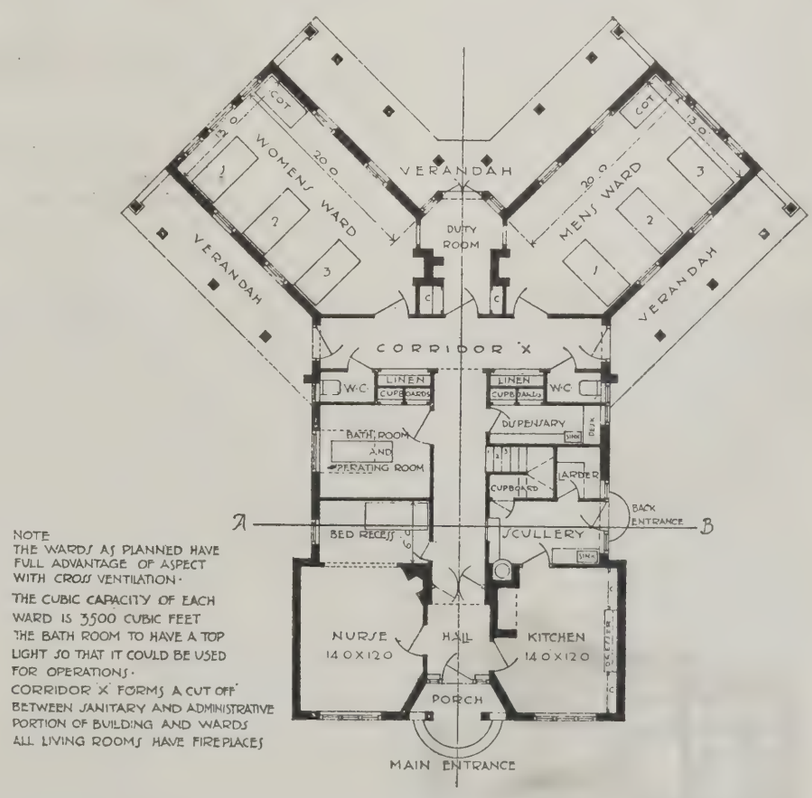
The students' work of the Glasgow School of Architecture was judged by a jury of city architects to make the annual awards. The judges were: Messrs. James M. Monro, J. L. Watson, and W. Forrest Salmon, with the professors. Mr. Monro also acted as assessor for the R.I.B.A. and for the Scottish Education Department. Four students presented works for the joint diploma awarded by the Technical College and the School of Art. The diplomés were: Messrs. Alexander Adam, Walter Alexander, Charles A. Harding, and Thomas A. Macadam. The judges met the diplomés as newly made colleagues at a luncheon given in the school, and the chairman, Mr. A. Forrest Salmon, welcomed them into the profession.

* * *

M. U. Schoop describes, in the "Comptes Rendus" of the Académie des Sciences, a new process of covering an inferior metal with a layer of a harder or more precious one. His process seems to consist in bombarding the surface with a stream of metal in a state of minute subdivision. He suggests that the process can be applied not only for plating an article but also for taking a cast or electrotype, which can be detached from the model and used as a mould.

* * *

At the meeting of the Society of Antiquaries on April 28th, Mr. W. H. St. John Hope submitted a report of the excavations carried out by Colonel Hawley and himself for the Society on the site of Old Sarum, in 1909. These had been confined to the inner and higher of the two great earthworks that form the monument, and had revealed considerable remains of the Norman castle for which the inner work had probably been thrown up. The



Ground-Floor Plan.

Scale of 10 0 10 20 30 40 50 Feet.

COTTAGE HOSPITAL, HOLKHAM, NORFOLK LESLIE T. MOORE, A.R.I.B.A., ARCHITECT.

gatehouse had been cleared; also a postern on the opposite side of the ring, with evidences of later blocking and alteration, and the base of a large postern tower that defended it. In one place a mass of walling 20ft. high and nearly 90ft. long, which had hitherto been completely buried, had been opened out. The smaller remains found were chiefly architectural and of Norman date, and evidently belonged to the great tower, the uncovering of which would form part of the work of 1910.

* * *

In consequence of the funeral of his late Majesty, the private view of the exhibitions at the Leicester Galleries, Leicester Square, of water-colours of London, by Mr. Herbert Marshall, R.W.S., and of Egypt and the Italian Lakes, by Mr. R. Talbot Kelly, R.I., is postponed from Friday, 20th May, until Tuesday, 24th inst.

* * *

Mr. Cormell Price, who recently died at Rottingdean, was the last survivor of the Oxford set of which William Morris and Burne-Jones were the most prominent members. He was their intimate friend, and in their biographies there are many references to him. He was the "head" of the school at Westward Ho! described by Mr. Kipling in "Stalky and Co."

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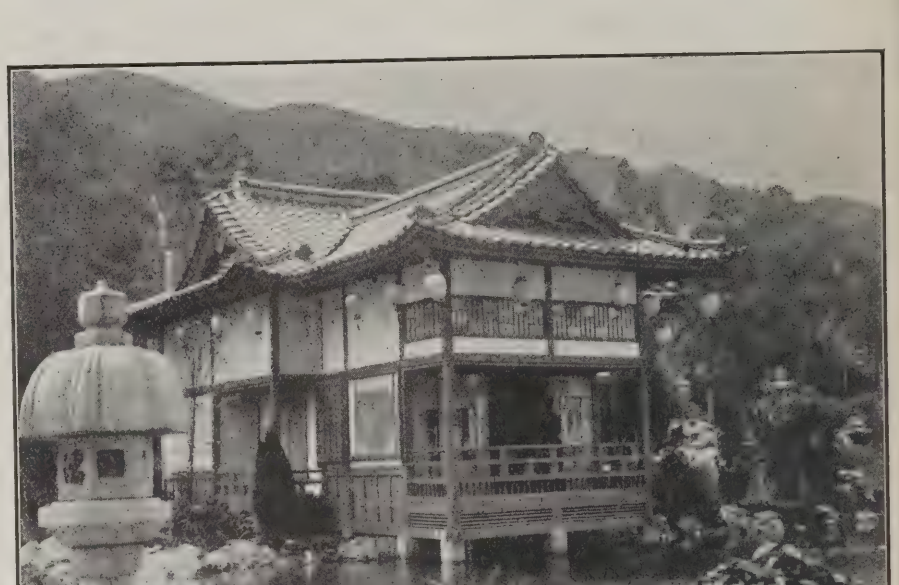
The "contagious diseases of metals" have been described by Professor Ernest Cohen in a lecture delivered to the Société de Chimie physique at Paris. Tin, he says, when exposed to a temperature below the freezing point of mercury, shows a kind of eruption of pustules, in which the metal loses its ordinary shining surface, becomes grey, and, on being cut with a saw, either falls to powder or breaks up into a bundle of fibres. The lecturer apparently felt justified in calling this a disease, because he was able to show that it is capable of extension by infection or contagion, the application of a few grains of the above-mentioned powder to the surface of a block of perfectly sound tin bringing about its transformation in a few days. In another transmittable disease of tin, the structure of the metal is changed and becomes crystalline. This disease has a special tendency to attack joints which have been soldered; but it is not peculiar to tin, as it attacks brass and lead as well.

* * *

Sir E. Montague Nelson, the first Mayor of Ealing, has formally presented to Mr. Charles Jones, M.I.C.E., a painted portrait of himself in recognition of his services to the town as borough engineer and surveyor for fifty years. The portrait is to be hung in the Town Hall, where the presentation took place. Mr. Jones has seen the district grow from a typical Middlesex village to a corporate borough of 55,000 inhabitants.

* * *

The University of Cambridge will shortly confer an honorary doctor's degree on Mr. T. G. Jackson, R.A.



A JAPANESE HOUSE AND GARDEN AT THE JAPAN-BRITISH EXHIBITION.

Japanese gardens are not very familiar to English people; and to visitors at Shepherd's Bush this garden will doubtless be a revelation of the art of Japanese miniature gardening.



The Japan-British Exhibition was opened last Saturday week without ceremony owing to the death of his late Majesty King Edward. The Art Exhibits form a very wonderful collection, and some notes on these are given in our leader pages.

JAPANESE TEMPLE AT THE JAPAN-BRITISH EXHIBITION.

The annual meeting of the Roya Archæological Institute is to be held a Oxford from Tuesday, July 19th, t Thursday, July 28th. The headquarter of the Institute will be at the Randolp Hotel, and the evening meetings will b held at the Ashmolean Museum. B courtesy of the Master and Fellows c Balliol College, and the Provost and Fe lows of Worcester College, accommoda tion for twenty-five gentlemen each ha been placed at the disposal of the Inst tute. Besides inspection of the college in the city, there will be visits by road c railway to the churches or other building at the following places: Dorchester, Wa lingford, Ewelme, Stanton Harcour Yarnton, Oxford, Rycote, Thame, Iffle Sutton Courtenay, Broughton, Bloxhan Adderbury, Witney, Minster Lovell, Bu ford, etc.

* * *

The business of Messrs. Longden ar Co., of the Phœnix Foundry, Sheffiel and No. 3, Berners Street, London, W has been acquired, as a going concern, b The Carron Co., of Carron, Stirlingshir The business will be carried on for th company under the supervision of M Henry Longden and Mr. C. F. Longde the partners in the firm of Longden ar Co. The various branches of the busine —grates, fenders, range work, wrough iron work, bronze work, and heating ar hot-water circulation—will be continue on the same lines as formerly.

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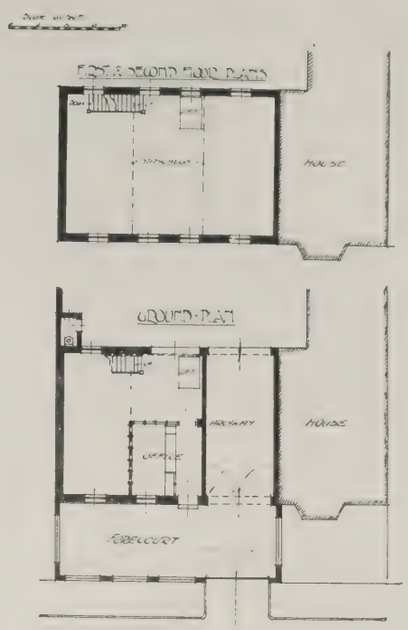
Grave anxiety has been felt in Nottin ham building trade circles, owing to th threatened strike of bricklayers and bric layers' labourers, numbering more th 1,000 men. Notices following upon th agitation for an additional penny p hour terminated on May 14th, when th men contemplated ceasing work; b after several inconclusive conferences, strike has been averted by an agreeme to refer the labourers' case to Board Trade arbitration, the Building Trad National Conciliation Board having be asked to adjudicate upon the demands the bricklayers.

THE PARIS SALON.

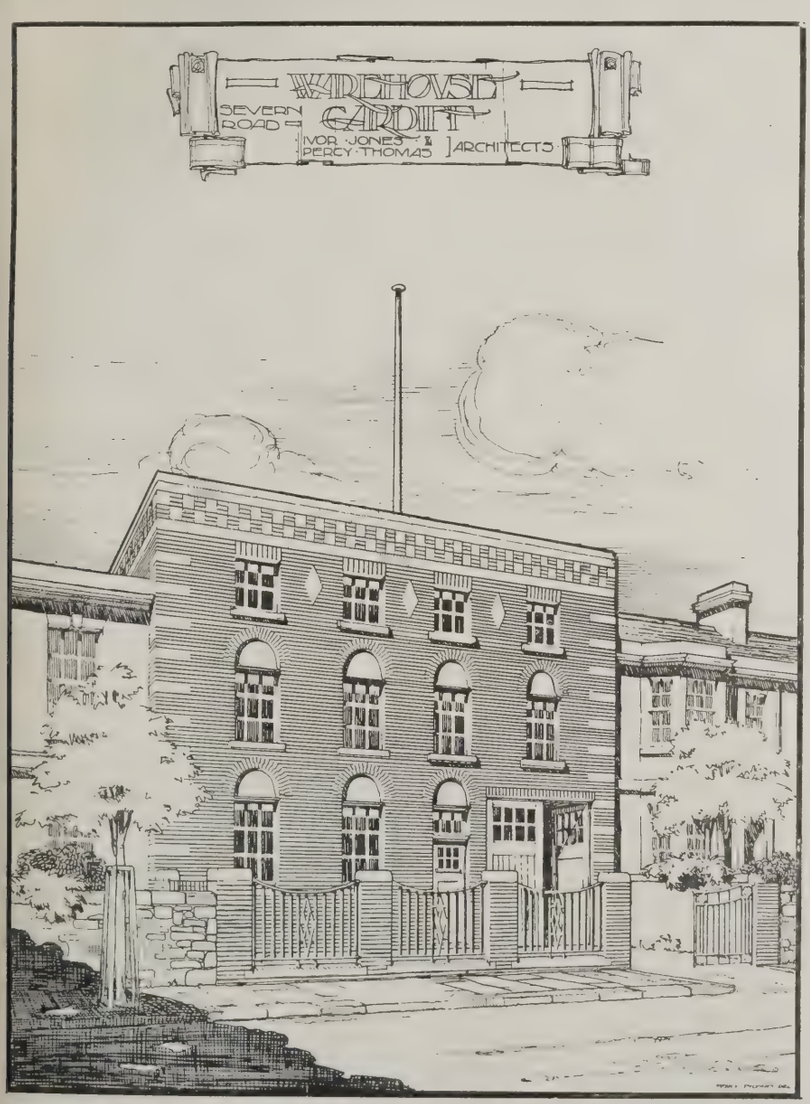
The great annual exhibition at the Palais des Beaux-Arts—the most important periodical exhibition of painting and sculpture in the world—is as bewildering as usual in its extent and variety. To those who have not visited the Salon since the erection of the Grand Palais des Beaux-Arts, planned to accommodate both the Old Salon ("Société des Artistes Francais") and the New Salon ("Société Nationale des Beaux-Arts"), some idea of its extent may be conveyed by saying that the Royal Academy Galleries would form but a corner in the Paris range of galleries, and might be cut out of the latter without being much missed. The Art-Palace was designed to accommodate both the Salons in a building which is architecturally a single one externally, but is a dual one internally, not only in the management of the plan, but in the different style of the decorative treatment. The erection of this dual building is rather unfortunate, as it seems to perpetuate in material form a division in the French artistic camp which arose originally merely out of a quarrel as to the justice of the "awards" made by the Old Salon Committee, and which is an injury to Art. There are not pictures enough of a high class to fill both Salons, consequently both are compelled to lower their standard in order to cover their walls. To the style of "Nationale," it may be added, the New Salon has no sort of pretence in fact; it was adopted as a taking title, but the Old Salon is in reality much the more "National" of the two—more representative of French art, especially in sculpture, for the display of which it has the advantage of its great central glass-covered court, where sculpture can be seen with plenty of space round it, and under a practically open-air light. Sculpture at the New Salon is hardly worth considering in comparison, except for those crazy people who think (or pretend to think) that a headless and legless trunk by Rodin is worth more than all the finished works of other French sculptors.

This is not one of the best years of French art, either in painting or sculpture. Three of the finest of the Old Salon men—MM. Henri Martin, Gervais, and Raphael Collin—do not exhibit; the first-named is the painter of various immense decorative pictures in a broad manner of his own invention, and the absence of any such work of his is a distinct loss to the exhibition. For the rest, one may say that visitors unfamiliar with the Salon exhibitions should distrust first impressions. The general tone and style of the paintings, and their immense number, give an impression so different from what we are used to at Burlington House, that it is difficult to get one's critical balance of mind at first. We seem to see an immense number of pictures which are not very interesting, and some which are vulgar; but the fact is that many very fine pictures are almost swamped, at first sight, by mere numbers, and have to be looked for and considered on a second inspection. There are, for instance, very few landscapes which make a strong impression at once; but a more detailed examination will show that there are quite a large number of landscapes which at the Academy would count among the most remarkable works of the year. With the exception of some realistic painters, such as Didier-Pouget and Biva (and their realism is quite beyond anything we are used to in London), French landscape has a tendency to look rather sombre; but it represents nevertheless the most thoughtful and intellectual school of landscape painting of the day, and they have one or two very powerful sea-painters now, M. Moteley especially, who is always worth looking at, and M. Palézieux, who unfortunately does not exhibit this year.

Decorative mural painting, or painting intended to be fixed on walls afterwards, generally plays a great part at the Salon, especially owing to the practice of the Government of giving commissions for such works for the decoration of provincial mairies and museums. There is rather less than usual of decorative painting this year; M. Laurens's "Surrender of Yorktown" is an American and not a French commission. But M. Gorguet's "Entry of Henri IV. into Rennes," to be executed in Gobelins tapestry for the Rennes Parliament House, is a remarkable example of the right way to design for tapestry; a symbolical, not a realistic picture, kept quite flat and all in one plane; and M. La Touche's three pictures for the Ministère de Justice (in the New Salon) show how light and rich colour can be employed for decorative effect. The Government likes



PLAN: NEW WAREHOUSE, SEVERN ROAD, CARDIFF.



The warehouse is planned for a furniture repository, and consists of ground, first, and second floors, with flat roof over, served by staircases and lift. The walls are of stone, faced with Cwmbran pressed bricks, with Victorian stone coping, sills, and dressings. The semicircular window heads are filled in with cement, finished white. The first and second floors are of timber, and the ground floor and flat roof of concrete on steel joists. The whole of the interior and exterior woodwork is treated with green preservative. An attempt has been made in the elevation to get away from the usual type of warehouse building without going to needless expense or using costly detail.

also to encourage the production of large historical pictures of important events; M. Detaille this year exhibits a very large and vigorous painting of a barricade scene during the Revolution of 1830, one of the best things of the kind that we have seen. This kind of picture does not, it is true, represent the highest object of the art of painting; but to make an historic scene live again is one use of the art, and one that is not to be despised.

We have not space, however, for an essay on contemporary French painting; it would be more useful, perhaps, to give a short list of some of the most noteworthy pictures, with the number of the gallery in which they are to be found; for by the inconvenient practice, in French exhibitions, of not hanging pictures in the order of numbering (they are apparently numbered first and then hung without reference to the numbers) it is impossible to know where to look for anything named in the catalogue. If any of our readers are visiting the Salon, the following short list may save them the trouble of looking for works which should not be passed over:—

OLD SALON.

Gallery I.

Steck: "Réunion dans un Parc": decorative picture bought by the State.

Simonnet: "Le Matin au Poudreux": street scene in sunlight.

Audras: "Soir d'Orage au bord de la mare."

Gallery IV.

Joseph Bail: two interiors with figures and accessories, unsurpassable in their kind.

Biva: two small landscapes at Villeneuve-l'Etang, of wonderful realism of detail; a special power with this artist.

Gallery V.

Bohm: "Heures Dorées": beautiful scene of mother and children; bought by the State; a real work of art.

Commerre: fine portrait of a lady: his "Au Soleil" a somewhat uninteresting nude.

Gallery VI.

Bertrand: "Derniers Rayons à Carqueiranne": landscape.

Gallery VII.

Béroud: "Salon Carré du Louvre": one of a series of Louvre interiors by this artist.

Cagniart: "Vallée de la Meuse"; bought by the State.

Chabas: "Sous les branches": water and figures; also a fine portrait of a lady.

Delaistre: "Falaises à Marée basse": a fine coast landscape; also a smaller landscape by the same artist.

Gallery VIII.

Franck Bail (brother of Joseph Bail): "La Fontaine de cuivre rouge" and "Le Potiron"; both splendid in their way.

Gallery IX.

Cabane: "Portrait de Jeune Fille."

Debat-Ponsan: two scenes of landscape and cattle (he generally paints more important subjects).

Humbert: two portraits of ladies, the best of the year. Humbert may be called the Gainsborough of modern France.

Gallery XI.

Detaille: "Rue du Petit-Pont, 29 Juillet, 1830": a large painting of a barricade fight.

Félix: "L'Après-midi d'Eté": nude figure seated under foliage through which the sunlight strikes; bought by the State.

Gallery XII.

Detaille: "Service Funèbre du général Dauvrémont," before the breach in the walls of Constantine (Algeria).

Cabié: "Les Chênes"; a fine landscape.

Gorter: "Paysage d'Hiver"; fine snow scene.

Hubbel: "La Sortie"; really a portrait of a lady in walking dress.

Gallery XIV.

Dupré: "Dans le Campagne."

P. Glaize: Portrait of Dr. Cathelin.

Guillemet: "Les Roches d'Equihen"; fine coast landscape.

Jules Lefebvre: "Le Vestale Condamnée."

Gallery XVI.

J. P. Laurens: "La Reddition de Yorktown"; large decorative painting for the Baltimore Law Courts.

Tapissier: "L'Eté"; decorative figure group.

Gallery XVII.

Gagliardini: "La Saluté, Venice"; architectural picture.

Kawalsky: "Jeunesse"; bright sunlit landscape and figures, in a style peculiar to this painter.

Gallery XXI.

Harpignies: "Un Centenaire"; a great tree in the middle of a landscape; the perfection of style in landscape painting.

Flameng: seated portrait of a lady.

Calvés: "Les Lagunes"; fine broad landscape.

Gallery XXII.

Mdlle. Humbert-Vignot: "Un jour de Grève"; a good example of the type of picture with a moral lesson.

Lenoir: Portrait of a lady.

Gallery XXIII.

Laugée: two small pastorals, landscape and figures, absolutely perfect in style and handling.

Gallery XXV.

G. Fanty-Lescure: "La Femme aux Prunes."

Sabatté: "L'Eglise"; a good architectural interior.

Gallery XXVII.

Moteley: "Une barque à la Côte"; a grand sea picture.

As for the sculpture at the Salon, there is not even the division into galleries to guide one through its mazes. It is, as usual, a wonderful collection of work, in which talent is to be seen everywhere; genius here and there; in which intellectual symbolism and poetic ideals are mingled with absolute (and sometimes very effective) realism and at times with extravagant sensationalism. No one work can be picked out which can be said to dominate the rest as the great production of the year; but there are many fine things. The sculptors whose work is especially to be looked to are Bourlange ("Le Devoir Civique"); Champeil ("L'Été de la Vie"); Convers ("L'Inspiration et l'Harmonie," a group for the Conservatoire National de Musique); Gardet (two great animal groups—State commissions for out-door decoration); Guillaume ("Aux Champs"—two peasants at work); Laoust ("Vers l'Infini," a beautiful female figure); Michel (monument to Jules Ferry); Perron ("Primavères," a group symbolic of Spring); and Terroir ("Vision Antique," two Greek lovers seated at the foot of a Doric colonnade). These are among the best, but there are plenty more that are worth attention.

MODERN BRICK AND TILE WORK.

Chiefly through the attention given to it by certain architects of outstanding ability, considerable interest has been aroused in modern brickwork—both in the actual texture and the detailing of it. The public still regard all brickwork askance, when used for other than purely commercial or utilitarian purposes, and on that account they cannot see any merit for example, in the campanile of Westminster Cathedral, which to them is no more than a glorified chimney stack. But among architects all such ideas have long since vanished, and it is to be hoped that as more and more consideration is given to the careful design of brickwork detail, and its possibilities become better known, the public will rise to a better appreciation of it.

As an example, take carved brickwork. How little of it, comparatively, is employed. Yet it is admirable on a brick building. Ever since our houses were bespattered with stucco—surely, the most baneful architectural disease we have yet suffered—the introduction of carved stone work on all classes of houses has been general. The most ignorant jerry-builder throwing up his brick boxes on the fields of our suburbs, has always had prominent in his mind the necessity for some foliated stone capitals on either side of the entrance doorway, and on the little bay window with its harsh slate roof and Gothic finial. It is not good carving; it is ill-devised, proportionless, coarse, and it sets on the house like fungus on a tree. Perhaps the builder in his ignorance, is the better judge of the taste of his prospective tenants, and as he buys his carved stone trimmings from the mason's yard at so much per dozen, and gets them hewn *in situ* for a lump sum, it seems hopeless to ask for something else. But with the better-class house, intended for people who are supposed to have a fitter sense of things, with at least some appreciation of appropriate work, it is surprising to find so little in the way of carved brickwork, for such work has a peculiar charm on a brick house, and no great expense need be incurred in the execution of it. It seems to grow out of the surface instead of having the appearance of being stuck on.

The design of brickwork detail depending for its effect on the disposition of ordinary bricks, in conjunction, perhaps, with tile work, also offers possibilities. Several well-known English architects of to-day have given proof of this, as, for



DETAIL OF CARVED BRICKWORK ON BAY, 25, VICTORIA STREET, WESTMINSTER. C. J. C. PAWLEY, ARCHITECT.



CHIMNEY TO LODGE IN KEW GARDENS. W. EDEN NESFIELD, ARCHITECT.

example, Mr. R. Weir Schultz, Mr. Troup, Mr. E. S. Prior, and especially Mr. Lutyens, who has done more for the revival of brick building than any other architect. But the revival, of course, was started years ago, and such names as those of Norman Shaw, Philip Webb, Eden Nesfield, and Butterfield at once occur as pioneers; while midway between these and those who are carrying on the work to-day stands the name of Bentley. The accompanying illustrations serve to show what can be done with brickwork when in capable hands.

OBITER DICTA.

The Grace of Grass.

Mown grass of some degree we must have in our forecourts, gardens, squares, parks, urban "open spaces." The time at which our early forefathers—smitten, perhaps, by the green carpeting of some forest glade or smooth slope of the downs—had the thought of replacing the prehistoric midden and fold-yard before the house door by a grass plat is a notable turning-point in our social development. From that rude beginning has descended the smooth green of castle-courts, cloister-garths, college quadrangles, terrace-slopes of great houses, and not less the little flower-bordered patch in the cottage garden, and the grimy herbage, the last survivor of green things, in the crowded yards of the town.—"*Times.*"

* * *

Continuity of Ideals. The ritual of worship, words, ceremonies, and all the beauty of art, are needed to remind men that they are something more than animals, and also that they have a common purpose in worship. There is a cumulative power in such things, arising from the fact that many generations have made use of them to express the nobler aims of men. And so it is with the ritual of national mourning. The mere fact that every one takes part in it makes it more ennobling than the mourning of private loss. . . . It is a symbol of that continuity of ideals which makes a nation, and which is so bravely opposed to the mechanical continuity of things.—"*Times.*"

CONSTRUCTIONAL STEELWORK.

By S. BYLANDER.

[*In this paper, which was read by Mr. S. Bylander before the Society of Architects, the special feature is a general description of the routine of steel-frame construction; bu interspersed there are many practical hints drawn from Mr. Bylander's extensive experience. Mr. Bylander has had under his control the design of all the more important recent steel framed structures in London, including the Ritz Hotel, the "Morning Post" Offices, the Selfridge Stores, the Waldorf Hotel, and, at the present moment, the New Automobile Club, Pall Mall. Some interesting illustrated articles on the steelwork at the Ritz Hotel appeared in our issues for September 28th, November 2nd, and November 30th, 1904, March 1st, 22nd, April 12th, and May 24th, 1905. On the "Morning Post" Offices in our issue of May 23rd, June 20th, July 18th, October 10th, November 7th, and December 5th, 1906, February 27th and March 27th, 1907. On the Waldorf Hotel in our issues for November 7th, December 5th, 1906, February 27th and June 19th, 1907. And on the Selfridge Stores in our issues for March 3rd, March 31th, May 26th, and June 23rd, 1909.*]

Planning and Designing.

The preparation of the plans for a building where the skeleton consists of steelwork, as compared with a building where the loads are carried on walls or piers, differs considerably.

Steel is becoming a more and more important material in building construction. As the sizes of the buildings are increased and fireproof construction is adopted, steel construction can be used with advantage. Heavy brick walls are substituted with steel stanchions, and rolled steel beams are used instead of wooden joists, thereby saving rentable space, and by the use of fireproof floors the danger of ruinous fire is materially reduced.

It is entirely wrong to prepare the final architectural design independently of the steel construction, and ask a contractor or engineer to design steelwork to suit the lay-out of the different floors. Steel should be employed to its greatest advantage, and not merely as a substitute for brick and stone as is often the case; for instance, where large rooms are required in the lower storeys, while in the upper storeys are placed heavy division walls and brick stacks, and where positions of the columns vary in the different storeys.

The object of the design should be to obtain the best result for the minimum amount of money, and this can only be obtained when each of the different building materials is employed to its greatest advantage.

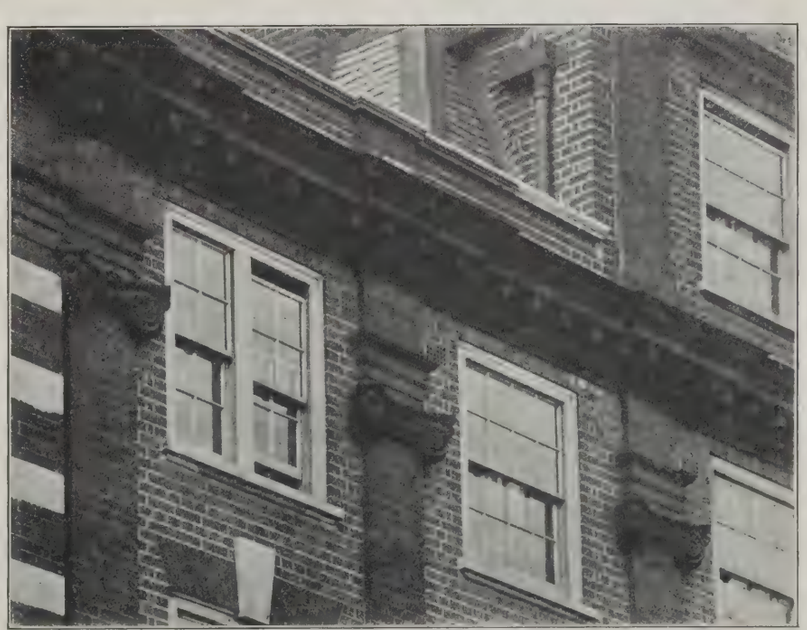
It is obvious that the steelwork, brickwork, and stonework must be designed simultaneously, in order that no material should be wasted.

The amended London Building Act of 1909 will give guidance to the architect and engineer, and ensure uniformity in specifications and designs, and undoubtedly prove of great advantage to the quality of construction generally.

The advantages promised in the Act of 1909 will, however, not be complete until all buildings are treated on the same basis. At present there are no regulations for buildings constructed in accordance with the old Act, while stresses and loads are definitely specified for steel-framed buildings.

The first consideration the designer has to take into account is the factor of safety in relation to the loads which should be used in the calculations for the different members. Good practice is to use a safe stress for steel equal to one-quarter of the ultimate strength of the material, or seven and one-half tons per sq. in. if the ultimate strength of the material is 30 tons per sq. in. As the elastic limit of medium steel is about 15 tons per sq. in., the actual factor of safety will be two.

The general lay-out of steelwork for a building is primarily dependent upon the size of rooms and type of floor construction; secondly, upon loads to be carried and requirements as to decorations. The spacing of columns should be uniform, if possible, in order to permit repetition of sections and details.



DETAIL OF BRICK CORNICE AND PILASTERS ON FIRE STATION, GREY COAT PLACE, WESTMINSTER. W. E. RILEY, F.R.I.B.A., L.C.C. SUPERINTENDING ARCHITECT

Loads.

The actual live load is not used in the calculations, but the corresponding dead load, which would cause the same stress in the steel as the actual live load. This dead load is usually referred to as "superimposed load," and varies from 70lb. to 120lb. per sq. ft. for apartment houses, hotels, and office buildings, and from 150lb to 400lb. per sq. ft. for warehouses and factories. To the above loads should be added the weight of the floor itself (including steel girders and beams, which is about 100lb. per sq. ft. for an average concrete floor. The dead load of floor must be carefully calculated in each particular case.

Steel may have to be used in buildings where the design will not permit of the use of only brick and stone work on account of large rooms, great loads, architectural features, or planning requirements. It is used by reason of economy where steel is found to be cheaper than other material, or where the floor space saved by using steel columns instead of brick wall or piers will more than compensate for the extra cost of steel compared with the cost of brick.

Steel beams and concrete are substituted for wooden joist floors and roofs in order to obtain a more fireproof construction, often with a considerable increase in the first cost of the building. However, the fireproof building may be more profitable to the owner than the old wooden construction when the reduced insurance premiums, and the increased rigidity and stability, are taken into consideration. No doubt fireproof construction will soon be adopted generally for large towns, and I will, therefore, in this paper only deal with that kind of construction.

In addition to the before-mentioned reasons for using steel in buildings, there are others more or less important according to conditions or circumstances: (1) Rapidity of construction. (2) Possibility of changing the arrangement of rooms after the carcass of the building is completed. (3) Increased stability and rigidity; uniform distribution of loads on foundations to prevent unequal settlement.

Rapidity of construction is generally a question of economy. By speedy completion of the building, interest on the capital is saved. Possibility of changing the arrangement of rooms saves cutting away brick walls and putting in steel girders to suit the client's requirements. Such alterations of rooms may in many cases increase the rateable value of the building. A steel-framed building where steel is properly covered with protective material is, I believe, the most durable fireproof building that can be produced at reasonable cost.

Difference between Brick and Steel Construction.

Let us compare the setting out and construction of a brick building and a steel-frame building. The setting out of a brick building need not be very accurate as to dimensions. The builders can set out the walls and foundations to the architect's plans and elevation drawn correct to scale, but not necessarily dimensioned. The accurate dimensions of the site are often not ascertained before the old building is taken down, and the builder is ready to start work building the walls. A little variation between the dimensions scaled from the drawings and the actual dimensions of the site will not present any great difficulties or cause delay or additional cost. The dimensions can simply be agreed upon between the builder's foreman and the architect's representative on the site. Nor is it necessary to have particulars of details when starting the work, as cutting away of a little brickwork is not accompanied by any great difficulty, should it be found at a later date that some alterations were necessary on account of some of the detail drawings not being ready when the work was commenced.

In the case of a steel structure, however, it is most essential that the drawings are completely worked out beforehand, and all details made. Ventilation, heating, drainage, lighting arrangements, etc., should be set out beforehand, and the general lay-out and steel plans made to suit the different requirements.

Economy.

Economy is the essential thing to aim at, and, generally speaking, steel is being used in buildings because it admits of cheaper construction than other materials, and at the same time ensures a reliable structure. By the use of steel the rental floor-space is increased considerably; it also permits the use of large spans and fewer pillars, thereby enabling the future tenants to arrange the rooms according to their requirements. Buildings can be quickly erected and completed, thus saving interest on capital. In order to obtain true economy, however, it is necessary that the planning and designing, and also the method of carrying out the work, should be systematical, and in accord with the general principles which I will deal with hereunder.

Systematical Progress of Work.

The steelwork plans should be ready several months before work can be started on the site, to allow for the time required for the manufacture of the steelwork at the mills; also it should be borne in mind that the steel can be obtained at a smaller cost if ample time is allowed for the steel contractor.

It is advisable to order the full quantity of each section in one lot, and get the pieces cut to exact lengths at the mills. Considerable waste occurs if the shop has to draw material from stock. To take material from stock should only be permitted when very quick deliveries are absolutely essential. Generally speaking, complete dimensioned shop drawings should be made in the office in preference to having the rivets, connections, and details set out by workmen in the shop.

It is of course necessary that the engineer in charge of making the detail drawings must have a well-trained staff of draughtsmen who are thoroughly familiar



PIERS BUILT UP OF TILES, HOUSE NEAR BASINGSTOKE, HANTS.
EDWIN L. LUTYENS, F.R.I.B.A., ARCHITECT.

("*Modern Brick and Tile Work.*")



LOGGIA AND BALCONY, PICKENHAM HALL, SWAFFHAM, NORFOLK.
ROBERT WEIR SCHULTZ, ARCHITECT.
("*Modern Brick and Tile Work.*")

with shop work, as the draughtsmen are called upon to do such work as the template worker would otherwise do according to the old practice. The position of every rivet should be shown on the detail drawings, and nothing should be left to the judgment of the workmen in the shops. More reliance can be placed upon drawings which have been checked than upon setting out in the shop, which setting out is not usually checked. Another advantage of having complete shop drawings is that every piece can be inspected and compared with the detail drawing, and errors in shop work can more easily be detected than if the work is set out in the shop without shop drawings. Every piece can be made complete to the detail drawing, without fitting the different pieces together, and still they must fit perfectly when erected. The essential thing to remember in steel construction is that there should not be any alterations of the steelwork on the site.

Alterations During Construction.

It is a very serious proposition to make alterations to the steel design during the progress of manufacture, and still more during erection. Not only will it cause delay and additional cost, but it will also result in less satisfactory work. If all drawings are properly worked out and completed before the work is started, the liability to alterations is materially reduced.

Manufacture.

The first thing the contractor has to do is to issue orders for rolling the material. An inspector will be appointed by the architect or engineer to inspect the quality of material at the place of manufacture. The inspector will be at the mills when the material is rolled. He will be present when the chemical and physical tests are made, and make records of the results of the tests, and order additional tests to be made if the material does not run evenly. The inspector will reject and order to be removed such material as fails to meet the requirements of the specification, and he will stamp and approve that which is satisfactory.

Inspector's Approval.

The approved rolled material is stamped with the inspector's mark of approval of quality of metal. Any piece coming from the rolls is stamped with the blow or melt number, and this number is referred to on the test sheet reports. Every piece is also marked with an identification number given on the detail drawings. This number is used for reference when consulting the drawings in the shop or when locating in which place the piece is to be erected on the site. After being rolled and straightened, the material is placed in the stockyard until required in the shop. As a rule, the material cannot be rolled in the order in which it is required in the shop, but in such order as the rolls go in according to the rolling programme for the rolling mill.

Weeks and often months may elapse before the same section is rolled again. It is often, therefore, advisable to roll the beams for the roof at the same time as for the lower floors when same section is used. In the shop, however, the material is usually fabricated in the order in which it is required on the site. The inspector is kept well informed as to the dates of rolling and manufacture, so that he can be present and inspect as required, and as the work proceeds.

Shopwork.

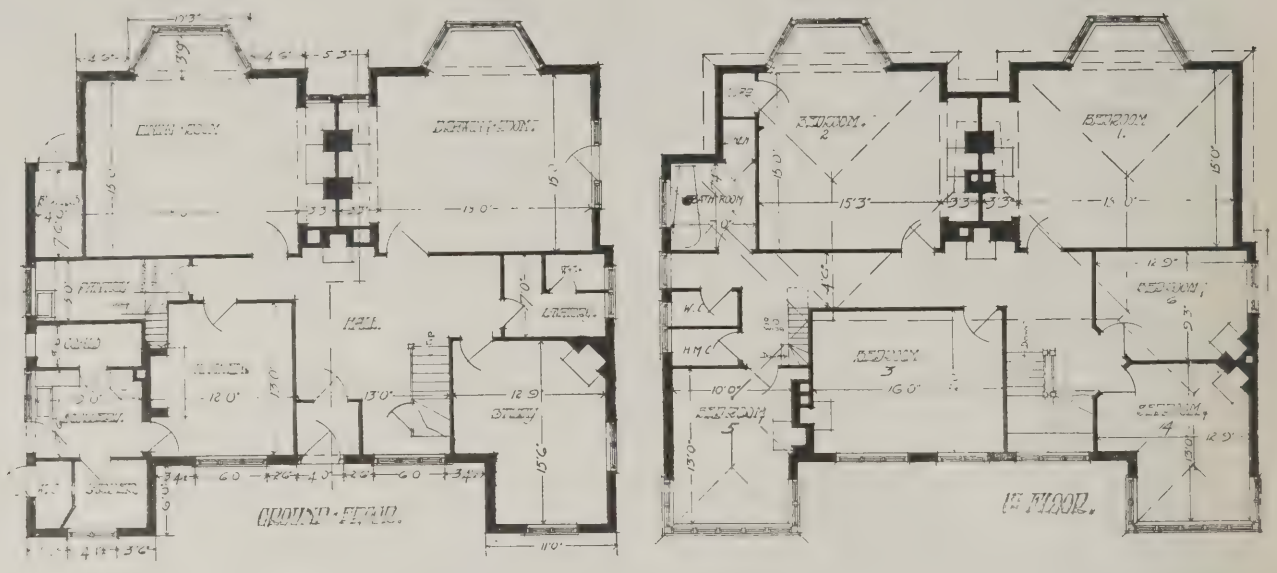
From the stockyard the material is brought to the working shop, where skilled workmen mark the position of the holes, lines of cutting, etc., on the steel pieces direct, with or without template. The number of the shop drawing and number of job are often painted on the piece before it leaves the working shop, in order to assist the checker and inspector. Therefrom the marked material is brought to the drilling shop.

In the case of built-up sections, as, for instance, a column composed of angles and plates, all the angles and plates are not marked and drilled separately, but only a few holes are first drilled; the different plates and angles are then bolted temporarily together, and the whole thickness of metal is drilled through at the same time, thus saving time and assuring greater accuracy and all holes being true. Several drilling machines can be used for one member at the same time. Burrs are removed after the drilling, and the ready-drilled piece is sent to the assembly shop. Some pieces are milled or ground to fit; the different pieces forming one member are temporarily bolted together and sent to the riveting shop.

During assembly the detail drawings are consulted and the dimensions checked. When the pieces are riveted, they are sent to the milling machines if any part has to be machined, such as ends of columns or bearing plates on girders. Before assembling, some surfaces must be painted, as after assembly they are inaccessible. Open holes which are to be filled with rivets in the field are marked by the assembler, so that such holes shall not be filled in by



CARVED BRICK PANEL ON FLATS, KNIGHTSBRIDGE, LONDON.
HART AND WATERHOUSE, FF.R.I.B.A., ARCHITECTS.
("*Modern Brick and Tile Work.*")



The lower part of the house is of brick rough-casted, the upper part weather-tiled with tiled roof.

HOUSE AT PARKLANGLEY, BECKENHAM, KENT: PLANS. REGINALD C. FRY ARCHITECT.

rivets in the shop. Holes in small pieces and brackets are generally punched and rimered after assembling, but main members are drilled. Before the finished steelwork is painted, it is examined by the inspector, and all dimensions are checked. Ends of compression members which are machined must be examined, and it is ascertained if the ends are square to the axis of the member. If all measurements are correct, and the workmanship satisfactory, the inspector stamps the piece with his shop inspection mark.

The material will now receive its shop coat of paint or oil before shipment.

Marking.

Any piece or bundle of pieces must not be shipped unless having the following marks applied: (1) blow or melt number; (2) identification number; (3) mark of mill inspection; (4) mark of shop inspection; (5) shipping mark.

When painting the material before shipment, all marks made in the shop are extinguished (except those above stated). A small circle or triangle with white paint is made around the marks previously indented by stamps. The shipping mark and the identification mark are applied with paint in large and distinct letters or figures. Sometimes pieces for different parts of the building are painted in different colours, or a spot or ring of a distinguishing colour is applied to facilitate selection of the material at erection. If the above-described methods are used, little or no difficulty will arise at erection, and no risk is taken of material arriving at the site incorrect.

The inspector makes remarks on his copy of the shop drawing when approving any piece at the time when his stamp of approval is applied. He has also to see that the material is shipped in the right order as required on the site. After completing inspection for each lot, he makes up a proper list of material. The works do likewise, and the two lists are compared and checked. Several days before a shipment is made, the shipping statement is written out in detail, and instructions are issued for shipment or transport of the material to the site.

As the material passes out of the works, it is weighed, and the inspector records the weight and counts the pieces weighed and sees if they are in agreement with the advice of shipment. The weighing machine should be checked at regular intervals by an independent party to assure that it registers the correct weight. The shipping statement, advice, and invoice are now sent to the contractor as the material is shipped, if the contractor only buys the material, but executes his own erection.

Shipment.

According to requirements, the steel is transported on van, railway car, or barge, or by ship. Considerable damage to the material may occur during transport if proper precautions are not taken against careless handling when loading and unloading, so that small pieces are not bent or crushed by large or heavy pieces placed on top. Delay through mixing up of the different consignments is a source of great inconvenience.

Erection.

The material is usually brought alongside the building on vans, and is hoisted by the erection cranes to a place on the building near to where it is to be erected, or sometimes directly placed in its final place. The different pieces are first temporarily bolted together, and afterwards set to correct level and made plumb, after which all holes are filled with rivets. The steelwork is painted immediately after erection, and if more than one field coat is applied, different colours of paint should be used. Floors and walls are built and fireproofing applied. The erection of the steelwork should be two storeys ahead of the floors. The floors should be put in one storey ahead of the walls, as may be convenient. In cases where walls partly support the floors or girders, the walls must, of course, be built the same time as the steel is erected. In order to prevent accidents to the workmen below, the floors should be put in close to the steel erection, or the floor framing should be boarded over to prevent any tools or material falling on the men below. At the same time, the different trades should be kept separate, so as not to interfere with the rapid progress of the work.

When the carcass is complete, and the roof is on, heating, ventilation, etc., are installed, partitions built, and joinery and finishing completed.

In the carrying out of a large job, it is not always satisfactory to put the responsibility on to different parties for designing, detailing, manufacture, inspection, and erection, as in that case it is not likely that uniformity of system will be followed. In my opinion, one man should be responsible for the systematic carrying out of the work. The engineer responsible should bear in mind that no work is satisfactory unless the following requirements are fulfilled: (1) Economic and safe design; (2) good material and workmanship; (3) correct work as to dimensions; (4) prompt deliveries; (5) proper erection.

It is wrong to suppose that after a good design and specification are made, the responsible engineer's work is done. A good specification is of as little use without inspection as a clever design is without proper shop drawings. The practice of taking a few test pieces from a job and sending them to a testing firm is not reliable. The material should be tested at the mills during the progress of manufacture.

Calculations and Preparation of Plans.

When preparing plans and calculations for a building the work should proceed in the following order:—

(1) The specification drawn up for stresses and loads.

(2) The principal members for the structure to be calculated, and it should be ascertained whether the setting out of the columns and girders is economical and reasonable, and if necessary such modifications made as will improve the construction.

(3) When the architectural plans are completed the engineer will calculate all the loads of floors, walls, etc., make stress sheets for each member, after which a set of plans is made and the required sizes given. The sizes of the steelwork thus obtained are drawn to scale on the architectural plans, and, where necessary, the engineer will modify the sections to suit architectural requirements; after which the architectural plans are practically completed, the shop drawings made, the contract placed with the steelwork contractor.

LEGAL NOTES.

By THE LEGAL EDITOR.

Covenants Relating to Building.

The fact that questions are frequently addressed to "The Architects' and Builders' Journal" in connection with covenants as to building raises the presumption that difficulty sometimes arises in understanding them. A man buys or leases a plot of land which places various restrictions on his powers of building. He reads them through, and in all probability his solicitor explains them somewhat fully; but their real effect does not come home to him until such time as he desires to build. He then finds that he must build a house of a certain value, or with a certain frontage, or "which shall be approved by the vendor (or landlord) or his surveyor." In the result he is unable to build the house which suits him best. Again, if his plot of ground forms part of a large building estate, he may find that he has to observe covenants which enure for the benefit of the purchasers or lessees of other plots. How far are such covenants binding upon him?

It is proposed, in the present article, to deal with these questions in their legal aspect.

It is clear, in the first place, that one who is laying out a building estate must needs be in a position to impose restrictions on those who take the various plots for the mutual benefit of all. That such restrictions are legal is clear from a case heard by Lord Romilly in 1865.* There the plaintiff and the defendant were adjoining owners. The plaintiff sought an injunction to restrain the defendant from erecting a certain building in the rear of his house. Both premises had been part of one estate, and a covenant in the head lease provided (*inter alia*) that houses to be built thereon were to be in accordance with a particular plan. It was held that a covenant against building entered into by a purchaser of land with the vendor, who was also adjoining owner, his heirs, etc., "runs with the land," and may be enforced by a subsequent purchaser of part of such adjoining lands. A person seeking to enforce it must, however, show that substantial damage will be caused by the breach. The principle is well illustrated by a later case,† where there was a general covenant entered into by all the purchasers of plots on a building estate, to the effect that no public-house should be built on any part of the estate. The defendant, in breach of this covenant, erected a public-house. The plaintiff then brought an action to restrain him, and would probably have succeeded had it not been proved that long before he brought the action he knew that the public-house was going to be built and took no steps to prevent it.

The above case may be relied on as an authority for the proposition that acquiescence in a breach of covenant by an adjoining owner may deprive a man of his remedy; but the fact that a lessee does not interfere to prevent a small and limited breach of a restrictive covenant in a building lease does not prevent him for all time from seeking to restrain a wider and more important breach. Acquiescence may be inferred by delay, and the amount of delay which spells acquiescence will naturally depend upon the nature of the breach. For instance, if a neighbouring lessee erects a building which obviously constitutes a breach of covenant, action must be taken at once; while the carrying on of a prohibited business might not be so easily discovered.

One other fact may be noted in this connection. The vendor or landlord may have waived his rights. Thus, if he omits to enforce a covenant in the case of the holders of some plots, the Court will decline to restrain a similar infringement by other tenants.

No lessee, however, should rely on any such point as this to justify a breach of covenant. If he builds in contravention of a covenant he will certainly run the risk of expensive litigation, and may be ordered by the Court actually to pull down the buildings which he has erected.

*Western v. Macdermott, L.R. 1 Eq. 499.

†Sayers v. Collyer, 28 ch. D. 103.

Mutual Credit and Set-off.

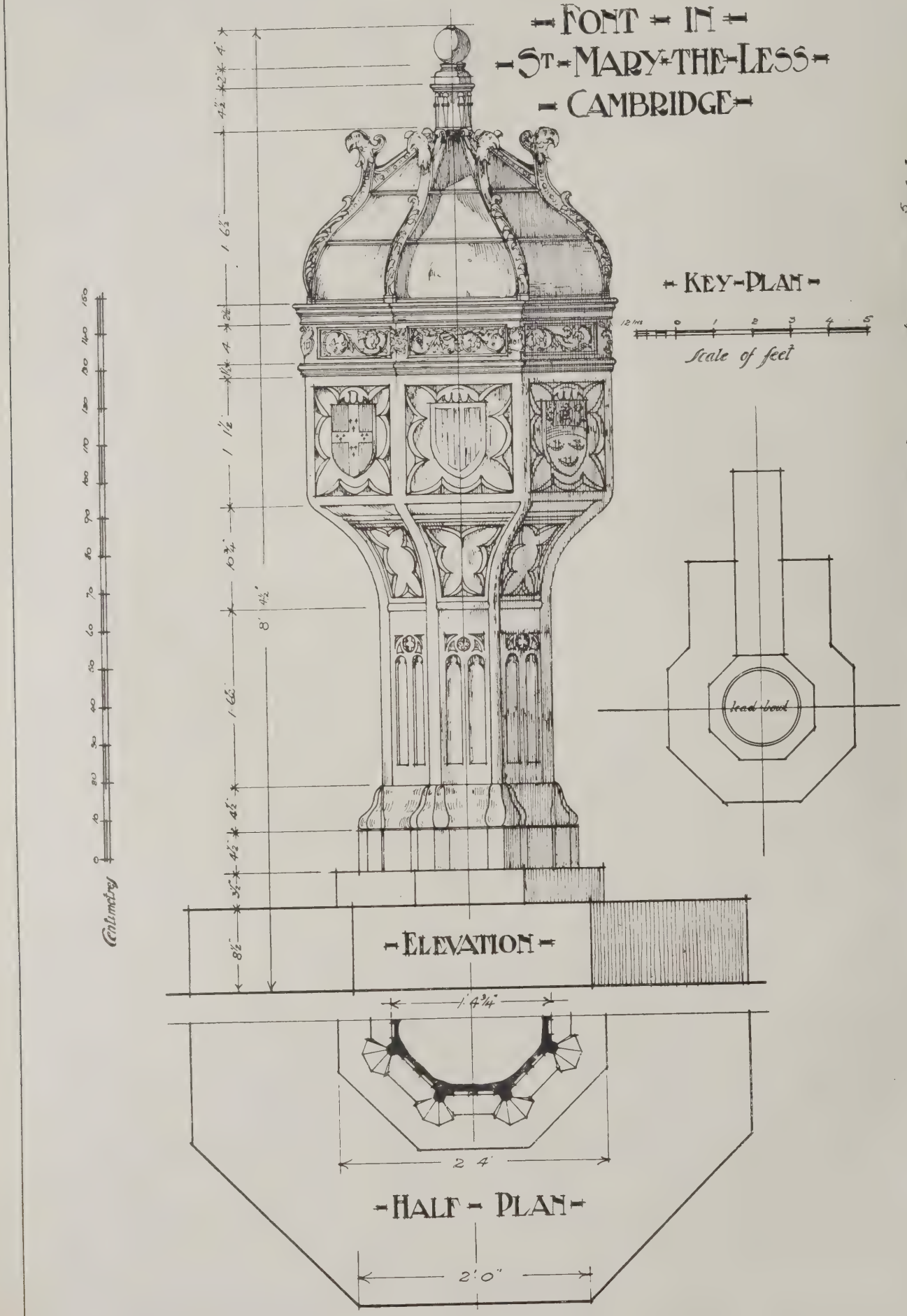
What is "mutual credit and set-off"? This is a question which may seem to the layman difficult to answer; but a proper appreciation of its meaning is of considerable moment in relation to building contracts. As everyone knows, when a man becomes bankrupt, his assets, such as they are, are divided up amongst his creditors *pro rata*. A creditor is generally regarded as lucky if he gets 10s. in the £. Now when a man goes bankrupt the trustee has to collect his assets. All debtors of the debtor have to pay up in full. But suppose that, at the date of his bankruptcy, the debtor owed me £100, while I owed him £100, I might have to pay the trustee £100 and only get £50 out of the bankrupt's estate. This would be clearly unjust. To put a concrete case. Suppose a builder is employed to erect certain houses, and he obtains an advance of £500 from the building owner to enable him to procure materials. The work proceeds, and £500 becomes due on certificates. That £500 would be assets in the bankruptcy; but it would be manifestly hard on the building owner that he should have to pay over the £500 to the trustee and get back £250. To provide against this injustice, the Bankruptcy Act, 1883, provides that where there have been mutual credits, mutual debts, or other mutual dealings between a debtor against whom a receiving order is made and any other person proving or claiming to prove a debt, an account is taken, and the balance of the account only is paid over. It is obvious, however, that the rule must be, and it is in fact, limited by this: that it can only apply if the creditor did not know that bankruptcy was pending when he gave credit to the bankrupt.



This represents an attempt to adapt the eighteenth century exterior to a modern planned house. The building has been specially designed for Parklangley, to occupy a site on the south side of a road running east and west.

HOUSE AT PARKLANGLEY, BECKENHAM, KENT. REGINALD C. FRY, ARCHITECT.

FONT IN ST MARY-THE-LESS CAMBRIDGE



MEASURED AND DRAWN BY FRANK T. DEAR.



This is the most interesting font to be found in Cambridge. It is of stone, formerly touched with colour on the shields. The font itself is obviously of much earlier date than its cover, the latter having the date 1632 carved on one of its angles. The cover we believe has suffered many viciss tudes, having once been buried, but, with certain portions repaired, it now remains in very much its original condition.

FONT IN THE CHURCH OF ST. MARY-THE-LESS, CAMBRIDGE.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

CONCRETE AND STEEL SECTION

(MONTHLY.)

In Praise of Concrete. There is one striking feature connected with the war that is being merrily waged around concrete: the unanimity of opinion existing between the opponents and adherents of the material as regards its availability for foundation construction. But let it show its head above ground (said Mr. W. F. Hall, in a paper read before the Franklin Institute) and immediately protests, ranging from mild-mannered objection all the way up the scale to vituperation, make themselves apparent from every quarter into which concrete has made inroads. The bricklayer who scents the decrease of brickwork, the drain-tile and sewer-pipe man who no longer enjoys a monopoly, the brickmaker who contemplates his decreased output, they, and many others, all unite in the cry of "Down with concrete." This is exactly what engineers have been doing with it for centuries with the result that the tourist is enabled to pay homage to structures to-day that, but for their concrete foundations, would long ago have been mere unrecognisable heaps of masonry. The man who first mixed water with stone and sand and tied them together with cement was the original conservator of natural resources. His puddling made it possible to give the house built on the sand the same stability as that founded on the rock. He devised the means of securing for structures immunity from time and the elements. The iron founders have erected statues to Vulcan. It is regrettable that the name of concrete's inventor should have escaped going down the ages. As previously stated, concrete has been used as a foundation material for centuries. Of recent years, refinements of this application have come into use that are worthy of more than passing notice. The concrete bearing pile is supplanting its perishable wooden prototype. The concrete sheet pile is responsible for the construction of bulkheads and other marine structures that will be in existence centuries after their builders have been forgotten. The concrete caisson made possible the building of towering structures on the most treacherous kind of soil There is an increased desire on the part of the Federal, State, and Municipal Government, as well as large corporations and people holding valuable property, to replace temporary construction heretofore used with permanent construction, and there is every evidence that an increasing amount of this class of work will be done each year.

* * *

Importance of Workmanship. The effect of workmanship on the strength of concrete was tested some time ago at the laboratory of the Technologic Branch of the United States Geological Survey, then situated in St. Louis. Three firms doing concrete work in the city were asked to furnish gangs to mix and place concrete for cubes and test beams. The same materials were supplied to all three gangs, and the cubes and beams were tested under the same conditions. The maximum variations between the test results were about 100 per cent., parallel specimens made by the laboratory's workpeople testing to about the same strength as those of the gang securing the maximum results. With a richer mixture the greatest difference in results was about 60 per cent., indicating that an increase in cement tends to cut down discrepancies. The beams were 13ft. long, and were designed to fail in compression, so as to give a truer index as to the strength of the concrete.

* * *

Waterproofing Concrete. According to Prof. Ira L. Baker, when alum and soap are used as waterproofing for concrete, the alum in powdered form may be mixed with the dry cement or the sand, and the soap may be dissolved in the water employed in mixing the concrete; or both the alum and the soap may be dissolved in the water. The former is probably the safer method in practice, since with the latter method the water must be thoroughly stirred while the two are being mixed or the precipitate may form in large masses which it is practically impossible to break up; and, further, the water must be kept stirred to prevent the compound from accumulating on the surface. However, the alum is more easily dissolved than the soap; and hence the alum may be dissolved in, say, one-fifth of the water, and the soap in the remaining four-fifths, and then the two portions may be mixed together. The alum and the soap combine and form a finely divided, flocculent, insoluble, water-repelling compound which fills the pores of the concrete and decreases its permeability. The best proportions are: Alum one part and hard soap two parts, both by weight. Soap varies in its chemical composition, and hence a single proportion cannot be stated which will be chemically exact for all cases. The above proportion is in round numbers the relative combining weights of alum and average hard soap. Any reasonably pure soap will do. It is difficult to dissolve more than about 3 per cent. of hard soap in cold water; and hence this practically limits the amount of alum to 1.5 per cent. and of the soap 3 per cent. These amounts will give a precipitate equal to about 3 per cent. of the weight of the total water. The amount of precipitate formed in the pores of the mortar or concrete will depend upon the amount of water used in the mixing.

* * *

Failure of a Concrete Roof. Part of the reinforced concrete roof of a car barn under construction at Saybrook, Conn., for the Shore Line Electric Railway, having collapsed, the failure is thought to be probably due to the removal of the forms at too early a date, and the weight of a large quantity of roofing material that had been piled on it. The matter is mentioned here for the sake of the lessons it may chance to convey. The building is one storey high, 74ft. wide and 194ft. long. The roof was a reinforced concrete slab carried on beams 8ft. apart on centres, and of somewhat less than 37ft. span. They were placed transversely and carried on wall pilasters and by the columns and girders of a longitudinal centre line of columns. It seems that the foreman, without instructions, directed the removal of the forms, although some of the concrete was not over 10 days old. The settling of the roof was noticed by one of the workmen, who gave the warning, permitting 15 men who were beneath it to escape. Some of these men were on a scaffold beneath the roof. Of the three men who were slightly injured, two were outside the building and were struck by the falling pieces of concrete. That the failure came slowly is evident from the fact that one of the men inside the building had time to warn the foreman who happened to be on another part of the roof. The foreman walked on to that part that was settling and fell with it. The parapet wall, 2 to 3ft. high, was pulled in, and falling on the foreman, caused injuries which proved fatal. The panels came down one after the other, breaking off sharply on the line of the new concrete. The section that failed extended across the width of the building for a distance of about 37ft. at one end. The loss, though not accurately determined, will probably be between 1,000 and 2,000 dollars. The structure was being built by the Sperry Engineering Company, of New Haven, Conn.

* * *

Concrete Mixers. A marked feature in the recent development of concrete mixing machinery is the very general application to mixers of ordinary size of auxiliary apparatus for delivering the charges of raw material, and the occasional application of apparatus for handling the finished concrete. This was made very evident at the Cement Show held recently in Chicago, where the concrete mixers made by a score or more of different manufacturers were on exhibition. A large majority of the mixers of the revolving drum type were equipped with power-operated charging hoppers or buckets. This equipment facilitates the work in two ways: (1) it reduces the amount of wheeling for the materials, and especially wheeling up inclines to reach the charging platform, which is frequently a cause of delay or interruption in the steady progress of the work; (2) it practically increases the capacity of the mixer, since the material for one charge is being got ready while the previous charge is being mixed. As soon as a batch of concrete is delivered, the complete charge for the next batch is dumped into the mixer. This takes but a few seconds, whereas a much longer time will be required if several loads of material for the charge have to be wheeled up and dumped into the mixer. Another matter to which attention was drawn by the machines at the exhibition was the very large number of self-contained units, each having mounted upon its frame the mixer, the motive power, the water tank, and the charging hopper and concreting bucket, with their hoists. Thus one man could control the entire series of operations of charging, mixing, discharging, and delivering the concrete.

THE CONCRETE INSTITUTE.

[At the Royal United Service Institution, the monthly ordinary general meeting of the Concrete Institute was held, Mr. William Dunn, F.R.I.B.A., in the chair. There was a fairly numerous attendance of members and visitors to hear a paper read by Mr. Sidney H. Chambers on the subject of "The Effects of Sewage and Sewage Gases on Portland Cement Concrete."]

The Chairman submitted to the meeting the following candidates for membership: Mr. Henry Alfred Brain, Assoc. M. Inst. C.E. (London), Captain John Gibson Fleming, R.E. (Chatham), Mr. Frederick Herbert, Assoc. Inst. Sanitary Engineers (Pretoria), Mr. Archibald Cecil Hughes (Wokingham), Mr. Segar Owen, F.R.I.B.A. (Warrington), and Mr. Cyril W Rice (Wick, Caithness). These gentlemen were unanimously elected.

THE EFFECTS OF SEWAGE AND SEWAGE GASES ON PORTLAND CEMENT CONCRETE.

The lecturer, Mr. Sidney H. Chambers, engineer and surveyor to the Hampton District Council, in the course of his remarks, said that it might be assumed that the available evidence as to the effects of sewage and sewage gases on Portland cement concrete was either inconclusive or of a more or less negative character. Cases were on record of destructive changes in tanks and sewers, but, nevertheless, the opinion tended to prevail that when the concrete construction was sound no marked disintegration need be anticipated, neither from sewage nor from its emanations. The author's experience, however, did not support this view, and it was to the elaboration of this, the positive side of the question, that he desired to direct attention. During the last five or six years he had had very special opportunities for studying the problem.

The Hampton Installation.

The nature of the sewerage system was water carriage, primarily flowing by gravitation, and, secondarily, raised by plenum pneumatic power. The sewerage was entirely and completely on the separate system. The installation consisted of a screening chamber, two detritus tanks, a hydrolytic tank, and triple contact beds, and an air-purifying filter. The sewage on its arrival at the works was delivered from the rising main into the screening chamber, and after passing through the screen was conveyed by a channel to the detritus tanks. From these tanks the sewage entered the hydrolytic tank, which, together with the detritus tank, was installed in 1903. The disposition of the tank was such that the main bulk of the sewage—80 per cent.—passed through at a comparatively high rate of flow, issuing in four hours as a clarified liquid, whilst the small volume—20 per cent.—containing the deposited matters, was sixteen hours in the tank. After flowing over the weirs of the first portion the liquid entered a channel which led to the second portion of the tank, consisting of four hydrolysing chambers arranged in sequence, and filled with large flint stones. The liquid having taken three hours in its passage through these four chambers, entered the lower channel, which conducted it to the contact beds.

The screening chamber, the tank, and the channels leading to and from the tank, as also the effluent channel of the primary contact beds, were covered in. The entire installation was ventilated by the hydro-mechanical system of sewer ventilation, and the withdrawn gases were purified by being passed through an air filter.

The sewage of Hampton was of a strong domestic character. It had undergone thorough disintegration by the lifting operations, and by the putrefactive changes occurring in the rising main. It was malodorous on its arrival at the screening chamber, where, as it left the rising main, it evolved sulphuretted hydrogen and other bad smelling compounds. The liberation of these gases constituted a nuisance, necessitating the screening chamber, channels, and tank being covered in, and a means being provided for drawing a large volume of air through them before discharging the gases into the atmosphere.

The Concrete Used.

The whole of the tank and channels were constructed of Portland cement concrete. The walls of the tank are 6ft. 6in. in thickness at the base, and 1ft. 6in at the top, and are strengthened by tie-rods; the roof was 6in. in depth and was reinforced by expanded metal, and the channels were covered by 2in. patent paving slabs. The work was executed by departmental labour and the best materials were used.

The concrete was composed of one part of Portland cement properly mixed with clean water and six parts of ballast thoroughly free from loam, clay, mud, or dirt of any kind, and no material was allowed to be used larger than would pass through a 2in. screen.

The patent paving flags were composed of granite chippings, washed and crushed to pass through a ¼in. mesh sieve, and heavy Portland cement. The materials are mixed in the proportion of one part of cement to three parts of granite.

Efflorescence.

Early in 1905, a few months after the hydrolytic tank had been put into use, it was noticed that the roof and walls of the hydrolysing chambers above the liquid level were white or yellowish in appearance. This efflorescence was not crystalline in structure, but was of a chalky subsistence, and resembled distempered work on a damp wall. On examination it was found to be due to a thin covering of sulphur, which could be easily removed by rubbing. Later the face of the walls and the roof in the second part of the tank showed signs of peeling, and the concrete appeared to be disintegrating. A thorough inspection of the installation was thereupon made.

Disintegration.

At the screening chamber nothing appreciable was observed, neither at the highest water-level nor on the underside of the roof. The concrete was sound, and when struck had a good ring. Immediately adjoining this chamber was the main sewage inlet channel, along which the whole of the gases pass to the main air duct leading to the air filter. At this point slots were made in the concrete to receive a dam; the concrete at the back of the grooves was found to have disintegrated, although the sides were perfectly sound.

Further along this channel it was observed that the greatest disintegration had taken place on the walls at the liquid level. Owing to variations in the flow of the sewage, the level of the liquid in the tank and channels rose and fell; thus a certain area of the walls was constantly being immersed in the sewage and then exposed to the air. This area was, consequently, even when not immersed, much wetter than the part of the walls which was always above the level of the liquid. The latter area at this point showed erosion, which, however, had not penetrated so deeply as that at the level of the liquid itself. At the liquid level there was a deep groove in the concrete, and above this the face of the work had bulged out and lost its nature.

The first portion of the tank, *i.e.*, the hydrolytic tank proper, appeared to have suffered a little. The walls and roof had only the slightest sulphur deposit. At the liquid level, which varied less than in the channel, there was a slight erosion. The second part of the tank, *i.e.*, the hydrolysing chambers, was found to have suffered in places to a marked degree. It was observed on breaking through the erosion on the surface that the concrete at the back was moist, soft, and gritty. Also, it was noticed that increased dampness constituted an important factor in the destruction of the concrete, for the lower parts of the vertical faces of the beams supporting the roof were more affected than the upper parts. The lower portions of the vertical walls of the tank also were more eroded than the upper. At the liquid level the concrete had been severely attacked, and a deep groove existed in it.

Analyses of Concrete in Hydrolytic Tank.

Two samples of surface concrete were taken above and below the liquid level, and the following was the result of the analyses:—

	Below Liquid Level. Sound.	Above Liquid Level. Unsound.
Appearance	Grey	White
Texture	Hard	Soft
Ratio cement to sand ..	1 : 2	3 : 3
Sulphate of lime in cement	Trace	66 per cent.

Considerable Deterioration.

The same pronounced effect was to be seen in connection with the concrete blocks, which were grooved to receive sliding boards and project above the liquid level; these blocks had in many instances crumbled away to such an extent as to be almost shapeless. Recently these chambers were emptied, and it was found that the concrete below the liquid level was perfectly sound and in a good state of preservation.

The lower channel conveying the liquid from the tank to the contact beds revealed the same characteristics as were observed in the upper channel, but the portion at the liquid level was very much more markedly affected.

Analyses of the Disintegrated Concrete in the Channels.

Samples taken of the lining of the sides and covering gave the following analyses:

	Ratio. Cement.	Ratio. Sand.	Sulphate of Lime in Cement.
1. Concrete at varying liquid level	1	1	70.26 per cent.
2. Underside of slab forming covering..	5	1	74.61 per cent.

The air duct taking the gases from the effluent channel of the primary beds and communicating with the tank outlet channel was found to have a coating similar in appearance to that observed on the underside of the covering to the channels.

Analysis of Concrete in Air Duct.

Analyses of this coating were made, with the following results:—

	Ratio. Cement.	Ratio. Sand.	Sulphate of Lime in Cement
Underside of slab forming covering of air duct ..	2	1	70.71

Conversion of Sulphate of Lime.

The point to observe in the above analyses was the conversion of the lime in the cement into sulphate of lime, the sulphur being obtained from the sewage flowing through the tank and channels, as well as from the gases expelled from the sewage,

and contained in the air withdrawn from the several parts of the installation.

Suggested Explanation.

Much thought had been given to the explanation of the foregoing observations, and it had been concluded that the effects had arisen from the putridity of the sewage and the oxidation of the putrid products by the air supply. The main erosive effect was at the varying liquid level, and was there dependent upon the amount of sulphuretted hydrogen in solution in the liquid. The gas was comparatively small in amount in the incoming sewage and in the liquid in the hydrolytic tank, and increased as the liquid passed through the hydrolising chambers. The results of this were especially well shown in the two channels; the alternate wet and dry area of the upper channel conveying the sewage from the rising main was less markedly affected, whilst in the lower channel the corresponding area was severely attacked. So with the two parts of the tank; the first part into which the sewage was delivered, and wherein comparatively little putrefaction took place, had not been affected to anything like the extent that the second part or hydrolysing chambers had.

When the level of the liquid fell, it left the concrete which it previously covered wetted with a liquid containing sulphuretted hydrogen in solution. This wet surface was then exposed to the action of the air supply, which oxidised the sulphuretted hydrogen with the production of sulphur and sulphuric acids; these decomposed the concrete, the lime being converted finally into sulphate of lime. What the exact nature of the intermediate compounds was could not be stated, as none of them had been isolated, but it was probable that the active agent was sulphurous acid, as it was known that cement was insoluble in sulphuric acid. When the liquid rose again, the decomposed concrete was washed away either wholly or in part, and a fresh surface was exposed to action when the liquid fell again. It was the continuation of this cycle which led to the formation of the grooves at the varying liquid level.

Concrete above the Liquid Level.

The erosive effects on the concrete above the liquid level were dependent upon the sulphuretted hydrogen evolved from the liquid and mixed with the air supply. Some of this gas was dissolved by the moisture which was present on the walls and roofs, from evaporation and condensation: it was then oxidised by the air, and decomposed the concrete as described above. In this case the decomposed concrete either remained as a coating on the surface, peeled off, or crumbled away.

Effect on Concrete Tubes.

In order to observe the phenomenon on concrete tubes, two 9in. concrete tubes were selected, which were supplied by the makers of the paving slabs previously referred to, and were composed also of similar materials in the same proportion. One of the tubes was coated with Dr. Angus Smith's composition (coal-tar, pitch, linseed oil, and resin). They were placed side by side in the second part of the tank in such a position that they would be subjected to the rise and fall in the level of the liquid. At low level the tubes were not in contact with the liquid, and at high level the liquid rose to half the diameter.

After the tubes had remained in the tank for eight months they were taken out and examined. The coated tube did not appear to have been effected, other than at the highest liquid level, where a thin line could be observed, and when struck it was found hard and had a good sound. It was noticed that there were two areas on this tube without any coating, due no doubt to its having been placed upon two supports to allow it to dry; these areas were soft on the surface and similar to the uncoated tube. With these exceptions the tube appeared to be in as good a condition as when first placed in the tank. On the other hand, the uncoated tube had a distinct line at the highest liquid level, which was found to be soft, and when tapped with a chisel had a dull sound; the interior of the tube which had been immersed appeared soft and had a dull sound when struck; the portion of the tube above the liquid level was unaffected, and when struck had a clear ring.

The author then referred to other cases of disintegration of concrete by sulphur compounds.

Conclusions.

The deductions to be drawn from the investigations were that the gases in solution in sewage, and those expelled from it, arising from its decomposition, do act injuriously upon Portland cement concrete, notwithstanding the fact that the concrete is constituted of sound and good materials, when the following conditions prevail:—(1) A high degree of putrescence of the sewage. (2) A moistened surface, which held or absorbed the putrid gases. (3) The presence of a free air supply. Further, that in the absence of one or other of the above enumerated factors little danger from erosion need be feared

Finally, the author recorded his obligations to Mr. T. Hughes, the manager of the Hampton Sewage Works, and to Mr. J. H. Johnston, the chemist, for their valuable assistance in obtaining the necessary material and data for the paper.

DISCUSSION.

The Chairman said that the lecturer had given them some important information concerning one of the dangers to which their work was exposed. It had already been found that water in the earth might act in such a way as to disintegrate lime concrete and cement concrete. It had been found in France, and sewage pipes in Algiers and Texas, where the brickwork in the one place and pipes in the other were buried in the ground amid alkaline waters. He had received the following two letters: Mr. Arthur E. Collins wrote from Norwich saying that some concrete tanks which he had at Norwich, which were laid down in 1891, of varying diameter, from 42in. to 24in., the total length of which amounted to several miles, showed 12 years since no signs of deterioration. He was also consulted with regard to the failure of a retaining wall of a circular percolating filter constructed by the local authority in a town of East Anglia. He found the mortar to have no appearance of being constructed with cement. It was analysed, and a large quantity of sulphur was found there. He concluded by saying that he was responsible for Mr. Chambers communicating his valuable knowledge to the Concrete Institute. Mr. H. K. G. Bamber also wrote expressing his appreciation of the paper as an extremely valuable one, being a plain record of actual facts rather than the exposition of vague theories. He believed it was a fairly warm temperature and moist atmosphere which was necessary to produce the results stated by the author, *i.e.*, the conversion of sulphuretted hydrogen into sulphuric acid.

Mr. Alfred Roechling, who was called upon by the Chairman to open the discussion, said concrete was very largely used at the present time in sewage disposal works. Engineers could not do without it. He had made a considerable study of these matters especially with regard to the subject of concrete tubes, and he had come to the conclusion that no alarm at all need be felt by anyone who had been using concrete tubes. If they were correctly understood they limited the subject to very foul and very putrid sewage. Concrete tops had been now used for 10 or 14 years. On the Continent they had been used very largely, but he did not think concrete tubes would replace stoneware below 15in. in diameter. It should not be where they had very hot liquids, *i.e.*, over 120 deg. Fahr. Neither should there be steam in the sewer, because it set up internal faults which led to cracking. These were experiences of his, and those who used concrete must bear in mind that under these conditions it was reasonable to avoid it.

Mr. Edwin Ault said that some four years ago he had samples of concrete pipes sent to report upon the cause of corrosion, which appeared to him to strikingly corroborate Mr. Chambers's observations and deductions. The pipes were made with good cement and clean sharp sand, which, on analysis of a new pipe, showed a proportion of 1 to 1½ throughout. The pipes were four inches internal diameter, and had walls rather more than three-quarters of an inch thick. They were of the ordinary spigot and rachet shape, and were of a length of 24 inches in the work. The quality and the make of the pipes might be judged by the fact that under an internal hydraulic test they stood 100ths pressure per inch, when water began to ooze out of the pores of the pipe. The pressure was then slowly increased to 120ths per inch, when the pipe failed by cracking at the spigot end. The pipes, which were made of cement of the tensile strength of 678lbs. per inch, were used for the conveyance of sewage, and the corrosion appeared only on the upper or aerial parts of the pipes, while the invert or lower parts of the pipes, which were covered with sewage, were found to be unaffected. The upper part showed on examination a large excess of sulphur anhydride in the form of calcium sulphate. Curiously, an experiment with fumes of sulphuretted hydrogen directed on the pipe had no corrosive action. This was probably due to the absence of moisture. The portion exposed to the fumes turned black, which was attributed to the action on the ferric oxide contained in the cement. By suspending pieces of pipe in the fumes of sulphurous anhydride the calcium carbonate was changed into calcium sulphite, which, subsequently, on exposure to air, changed into calcium sulphate. The pipes were in use in a tropical city, but their information did not show whether the cement pipes generally were affected, or only those in certain districts. Bearing in mind the greater intensity of the decomposition of organic matter in the tropics and the great humidity of the ordinary atmosphere of this particular city, and also the fact that the sewage flowing through was a domestic one of great strength, and also bearing in mind the later experiences which Mr. Chambers had so lucidly set forth in his paper, he had not the slightest doubt that the corrosion of the pipes he had mentioned was due to the same causes as that which Mr. Chambers had experienced at Hampton.

Mr. D. B. Butler also contributed to the discussion. He had made a few notes which seemed to him to corroborate very much what the author had read so clearly in his paper. About five years ago he had a piece of concrete piping examined which had been down about five years, and its condition was exactly parallel to the case which the author had brought forward. The concrete was corroded. The pipe was one inch thick, and on the top the thickness was reduced to half an inch. The top coating was largely sulphate of lime, and from experiments he made the corrosion was due to sulphuretted hydrogen.

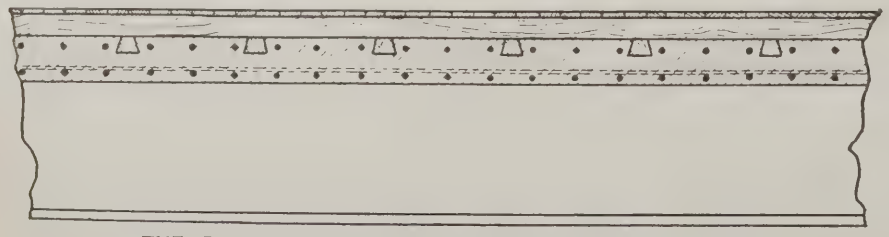
Mr. Arthur C. James (Grays), as a person who had been in charge of sewage works dealing with strong sewage, said that practically the whole of his tanks were formed of concrete. The sewage was from Grays and Tilbury, districts which were very flat, so that the velocity of the sewage was very slow. The average dry-weather flow was under 15 gallons per head per day, so that not only was it very strong, but it was very concentrated. The tanks had cracked.

Mr. J. Kirkaldy said that the presence of sulphuretted hydrogen was due entirely to the presence of vegetable matter; thus it was found most prevalent in the neighbourhood of cookshops—(laughter)—and such districts as Hampton. (Laughter.)

Vote of Thanks. Mr. Wells and Mr. Brooks also spoke, and a hearty vote of thanks to the lecturer concluded the proceedings, Mr. Chambers saying that he would prepare his remarks in reply to the discussion and communicate them at a later date.

LAYING BOARDS ON A CONCRETE FLOORS.

The new yarn mill of the Jules Desurmont Worsted Co., at Woonsocket, U.S.A., presents an interesting type of machine-carrying floor of concrete with wood top, designed by F. W. Dean, mill engineer and architect, of Boston, who planned the whole building. The necessity of providing a wood top of such sort that it would afford a secure attachment for machinery, dictated the special scheme shown in the annexed figure. Planed, dovetailed nailing pieces or sleepers, 2in. by 3in. were accurately placed with centres 18in. apart, and when the concrete was poured about them they were securely locked into the mass of the floor slab. It will be seen, by reference to the figure, that the sleepers were laid parallel to the support course of reinforcing bars in the concrete, and that there were three bars to each space between sleepers. The bases of the latter were a little below the level of the upper course of bars. Machines can be easily and securely attached to this floor by means of lag screws.



THE DEAN WOOD-TOP REINFORCED CONCRETE FLOOR.

CONCRETE NOTES.

Reinforced Concrete for Short Span Bridges. The American Railway and Maintenance of Way Association has issued a very useful bulletin (No. 117), containing the report of the Committee on Iron and Steel Structures. In any bridge (the committee say) the qualities to be desired are: adequate strength, freedom from vibration and excessive deflection, economy in first cost, economy in maintenance, and permanence. The theory of flexure of reinforced concrete is sufficiently well understood to enable safe and economical designs to be made of this material, and experience with reinforced concrete structures carrying dead loads only has been abundant. Experience with such structures carrying heavy live loads and subjected to the shock and vibration of these loads, moving at high speed, has not been so extensive, but reinforced concrete girders can be designed and built in short spans of any strength required, or likely to be required, by railway loads. In the event of overloading or defective construction, reinforced concrete will give quite as much warning of probable failure as other materials.

Advantages Over Steel. One of the chief advantages of reinforced concrete over steel for short spans is that the form lends itself more readily to ballast floor construction, the superiority of which to open decks is evident to every operating officer, not only on account of the absence of wood, which may rot or burn, or exposed steel, which requires protection from brine drippings or other corrosive influences, but also on account of the freedom from vibration and excessive deflection and the reduction of the cost of maintenance to a minimum.

Comparative Economy. A comparative economy of the two styles of construction is a matter which is not easily determined in general terms, depending as it does upon the market price of steel, concrete materials, and labour. The character of the design is also a factor of first importance. Generally speaking, if it is not considered advisable to use ballasted floors in a particular case for that case, the short span of I beams with ordinary floor of wooden ties is the cheaper construction in first cost. If, however, a large number of similar spans are to be built, so that concrete slabs can be constructed in a central and conveniently arranged plant, and if the erected price of steelwork approximates three (3) cents per pound, the difference between concrete slab construction built with ballast floor and steel construction with open wooden floor will be small, and in many cases will be favourable to the concrete. If the designs contemplate the use of I beams embedded in concrete, compared with reinforced concrete girders, economy will be all on the side of the latter. Short spans of reinforced concrete also permit a substantial economy in the design of abutments carrying them.

Reinforced Concrete Recommended. It is the opinion of committee that reinforced concrete flat slabs or girders are not generally advisable for railway loads in spans exceeding 40ft., but, as the great majority of structures carrying tracks over openings in the roadway are of spans less than 40ft., the importance of these small structures is very great, and we believe the use of reinforced concrete for these small spans is desirable.

Embalmed in Reinforced Concrete. Entertaining in life peculiar ideas as to the hereafter and determining not to have his body disturbed in future aeons of time, William Lay, a coal merchant of Honeoye Falls, N.Y., left a unique will, from which the following is an extract: "That a grave be prepared of at least the ordinary size and depth; that the bottom thereof, for a depth of at last six inches below the place prepared for the body be constructed of reinforced concrete; that above said foundation a space be left for the reception of the body, and the said space be large enough so that there will be an opening about six inches on all sides above and around the body; that my body be placed in a winding sheet of suitable material and placed in said grave without box or coffin; that said grave then be filled and the body entirely covered along the sides and above with reinforced concrete, consisting of one part Atlas Portland cement to three parts of clean gravel; that said concrete be brought up to a point about two feet above the level of the ground, and the ends of the solid concrete levelled and the top given an oval form; that the same be furnished with a smooth surface, and upon the same be placed an inscription containing my name, 'William Lay,' the figures '1854,' that being the year of my birth, together with figures indicating the year of my death, and that no other inscription be placed thereon."

An American Concrete Bridge. As the durability of concrete work is occasionally called in question, it may be useful to recall that in the south of France the concrete arch bridge known as the Pont du Gard was erected in the year 56 B.C. The concrete in this was not composed of crushed stone or other small aggregate of the variety now employed in concrete bridge work, but was of the old style, consisting of alternate layers of large and small stones, gravel, etc., and of cementitious materials. Vitruvius describes the materials and methods in use before the Christian era, and other writers, like Alberti in 1845, and Palladio in 1570, accurately described the method which the "ancients" (as they call them) employed, "of using boards laid on edge and filling the space between with cement and all sorts of small and large stones mingled together." It is very improbable that the Pont du Gard would have withstood the rigours of a northern climate, but its actual state of preservation, as well as that of many other specimens of ancient concrete work, proves that if modern work is honestly executed it will many times outlast any reasonable bond period, so that a very small yearly sinking fund per cent. is all that is required for properly designed and erected concrete work.

SPRINKLERS.

Installation Details. Sprinkler installations are erected in accordance with the fire insurance companies' official rules. Lines of horizontal distributing pipes are fixed at intervals of approximately 8ft. to 12ft. along the ceiling of each room, and are connected with larger vertical rising pipes supplied from the public water main, and an elevated tank, or other source of supply, which will keep the water in the pipes under constant pressure. The automatic sprinklers are attached, at intervals of 8ft. to 12ft., to each of the lines of distributing pipes. Should a fire break out in any part of the protected building, the heat at once rises to the ceiling, where the temperature very soon becomes sufficiently high to melt the solder on the link of the sprinkler, which solder fuses at 155 deg. Fah. The elastic valve in it is thus released and the water discharged profusely over the fire. The sprinkler has a clear outlet ½in. in diameter, and a deflector or splash plate, by means of which the stream of water is broken into spray and distributed effectively on the ceiling above and on the floor below each sprinkler. At the pressure of only 5lb. to the square inch, this sprinkler completely protects 100 superficial feet of floor area. It can be fixed above, below, or obliquely to the pipe line, giving an equally good distribution of water in any position. The arrangement of the piping can be adapted to any style of construction and every description of property.

Automatic Alarm. Next to the sprinkler itself is the continuous automatic alarm. This fulfils its purpose by immediately giving warning of the smallest escape of water inside the protected buildings, whether such escape be from a leaky pipe, a broken joint, or the operation of a sprinkler through fire, and to continue that alarm as long as the escape takes place.

Dry Pipe System. In buildings where the water in the pipes is likely to freeze, the dry pipe system is applied. This patent differential air-valve intervenes between the water supplies, which are beyond the reach of the frost, and the sprinkler pipes in the building. Within these pipes air under moderate pressure keeps the valve closed, thus excluding the water. The opening of one or more sprinklers in case of fire lets the air out of the sprinkler pipes, and simultaneously the valve is automatically opened by the water, which fills the pipes and is discharged upon the fire in a profuse shower from each unsealed sprinkler. The Grinnel sprinkler, applied to the protection of buildings throughout, has received official recognition from the fire insurance offices in all the important countries in the world. The 25 to 50 per cent. discounts granted off the premium on buildings equipped with the sprinkler extend, it seems, to all classes of risks, and, therefore, apart altogether from the question of protection and immunity from fire, the sprinkler installation may be fairly reckoned as an excellent investment, the saving in the insurance premiums paying a very satisfactory return upon the outlay. Moreover, property, the insurance of which has been previously very difficult to cover on account of the exceptional hazard involved, is freely accepted by the fire offices after it has been protected by the installation of these sprinklers.

External Protection. Another interesting feature of the system is the water curtain and drencher, designed specially for the external protection of buildings from fire breaking out in surrounding properties.

Concealed or Exposed Pipes ? When an architect comes to consider sprinklers for a new building, he sometimes desires that all the pipes shall be concealed, irrespective of the construction of the building and design of the ceilings. Such a decision is sound enough where the ceilings are of a decorative or heavily moulded type, or where the cross-beams come down below the ceiling to form panels; but in many cases where the ceilings are plain, it is preferable to see the range pipes exposed. In a new building it is always possible to conceal the main feeders, and at the same time expose the smaller distributing pipes. It is unquestionably sounder practice, and therefore more satisfying to the eye, to see where the sprinklers come from, rather than to see the bare heads pricked through a plain ceiling. As a general rule, all piping, no matter for what service, should be easy of access, and therefore exposed. In a drapery establishment where the heads were painted a bright vermilion, the effect was striking, but certainly not an eyesore, as one might have expected.

STRESSES IN ROOF TRUSSES.

By Max am Ende, M.Inst.C.E.

(*Continued from page 510, No. 746.*)

Example II.

Fig. 5 represents a roof truss which, with somewhat different proportions, is also used sometimes as a bridge girder. The number of bars—among them many redundant bars—is so great that the calculation according to Example I. would be too laborious; and as its object is mainly to find the stress in the bottom tie, it would be sufficient to substitute a structure with fewer lattice bars, so that the bottom tie is the only redundant bar. But a still shorter way is to substitute a plate for the lattice web, and to introduce the work from the bending moments upon a piece of the solid beam into the equations. By this method, suggested by the present writer (Engineering, 1883, p. 509), continuous beams and arches can be calculated either alone or when forming part of a system of bars. The beam is divided into a number of pieces and each piece with its properties. its length, λ, sectional area, a, and moment of inertia of section I, are imagined to be located in its centre of gravity, which is used as the fulcrum for the moment acting on it. Besides the work from the moment of a force, the work of the axial stress, and of the shearing force should be taken into account and added to it, but if the depth of the beam is not great compared to the depth of the whole structure, as here, it is sufficient to calculate with the moments only. Apart from this, the accuracy of the results will depend on the number of divisions. In the present example, only to show the method, we divide the whole arch into the 8 pieces marked by the radial ties.

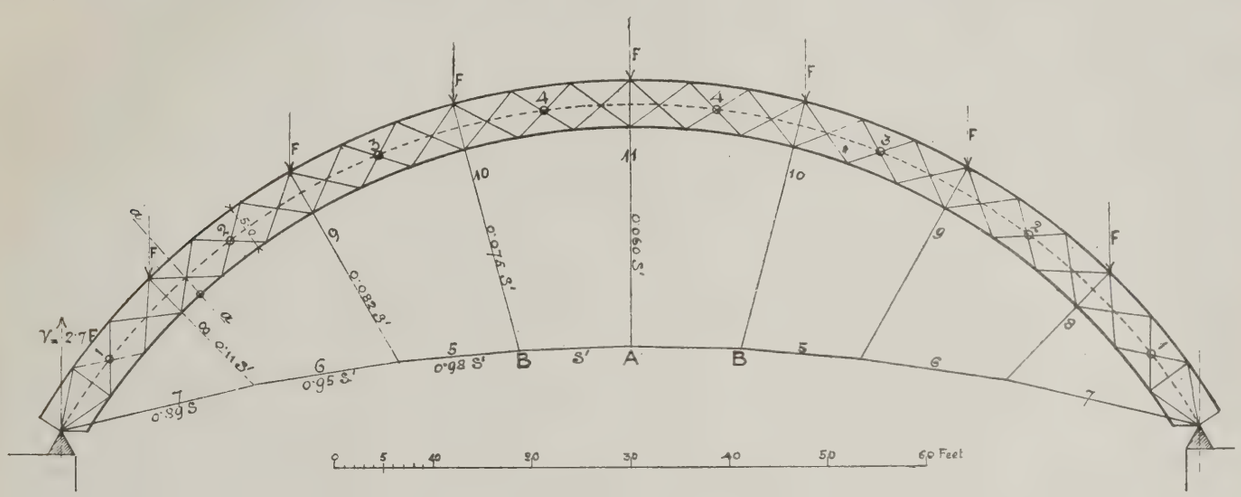


FIG. 5. STRESSES IN ROOF TRUSSES.

Fig. 6 represents the stress diagram of a piece λ acted upon by the moment M. The unit stress at the distance η from the neutral fibre is $\frac{M\eta}{I}$. The elongation at this distance is $\Delta\lambda = \frac{M}{IE}\eta\lambda$. The work on the unit of section at η is $\frac{M\eta}{I}\frac{\Delta\lambda}{2} = \frac{M^2}{2I^2E}\lambda\eta^2$. The work on the lamina $bd\eta$ is $= \frac{M^2}{2I^2E}\lambda\eta^2 d\eta b$ and the work on the whole section is:—

$$\frac{M^2\lambda}{2I^2E}\int_{-e_1}^{+e}\eta$$

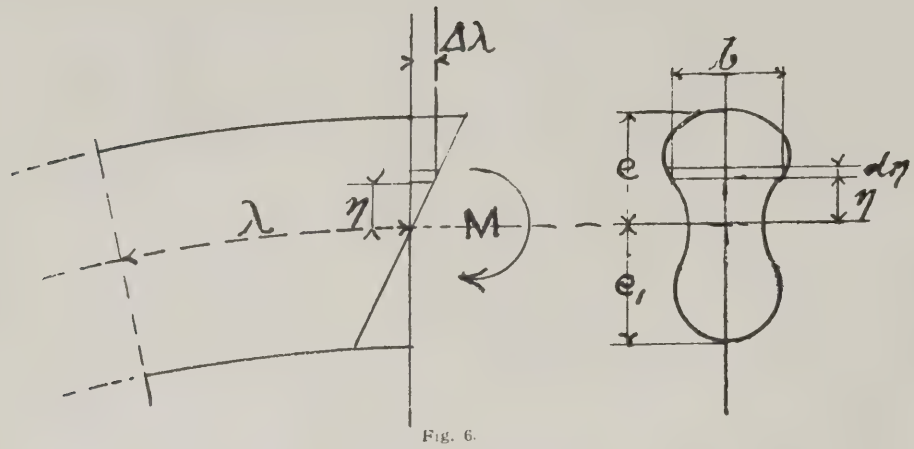


Fig. 6.

The integral is equivalent to I, and therefore we have the double work,

$$2w=\frac{M^2\lambda}{EI}$$

instead of $2w=\frac{S^2}{aE}l$ in the case of a bar.

Naming $\overline{\mu}$ the moment in any part x due to the units of the forces F and μ', μ'', etc., the moments from the units of S', S'', etc., and putting these in (9) in place of σ and σ', as also $m=\frac{\lambda}{EI}$ in place of $m=\frac{l}{aE}$ we get in this case of only one redundant bar:

$S'm'+\Sigma_o^n(\mu')^2 S'm_x+\Sigma_o^n\mu' R_x m_x=0$ .. (9a)

where $R_x=\Sigma_o^r \mu F$. In the same way we get three equations corresponding to (10), if there are three redundant bars.

In the present case the bars 5 to 11, left and right, may be regarded either as belonging to the determinate system, in which they have no stress, or as belonging to the redundant tie, since their stresses, stated in Fig 5, depend only on S' in an elementary way. We can now set up the following table, assuming values for I and a, and regarding moments bending concave upwards as positive:—

TABLE II.

Part No.	λ (ft.)	I (ft.²in.²)	m	R_x	μ^1	$(\mu^1)^2 m_x$	$\mu^1 R_x m_x$
1	17·5	75	0·233	+13·4	− 5·34	+ 6·6	— 16·7
2	17·5	75	0·233	+46·6	−14·25	+ 47·3	—154·7
3	17·5	75	0·233	+51·8	−20·58	+ 98·8	—248·6
4	17·5	75	0·233	+52·6	−24·00	+134·1	—294·0
1	17·5	75	0·233	+ 4·4	− 5·34	+ 6·6	− 5·5
2	17·5	75	0·233	+14·8	−14·25	+ 47·3	− 49·1
3	17·5	75	0·233	+27·8	−20·58	+ 98·8	—133·4
4	17·5	75	0·233	+42·0	−24·00	+134·1	—234·8
Bar No. left / right	l (ft.)	a (in.²)	m		σ^1	$(\sigma^1)^2 m_x$	$\sigma^1 R_x m_x$
5 5	24	6	4	0	+ 0·98	+ 3·84	0
6 6	29	6	4·83	0	+ 0·95	+ 4·36	0
7 7	41	6	6·83	0	+ 0·89	+ 5·31	0
8 8	26	1	26	0	+ 0·11	+ 0·31	0
9 9	40	1	40	0	+ 0·082	+ 0·27	0
10 10	47	1	47	0	+ 0·075	+ 0·26	0
11	24·5	1	24.5	0	+ 0·060	+ 0·09	0
AB	22	6	3·66				
			$\times\frac{I}{E}$	$\times F$		$\times\frac{I}{E}$	$\times\frac{F}{E}$
				$\Sigma_o^n =$		$\frac{+588\cdot04}{E}$	$\frac{1136\cdot8F}{E}$

$$\frac{3\cdot66}{E}S'+\frac{588\cdot04}{E}S'-\frac{1136\cdot8}{E}F=0;$$

$$S'=1\cdot92F.$$

For the computation of the actual stresses we can now revert to the lattice construction of the rib. For example, in the section a—a, assuming the shearing stress equally apportioned to the two diagonals, the fulcra for the chords will be opposite the intersection of the diagonals, and we have the stress S for the upper chord:

$$+5S+14\cdot0V-5\cdot8F-10(0\cdot95)S'=$$
$$5S+32\cdot0F-18.24F=0.$$

Hence, $S=+2.8F$. For the stresses in the diagonals we resolve the 3 forces into components parallel to the chords, and two equal components in the direction of the diagonals as usual.

Example III.

Fig. 7, consisting of an arched rib ABCDE (solid or braced) and 7 bars, represents a system with 3 redundant bars. As such may be regarded AG, GF, and FE, the removal of which would make the system determinate. Or the continuity of the flanges of the rib at B, C, and D may be cut with the same result. In the latter case a bar of infinitesimal length at each point may be regarded as a redundant bar, so that m', m'' and m''' would be nil. As the depth of the rib is small in proportion to that of the whole structure, the effect of the extensibility of the redundant bar GF upon the stress in it will not be great.

The stress in GF could therefore at once be determined by assuming a hinge at C. Then BG and DF may be regarded as the two redundant bars. Whether their stresses may also be determined simply by assuming hinges in the rib at B and D, so that the structure would be a determinate system, would depend on the degree of accuracy required.

Example IV.

The arch, Fig. 8, fixed at both ends, represents one of the principals of the roof over St. Pancras Station, London. Assuming it for the present to have a solid

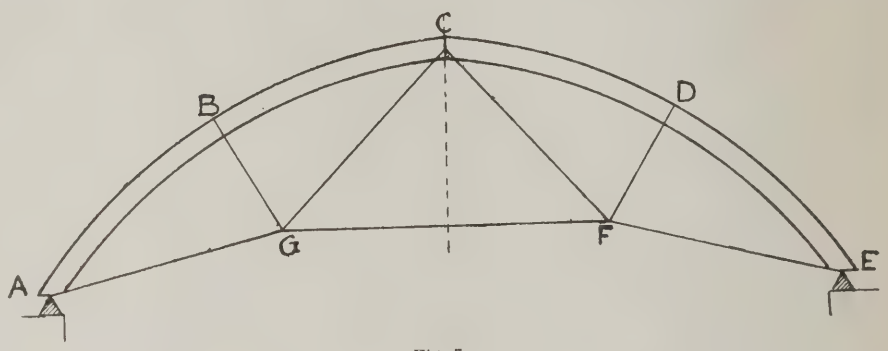


Fig. 7.

web, and dividing it into 20 parts of the length $\lambda=17\cdot5$ft., we have a system with $n=20$ necessary parts, but also with 3 redundant parts. A larger number than 20 would be desirable for greater accuracy. Assuming now the arch to be cut in two, for example, in the middle, there would be the axial pressure S', the shearing stress S'', and the moment of S' *i.e.* S'r, acting on each face of the cut. These are at present unknown, but the moments due to the unit of each, viz., μ', μ'', and μ''' in any section of each half of the structure as a cantilever, can be stated. We regard the forces S', S'', and S'r as stresses in three redundant parts; but the parts have no length, and the lever arm r must be regarded as inflexible, because the two faces are actually in contact. Therefore m', m'' and $m'''=0$. The 10 pieces of each half of the arch are here of equal length and equal section, and the factor m_x, being thus constant, may be omitted. This could, of course, not be done if the work of the axial and shearing stresses were to be taken into account. It would then be necessary to add to each member of the following equations one for each of these stresses; but the effect of these axial and shearing stresses is very small compared to that of the moments. It may be remarked that the moment of S', for example, on point 7, is S' $(18\cdot5+r)$, and that accordingly $\mu'=18\cdot5$ and $\mu''=r$.

Equations (10) will then be as follows.—

$$\left.\begin{aligned} &S'\Sigma(\mu')^2+S''\Sigma\mu'\mu''+S'\Sigma\mu'\mu'''+\Sigma R_x\mu' \\ &\qquad =0 \\ &S''\Sigma\mu'\mu''+S''\Sigma(\mu'')^2+S'\Sigma\mu''\mu'''+\Sigma R_x\mu'' \\ &\qquad =0 \\ &S'\Sigma\mu'\mu'''+S''\Sigma\mu''\mu'''+S'\Sigma(\mu''')^2= \\ &\qquad \Sigma R_x\mu'''=0 \end{aligned}\right\} \quad 10a$$

The following table contains the values necessary to make up the sums of 20 members each in the above equations. Its composition is too simple to need further explanation, and the sums worked out from it are stated in Table III. on p. 535, where b is the distance between two roof principals in feet and w the wind-pressure

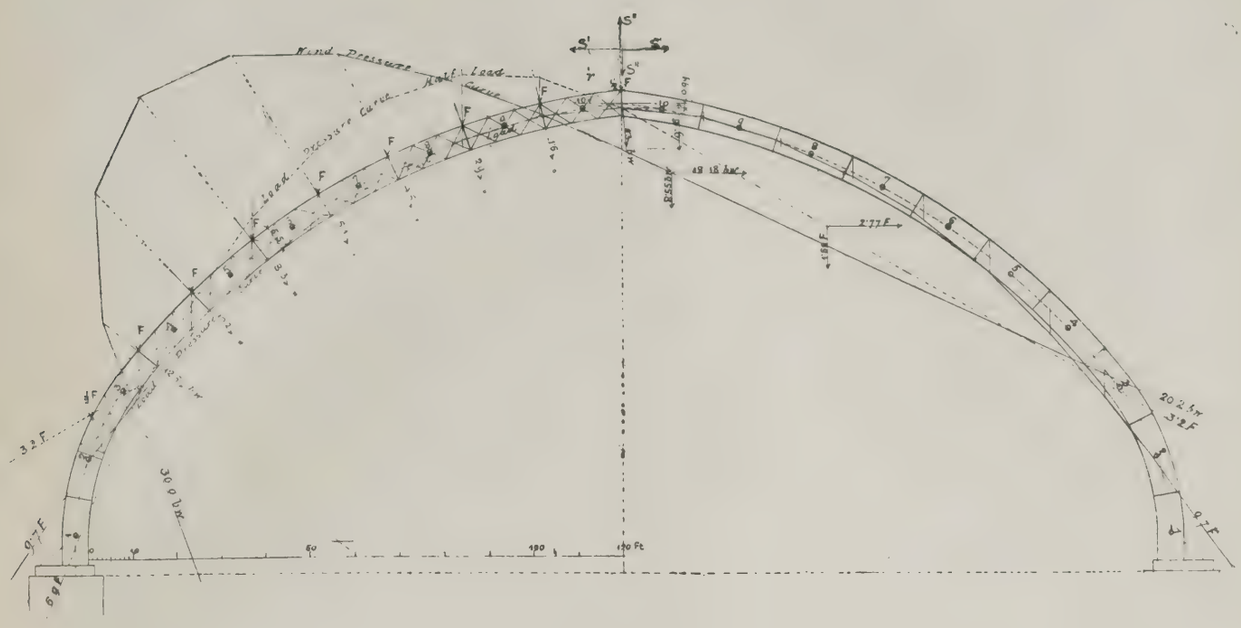


Fig. 8

per square foot. It may be noted that only the radial component of the wind-pressure is effective as usually assumed.

Load : $\Sigma R_x \mu'_x = -136771$; $\Sigma R_x \mu_x'' = -225454$; $\Sigma R_x \mu''' = -2163r$.
Wind : $\Sigma R_x \mu'_x = -770000$; $\Sigma R_x \mu''_x = -1214444$; $\Sigma R_x \mu_x''' = -10796r$.

$\Sigma(\mu'_x)^2 = 50153$; $\Sigma(\mu'')^2 = 141970$; $\Sigma(\mu'''_x)^2 = 20r^2$; $\Sigma \mu'_x \mu_x''' = 786r$; $\Sigma \mu_x' \mu_x'' = \Sigma \mu_x'' \mu_x''' = 0$.

The equations are now as follows :

Load
$$\left\{\begin{aligned} &+50153S' + 786rS' - 136771F = 0 \\ &+141970S'' - 225454F = 0 \\ &+786rS' + 20r^2S' - 2163rF = 0 \end{aligned}\right.$$
$S' = 2{\cdot}77F$; $r = -0{\cdot}99ft.$; $S'' = 1{\cdot}588F$.

Wind
$$\left\{\begin{aligned} &+50153S' + 786rS' - 770000bw = 0 \\ &+141970S'' - 1214444bw = 0 \\ &+786rS' + 20r^2S' - 10796rbw = 0 \end{aligned}\right.$$
$S' = 18{\cdot}18bw$; $r = -9{\cdot}6ft$; $S'' = 8{\cdot}55bw$.

The resultant of S′ and S″ is the reaction of the right-hand abutment, and its amount, direction, and position, given by the above results, is shown in the drawing. The left-hand abutment pressure is found by completing the funicular polygon in the usual way to be 6·9F. If the right hand half of the arch is equally loaded with loads F, there will be another pressure line equal and opposite to that shown, and the resultant of the two will be the pressure line for the full load shown to the right, with an abutment pressure of 9·7F. The wind-pressure line is obtained in a similar way.

TABLE III.

Part	λ	I	R (loads)		R (wind)		μ′		μ″		μ‴	
No.	Ft.	ft²in²	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
1	17·5	317	−472	0	−3209	0	+96·6	+96·6	+122·6	−122·6	+r	+r
2	17·5	317	−445	0	−2718	0	+79·6	+79·6	+119·5	−119·5	+r	+r
3	17·5	317	−385	0	−2056	0	+63·8	+63·8	+112·0	−112·0	+r	+r
4	17·5	317	−302	0	−1206	0	+50·9	+50·9	+101·0	−101·0	+r	+r
5	17·5	317	−230	0	− 827	0	+38·5	+38·5	+ 88·0	− 88·0	+r	+r
6	17·5	317	−158	0	− 456	0	+27·8	+27·8	+ 74·0	− 74·0	+r	+r
7	17·5	317	−98	0	−218	0	+18·5	+18·5	+ 58·9	− 58·9	+r	+r
8	17·5	317	−51	0	−84	0	+11·0	+11·0	+ 43·2	− 43·2	+r	+r
9	17·5	317	−18	0	−19	0	+ 5·3	+ 5·3	+ 26·4	− 26·4	+r	+r
10	17·5	317	−4	0	−3	0	+ 1·2	+ 1·2	+ 8·8	− 8·8	+r	+r
			×F		×b w							

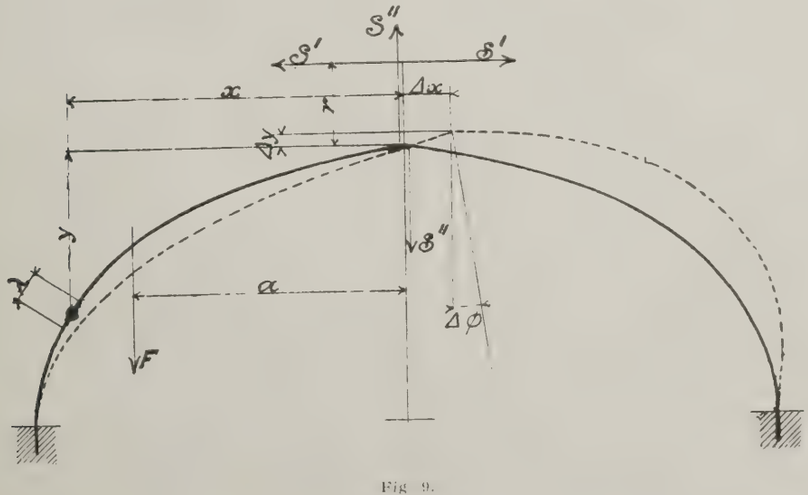


Fig. 9.

The forces acting on the arch are now complete, and we can calculate the stresses in any section in the way illustrated by Fig. 7. We have, for example, the stress in the outer chord at point 6.

From load : $(9{\cdot}7 \cdot 12 - 11 - 24{\cdot}5 - 375 - 23{\cdot}6)F + 5{\cdot}5S = 0$; $S_f = -3{\cdot}6F$.
From wind : $(30 \cdot 48 - 8{\cdot}3 \cdot 8{\cdot}7 - 10{\cdot}2 \cdot 26 - 12{\cdot}5 \cdot 43)bw + 5{\cdot}5S = 0$; $S_w = -103{\cdot}4bw$.

Assuming the weight of ironwork at 19lbs., and of the covering at 9lbs. per square foot, we find with $b = 29'6''$.

$F = 17\frac{1}{2} \times 29\frac{1}{2} \times 28$ lbs. $= 6{\cdot}4$ tons, and assuming $w = 40$lbs. we have $bw = 0{\cdot}523$ ton and

$S_f + S_w = 3{\cdot}6 \cdot 6{\cdot}4 + 103{\cdot}4 \cdot 0{\cdot}523 = 76$ tons compression.

The sectional area of the chord is about 21 square inches wrought iron.

It may be interesting now to recall to mind the older method of calculating the fixed arch from the movements of the section at the crown.

Naming (Fig. 9) the movements of the left face $\Delta\phi$, Δx and Δy and those of the right face $\Delta\phi'$, $\Delta x'$ and $\Delta y'$ we have the three equations : $\Delta\phi = -\Delta\phi'$; $\Delta x = -\Delta x'$ and $\Delta y = \Delta y'$. Each movement, though small, is the sum of movements $d\phi$, dx, dy, due to the deformation of one element λ_x, and we

have $d\phi = \frac{M\lambda}{EI}$; $dx = yd\phi$; $dy = xd\phi$. Then assuming $\frac{\lambda}{EI}$ to be constant, we find:

$$\left.\begin{aligned} \Delta\phi + \Delta\phi' = 0 &= \Sigma F(x-a) + \Sigma S'y \\ &\quad + \Sigma S'r + \Sigma S''x \\ y\Delta\phi + y'\Delta\phi' = 0 &= \Sigma F(x-a)y \\ &\quad + \Sigma S'y^2 + \Sigma S'rv + \Sigma S''xy \\ x\Delta\phi - x'\Delta\phi' = 0 &= \Sigma F(x-a)x \\ &\quad + \Sigma S'yr + \Sigma S'rx + \Sigma S''x^2 \end{aligned}\right\} \quad (11)$$

Here F $(x-a)$ is the same as R_x in the previous calculation, y is the same as μ' and x is the same as μ''. Substituting these symbols in (11), and observing that sums where x (*i.e.* μ'') appears only once are nil, we get equations (10*a*) in the order 3, 1, 2. If it were desired to take into account the additional movements $\Delta\psi$, Δ_x and Δy, due to the axial compression, and to the shearing stress, there would be two additional sums for every one in (11), the same as there would be in (10*a*). Different factors m_x for moments, axial stress, and shear would have to be introduced in both calculations. The labour of calculating is equal in both methods, but the advantage of the method based upon the principle of work is that equations (10*a*) or (9) are the same for all kinds of structures composed of solid beams or bars, while equations (11) are only applicable to solid, straight or curved beams, and would be different in each case.

THE STRENGTH OF ROLLED STEEL BEAMS.

By W. LEICESTER.

(Concluded from p. 397, April 27, 1910.)

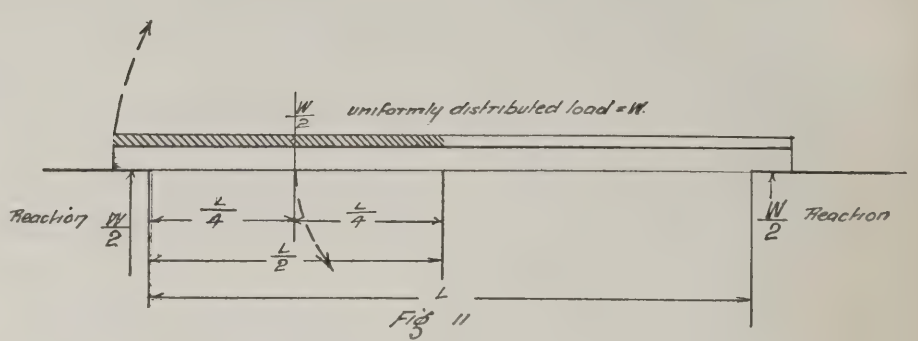
Referring to Fig. 10,* we have $\frac{w}{2}$ acting at the end of the beam and causing it to have a tendency to rotate "clockwise"—as shown by the dotted line—around any point or fulcrum selected in the axis of the beam This "fulcrum" or "centre of moments" is the point on the beam at which it is desired to find the "bending moment." First, determine the B.M. at the centre under the load. At this point the B.M. will be the greatest, and its intensity is measured by "$\frac{w}{2}$" at the support multiplied by its perpendicular distance, or leverage from that point, which is

$$\frac{w}{2} \times \frac{L}{2} = \frac{wL}{4}$$

$\frac{wL}{4}$ then, is the formula for finding the maximum bending moment in any beam supported at the ends and loaded at the centre with a point load.

Next consider the case of a beam loaded uniformly over its entire length (Fig. 11) In this case, as before, it is obvious that half the load will be carried by the supports, and consequently the reactions will each be $\frac{w}{2}$. Taking moments at the centre of the beam, we have $\frac{w}{2}$ acting with a leverage of $\frac{L}{2}$ causing the beam to rotate clockwise, but there is also a load on the beam causing it to rotate in the opposite direction. This load is of course half the total load shown by the shaded portion in Fig. 11. Its amount is $\frac{w}{2}$ and its leverage is $\frac{L}{4}$. Distributed loads are always considered as acting through their centre of gravity, which is —in the case of even distribution—at the centre of their length. Therefore the leverage of the shaded portion of the load, Fig. 11, is $\frac{L}{4}$. So that we have

* See page 397, issue of April 27, 1910.



$$\frac{w}{2} \times \frac{L}{2} - \left(\frac{w}{2}\right) \times \frac{L}{4} = \frac{wL}{4} - \frac{wL}{8} = \frac{2wL - wL}{8} = \frac{wL}{8}$$

This is the formula for finding the maximum bending moment for beams supported at the ends and uniformly loaded over their entire length.

It has previously been shown that bending moment is equal to moment of resistance of the beam.

But resistance of the beam is equal to the section modulus × ultimate fibre stress, or breaking stress of the metal, and since the working stress is one-fourth of the ultimate stress: the safe resistance therefore is equal to section modulus × working stress, and this for safety is equated with the bending moment so that B.M. = Mod. Sec. × working stress per inch.

The section modulus of a 11in. × 6in. × 42lb. R.S.J. British Standard section is 52.55 sq. inches: find the safe distributed load that it will support over a span of 14ft. under a working stress of 7.5 tons per sq. in.

Bending Moment = *Safe* Moment of Resistance

$$\therefore \quad \frac{wL}{8} = 52.55 \times 7.5$$

$$= \frac{w \times 14 \times 12}{8} = 52.55 \times 7.5$$

$$21 \times w = 394.125$$

$$\therefore \quad w = 394.125 \div 21 = 18.76 \text{ tons.}$$

It is thus seen that to find the safe uniformly distributed load for a beam with ends supported over any span, the formula or rule is,

Section modulus × 8 × working stress per sq. in. on the steel divided by the length in inches.

So that if the working stress is limited to 7 tons per in., the rule will be expressed as follows:—

$$\frac{\text{Sec. mod} \times 8 \times 7}{\text{Length in inches}}$$

And for a centre load the rule is:—

$$\frac{\text{Sec. mod} \times 4 \times 7}{\text{Length in inches}}$$

Examples of Calculating.

Before passing to the consideration of other than distributed and centre loads, it will be better if the foregoing rules are supplemented with a few examples.

Find what centre load can be applied to a 16in. × 6in. × 62lbs. R.S.J. British Standard section, when the span is 18ft. and the working stress on the metal is limited to 7 tons per inch.

The modulus section is 90.71 sq. inches.

(*a*) Then $\frac{90.71 \times 4 \times 7}{18 \times 12} = 11.38$ tons.

(b) What distributed load can safely be applied to a 12in. × 6in. × 54lbs. R.S.J. B.S. section.

Span 16ft.. Unit stress 7.5 tons per inch. The section modulus is 62.58 sq. ins.

$$\frac{62.58 \times 8 \times 7.5}{16 \times 12} = 19.55 \text{ tons.}$$

In practice it is often necessary to select a section suitable for some arbitrary condition. For instance: Determine the section of a R.S.J. suitable for a span of 14 ft. and a distributed uniform load of 30 cwt. per lin. foot.

$$\text{Max. Bending Moment} = \frac{wL}{8}$$

$$= \frac{21 \times 14}{8} = 36.75 \text{ foot tons.}$$

This must be reduced to *inch* tons by multiplying by 12 = 441 inch tons.

But bending moment equals resistance, therefore "resistance of beam" = 441 inch tons; but this "resistance" is made up of the "modulus section" multiplied by the working stress.

Therefore, if the "bending moment" in inch tons is divided by the working stress, the result will be the "modulus section," which it is necessary that the selected beam should possess.

$$441 \div 7.5 = 58.8 \text{ square inches.}$$

Now since we are confined to the sections turned out by the rolling mills, and which are given on the "beam sheets," we must select a beam from the list, which approaches nearest the conditions demanded.

Deflection.

In making this selection there is another very important condition to be provided for, that is, "deflection." The beam should not deflect more than $\frac{1}{360}$ of its span, and to provide against excessive deflection the depth should not be less than $\frac{1}{20}$ of the span for quiescent loading and $\frac{1}{14}$ for moving loads.

Upon inspecting the column headed "Modulus Section" about x-x; in sq. ins. it is found that the beam whose "modulus section" is nearest to 58.88 without dropping below that figure is a 12in × 6in. × 54lbs. R.S.J., whose mod. sec. is 62.58 sq. ins., and the depth is $\frac{1}{14}$ of the span. That beam would undoubtedly more than fulfil the conditions required, but it does not follow that it is the best choice. There is a 14in. × 6in. × 46lbs., whose section modulus is a little higher. Now here we have a beam which is 8lbs. per foot less in weight: but which has a higher value with regard to its section modulus. From an economical point this beam would be preferable to the former, if the extra depth of 2in. was not objectionable. The weight of these beams should not be lost sight of in selecting. It is by weight that their cost is generally estimated. Carrying this example a little further on the "beam sheet," we notice a 15in. × 5in. × 42lb. R.S.J., whose section modulus is 57.06 sq. inches; provided that the depth is not objectionable, it appears on the face to be a tempting offer, since its weight is only 42lbs. per foot. As a rule, it is not wise to depart from your calculations in that direction. The results or conclusions to which they lead should be considered as the "irreducible minimum," below which it is dangerous to proceed.

Therefore, before giving your verdict on this last beam, investigate under what working stress the steel will exist. The bending moment under which it will exist is 441 inch tons.

Then $441 \div 57.06$ (its Sec. Mod.) will give the unit or working stress, to which the steel will be subjectel.

$441 \div 57.06 = 7.72$ tons per sq inch.

This is not excessive, and under a stationary load it would be quite safe.

ECCENTRICALLY LOADED STANCHIONS.

By W. E. BARKER.

Most formulæ for calculating the strength of stanchions or struts assume that the load acts centrically, and therefore when using one of the generally accepted formula in the case of an eccentrically loaded stanchion, the results obtained will be incorrect.

A common case of eccentric loading occurs when a stanchion is used to support a crane girder in addition to the roof truss—as indicated by the sketch. The crane bracket should in all cases be made fairly deep and no wider than practicable for clearance of crane wheels and frame. A very good type of bracket is shown by the illustration, which is taken from actual workshop practice. It will be noticed that the crane bracket is cut from a piece of I section joist, and by one diagonal cut through a suitable length of joist two brackets can be made.

As regards calculations, the eccentric loading causes a bending stress, the bending moment being the load of the crane that comes directly over the centre of the crane girder where it rests on the bracket, multiplied by the distance from the centre of stanchion to centre of crane girder.

Therefore let

W = Total weight in tons or cwts. of the eccentric load.

D = Distance between neutral axis and load.

E = Distance between neutral axis and outer edge of stanchion.

R = Radius of gyration of section.

The radius of gyration of the various sections of I joists or stanchions can easily be obtained from any of the section books issued by the leading rolling mills.

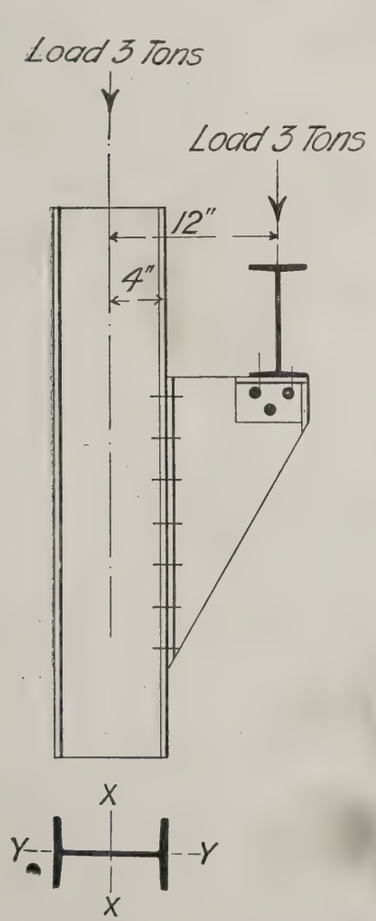


DIAGRAM ILLUSTRATING ECCENTRICALLY LOADED STANCHIONS.

To obtain the equivalent centric load upon the stanchion as a result of the eccentric load, we have

$$W\left(1 + \frac{D.E.}{R^2}\right)$$

Having found the equivalent centric load resulting from the eccentric load, this must be added to the direct centric load due to the weight of the roof truss, etc., and the result will be the total load that the stanchion will have to support.

Let us work out a case from actual practice, the stanchion being 8×5×28lbs. per foot and the length 16ft. from foundation level to underside of shoe of roof truss, having a combined centric load from truss, roof covering and wind pressure of 3 tons and an eccentric load from crane 3 tons.

Therefore $3\left(1 + \frac{12 \times 4}{10.8}\right) = 16$ tons equivalent centric load, and 16 tons×3 tons=19 tons total centric load.

A British standard beam used as a stanchion 8×5×28lbs. per foot has an area of 8.24 sq. ins. and a minimum radius of gyration of 1.11. Therefore to obtain a safe load per square inch divide the length of the stanchion in inches by the radius of gyration which in this case equals 173. From a standard section book we find that, allowing a factor of safety of four, the safe centric load per sq. in. for an 8×5 stanchion 16ft. long with a minimum radius of gyration of 1.11 is 2.32 tons per square in. of section, or a total load of 19 tons.

It must be borne in mind when using this formula that the maximum radius of gyration—axis XX—is used for the term R when the eccentric load comes on the flange, and the minimum radius of gyration—axis YY—when the load is applied to the web of the section.

THE GERMAN BUILDING TRADE TROUBLES.

Some very strong allegations as to the "uncompromising attitude" of the employers, who were said to be actuated by a determination to crush the trade unions, having been made in the English newspapers, we have thought it desirable to obtain an authoritative statement of the case for the employers. The information here given has been gleaned from particulars courteously supplied by officials of the German Building Trades Employers' Federation, and it therefore, of course, represents only the employers' point of view, which, in the circumstances, is exactly what was required.

Addressing the Imperial Administrative Authority, the German Builders' Federation offer the following explanation of what has taken place:—

On April 15th nearly all the building concerns, adherent to the German Building Employers' Federation, dismissed their workmen, belonging to the Social-Democratic Central Associations of Masons and Bricklayers, Joiners, and Labourers, as also those belonging to the Christian Central Association of Building Workermen. The number dismissed amounted at first to about 200,000, and was afterwards substantially increased. The occasion for this severe measure is the refusal by the large workmen's organisations to renew the Tariff Agreement, which expired on March 31st, on a basis which the employers could consider practicable.

The negotiations which have been in progress since November last have shown that, on certain points of principle, differences existed between the parties which could not be bridged over. These could not be overcome by the efforts made, during recent weeks, to bring about an understanding, by Imperial officials, by the Governments of various Federal States, as also by the magistrates of several cities, because the tactics of the workmen's representatives, as on former occasions, consisted in taking exception to proposals of the employers, while conceding nothing, the object obviously being to put off the ultimate decision to a time unfavourable to the employers. The dispute turns not so much upon the rate of wages as upon the fact that the employers demand provisions in the proposed working agreement, which shall serve to maintain the agreement itself, and also to strengthen several regulations therein, hitherto regarded as negligible by the workmen. The workmen's organisations are extremely opposed to these proposals.

After referring the administration to some accompanying documents for details, the employers proceed:—"The German Building Trades Employers' Federation begs that these particulars be sufficiently studied, because it is of first importance to it, that in the Government departments of the Empire it should be known that the employers desire nothing inequitable, but are rather filled with humane and social ideas. Also that, for safety in carrying out building operations, that indispensable authority on the works is required which only these working conditions can secure—conditions which are necessary to the undisturbed further progress of the building industry. No extraordinary insight is needed to see that the employers will gladly extend the hand of peace as soon as the operatives are ready to give their adhesion to the, for the employers, indispensable conditions in the new tariff agreement. That our action is not directed against the workmen's organisation itself follows from the fact that no object is to conclude a new tariff agreement with the strong central organisations of the workers."

The documents referred to give some explanations of the reasons for the demands put forward by the employers; these are, shortly:—That the tariff agreement must be with the central organisations of the workers, and, in addition, must be subscribed to by each of their affiliated branches, because it is essential that one fundamental agreement should rule throughout the Empire, and it is impossible, therefore, to leave it permissible for local associations to set the agreement aside. That to each local association full liberty shall be reserved to bargain as to the local minimum rate of wages, and as to any special methods of remuneration which may be locally in use, but that there is no intention to use this freedom as a means to lower wages. It is explained that under the minimum standard wage the output of workmen has notably declined, and it is contended that it is not equitable that the bad workman should receive the same wage as a good one. It is also contended that the system by which each workman enters into a formal contract of work with his employer shall be admitted as allowable under the tariff agreement. This is because in some places the unions object to these contracts, and fine or expel members who sign them. The employers do not wish to compel every man to sign a contract, but they wish that where a man desires to secure a better wage for better ability he may be able to enter into a special contract without coming under the ban of the association to which he may belong. The employers further urge that where the employers set up, or have set up, Labour Exchanges, these shall not be interfered with by the operatives in any way. It appears that the unions do not like the Bureaux, and prejudice them in the eyes of their members. It seems the unions want to have joint control of the labour exchanges; and then the officials of the exchanges, who are mostly members of the Social-Democratic Organisation, are expected to favour the members of that body at the expense of the rest.

The employers, it seems, resolved three years ago, that they would not allow their branches to concede any shortening of the summer hours below a 10 hours day, or, where the hours in summer are already below that, to shorten them further. The workmen demand the rescission of this resolution as one of the conditions of agreement.

NOTES ON COMPETITIONS.

Competition for Essays on and Designs for Glazed Bricks.

The competition instituted by a committee of glazed brick manufacturers produced several designs of merit, but none displaying such a combination of artistic quality with practical suitability to the material as, in the opinion of Mr. Max Clarke, R.F.I.B.A., the assessor appointed, would justify the award of the first premium to any individual designer. Several of the essays submitted have also been admirable, but in no case did a set of drawings and the essay sent with it attain anything like corresponding excellence. The assessor has awarded prizes as follows:—50 guineas to John Greaves and L. MacDonald Gill, 16, Old Buildings, Lincoln's Inn, W.C.; 50 guineas to Alexander Peacock, Elmswell, Longton Bridge, Preston; 25 guineas to F. Van Baars, 5, Clive Road, Colliers Wood, Surrey; and two guineas to each of the following:—A. Troyte Griffiths, The Priory Gateway, Malvern; J. M. W. Halley and H. A. McQueen, 55, Lincoln's Inn Fields, W.C.; J. Algernon Hallam, 18, St. Mark's Crescent, Regent's Park; W. Henry Jowett, 38, North Road, Highgate, N.; and Leonard W. Tracey, 49, Rann Street, Ladywood, Birmingham. The glazed brick manufacturers intend to circulate from time to time reproductions of the drawings and also selections from the various essays.

LIST OF COMPETITIONS OPEN.

MAY 31. MUNICIPAL OFFICES, KARACHI. Particulars given in our issue March 16th.

JUNE 11. COVENTRY. ENLARGEMENT OF SCHOOL at STOKE. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

JUNE 15. ELEMENTARY SCHOOLS, ACTON. Particulars given in our issue of March 16th. The Royal Institute of British Architects has requested architects not to compete.

JUNE 20 YSTRADGYNLAIS SEWERAGE SCHEME. The Rural District Council will pay £20 for the most suitable scheme for sewering Ystradgynlais Lower. Competitors to state terms for full detailed plans and specifications, and for carrying out the scheme they submit. Particulars from Mr. T. Watkins, surveyor to the Council, Ystradgynlais.

JULY 9. PROPOSED USHER HALL, EDINBURGH. Particulars given in our issue of April 20th. Inquiries to be addressed to Thomas Hunter, Town Clerk, City Chambers, Edinburgh.

AUGUST 31. COVENTRY. NEW ELEMENTARY SCHOOL in Centaur Road. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

TRADE AND CRAFT.

A New Steel Lathing.

The Trussed Concrete Steel Co., Ltd., of Caxton House, Westminster, who supply the Kahn bar for reinforcing concrete, have just recently put on the market a material which, while it has its uses for reinforcing concrete, is more generally applicable to plastered surfaces.

This material known as "Hy-Rib" consists of a sheet of slitted metal pulled out to open up into mesh work formation, stiffened every now and again by unsevered portions of the sheet bent to form ribs that serve to stiffen it and displace studs. The material derives its name from these rigid "high ribs." It is something to be able to do away with the use of studs for partitions and walls, but the ribs have a further use in

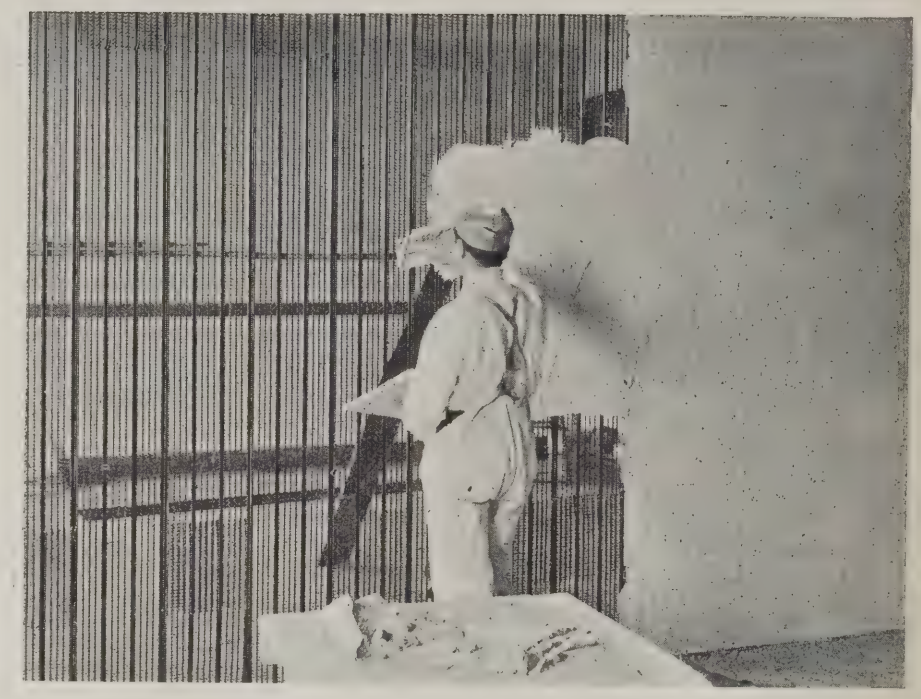
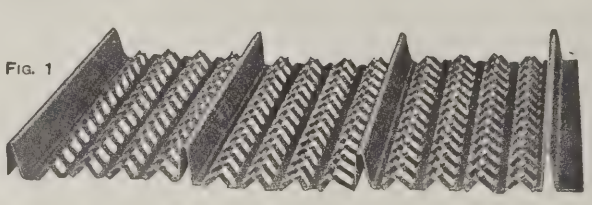


FIG. 1



stiffening the sheet of lathing so that it can be used for reinforcing concrete floors and roofs without centering being required, the material having sufficient strength and rigidity to withstand the weight of wet concrete and the punning of the same thereon. The lathing quality of "Hy-Rib" seems very good, as the surface is straight and true, and the expansion of the metal to form the meshwork is so arranged as to provide a good key with a minimum amount of plaster. As "Hy-Rib" so greatly reduces the cost of building work by doing away with expensive field labour and centering, while also saving time in erection, it is obvious that there must be a very large field for its use. It has been applied already in the United States to the construction of floors, roofs, walls, partitions, ceilings, and floorings of all kinds. One kind of application is interesting, namely, the use of bent sheets of the material for the centering of arched floors, culverts, conduits, sewers, silos, tanks, reservoirs, and tunnels.

"Hy-Rib" is manufactured from the highest grade of open-hearth rolled steel plate, in three guages. The cross-sectional areas of metal per foot of width, including side laps, are as follows:—

U.S. Gauge.	Sq. Ins.
28	.209
26	.251
24	.335

The centre of gravity of the section is 3-10ths in. from the flat side of the sheet.

As centering, the following table gives the safe load in lbs. per sq. ft. for "Hy-Rib" not embedded in concrete:—

U.S. Guage.	Span in Feet.						
	2	2½	3	3½	4	4½	5
28	68	44	30	22	17	13	11
26	87	56	39	29	22	18	15
24	140	90	63	46	35	28	22

Of course, if the material is arched its strength as centering is greatly increased.

When wide spans are necessary, temporary lines of shoring may be arranged at convenient centers.

The use of "Hy-Rib" for reinforced concrete floors is simple. It is laid over the supports with the lath side down, and the concrete poured in from above; the concrete flows through the lath surface only enough to secure a good key or bond to the steel. Plaster is applied directly to the under surface. Sheets are laid side by side and are spliced by just overlapping, so as to interlock the end ribs. There is obvious economy in a material which provides reinforcement and centering all in one. Roofs are constructed in the same way as floors except the loads are lighter and the construction is therefore lighter, slabs as thin as 1¼ins. often being built. This saving in dead weight in a fire-resisting roof is a point of economy: it saves in the direction of lighter roof trusses and supports being needed.

The manner of uses of the material for partitions, walls, and ceilings is obvious No channels, tees, angles, or studs are necessary, thus doing away with the expense and labour of attaching sheets of lath struts.

Curved sheets of "Hy-Rib" are supplied shop bent, varying in radius from 13ins. to 20ft. They have been used for reinforcing concrete sewer and water pipes.

A useful little booklet is published by the Trussed Concrete Steel Co., Ltd.

Berwickshire.—Duns School Board has been considering proposals for the enlargement of the Berwickshire High School, Duns, and it has been resolved to instruct a firm of Glasgow architects to prepare final plans for the extension and specifications in terms of the Scotch Education Department's requirements, with a view to an application for a grant under Section 19 of the Education (Scotland) Act, 1908. The probable estimate of the cost of the extension is £5,530.

COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about five days or longer after the date of this issue. Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders. The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

May 30. **HALIFAX.**—Erection of two shops and appurtenances, situate at Skircoat, Halifax, for the Halifax Industrial Society, Ltd. Plans, etc., may be seen, and bills of quantities obtained at offices of Clement Williams and Sons, architects, Post Office Buildings, Commercial Street, Halifax.

May 30. **PINXTON.**—Erection of four cottages by the Pinxton Co-operative Society, Limited. Plans and specifications can be had from the architect, John Tomlinson, South Normanton, or the Secretary, Ashville, Pinxton, on the deposit of £1 1s. Tenders to be sent addressed to the Secretary.

May 30. **SEATON.**—Erection of a residence at Seaton. Plans and specifications may be seen at the office of Donald and Donald, 14, John Street, Workington, to whom tenders must be sent. Only full tenders will be considered, and the work will be required to be completed within five calendar months of the signing of the contract.

May 30. **CHELMSFORD.**—Alterations and additions to King Edward VI. Grammar School. The drawings and specifications may be seen on application to the architects, Charles and W. H. Pertwee, Chelmsford. A deposit of £5 is required. Quantities will not be supplied. Tenders to be delivered to William Stunt, solicitor, Clerk to the Governors, 71, Duke Street, Chelmsford.

May 30. **RYDE, I.W.**—Alterations and additions to the Artillery Drill-hall, Butler's Road, Ryde, I.W., for the Southampton Territorial Force Association. Plans and specification can be seen at the office of the architect, Percy M. Du Feu, Ventnor from whom copies of same and form of tender can be obtained on deposit of £1 1s. Tenders to be sent to the offices of the Association, 32, Queen's Terrace, Southampton.

May 30. **BARNSLEY.**—Erection and completion of new wards, to accommodate 38 beds, a new block for kitchens and offices connected therewith, new sterilizing and store rooms, new electric lift, and reconstruction of corridors and renovations to central block, at Beckett Hospital. Plans and specifications may be inspected on application to the architects, G. Moxon and Son, Central Chambers, 26, Church Street, Barnsley. Bills of quantities may be obtained on deposit of £3 3s. Tenders to be delivered to R. F. Pawsey, hon. secretary, 8, Regent Street, Barnsley.

May 30—June 8. **TIDWORTH, HANTS (Assaye Barracks).**—Erection of twelve blocks of troops' stables, including drainage, water supply, pavings, etc., at Assaye Barracks, Tidworth, Hants, for the Secretary of State for War. Plans, specification, and conditions of contract may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., or at the Barrack Construction Office, Tidworth, on May 25, 26, and 27. Those desiring to tender and to receive a copy of the bills of quantities must apply to the Director of Barrack Construction not later than May 30, and the application must be accompanied by a deposit of 10s. Cheques or orders to be made payable to the Assistant Financial Secretary, and crossed "Bank of England for Credit to Army Funds." Tenders to be delivered addressed to the Director of Army Contracts, War Office, Whitehall, London, S.W.

May 30—June 8. **TIDWORTH, HANTS (Mooltan Barracks).**—Erection of twelve blocks of troops' stables, including drainage, water supply, pavings, etc., at Mooltan Barracks, Tidworth, Hants (or other selected site within the barrack area), for the Secretary of State for War. Plans, specification, and conditions of contract may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., or at the Barrack Construction Office, Tidworth, on May 25, 26, 27. Those desiring to tender and to receive a copy of the bills of quantities must apply to the Director of Barrack Construction not later than May 30, and the application must be accompanied by a deposit of 10s. Cheques or orders to be made payable to the Assistant Financial Secretary, and crossed "Bank of England for Credit to Army Funds." Tenders must be delivered addressed to the Director of Army Contracts, War Office, Whitehall, London, S.W.

May 30—June 15. **DUNSTABLE.**—Erection of a new Council school, for the Bedfordshire C.C. Drawings, specifications, and form of contract may be inspected at the office of Gotch and Saunders, architects, Kettering. Builders desirous of tendering must send their names and addresses to the architects on or before May 30, together with a deposit of £1 1s., when a copy of the bill of quantities and form of tender will be forwarded to them. The contractor will be required to find sureties for the due performance of the contract. The acceptance of a tender will be subject to the approval of the Local Government Board. Tenders must be sent to W. W. Marks, Clerk of the County Council, Shire Hall, Bedford.

May 31. **BELFAST.**—Erection of a manse at the Woodvale Park Presbyterian church. Plans, etc., may be seen at office of Young and Mackenzie, Scottish Provident Buildings, Belfast.

May 31. **MERTHYR TYDFIL.**—Improvement and extension of Pentrebach school, for the Education Committee. Names in writing to the Deputy Surveyor, Town Hall, with deposit of £2 2s. with the Borough Accountant.

May 31. **BRYCHNI (Wales).**—Construction of a masonry arch bridge over Afon Wen, near Brychni, in the parish of Llangybi, for the Lleyn R.D.C. Plans, specifications, etc., may be seen at the office of the Council's Surveyor, Tynewydd, Chwilog, S.O. Tenders (which must be on a form supplied by the Council's Surveyor) to be delivered at the office of Hugh Pritchard, Clerk to the Council, Pwllheli.

May 31. **CROYDON.**—Additions and alterations and general repairs at "Crosslands" and "Lindens," 218 and 220, London Road, for the Guardians. The specification and conditions of contract may be seen, and bills of quantities and form of tender obtained, at the office of Henry Berney, architect, 104, George Street, Croydon, surveyor to the Guardians, upon deposit of £5 5s. The contractor will be required to enter into a contract and bond and give two sureties, to be approved by the Guardians, for the due performance thereof. Tenders are to be addressed to Harry List, Clerk to the Guardians, Union Offices, Mayday Road, Thornton Heath, Surrey.

June 1. **STENALEES (Cornwall).**—Erection and completion of a new Wesleyan church, according to plans and specifications, which may be seen and particulars obtained at the office of F. C. Jury and Son, Architects and Surveyor, No. 1, Alma Villas, Tregonissey Road, St. Austell. Tenders to be sent to Rev. W. H. Gibbs, Wesley Manse, Bodmin, Cornwall.

June 1. **LONDON, S.E. (Lewisham).**—Building brick graves and vaults, supplying York ledgers, taking down and replacing head stones, etc., which may be required at the Borough cemeteries at Ladywell and Hither Green during the three years from Midsummer, 1910, for the Borough of Lewisham Cemeteries Committee. Specifications, with forms of tender and schedule of prices, may be obtained on application to Edward T. Oxenham, Clerk to the Committee, Lewisham Town Hall, Catford, S.E., to whom tenders should be sent.

June 2. **WOODSTOCK.**—Alterations, repairs, and other work at the Workhouse, for the Guardians. Specifications can be obtained on application at the office of A. G. Higgs, Clerk to the Guardians, Woodstock, to whom tenders must be sent.

June 3. **BRADFORD.**—(See "Sanitary Engineering.)

June 4. **HOLYWELL.**—Erection of a mortuary Chapel at their new public cemetery, for the U.D.C. Plans and specification may be seen at the office of R. Arthur Thomas, District Surveyor, Holywell. Tenders to be sent to the Clerk to the Council, The Town Hall, Holywell.

June 4. **DUBLIN.**—Tenders are invited for (a) general contractors' work; (b) shop fitting; (c) electric installation; (d) decoration of 67, Sackville Street premises. Plans, etc., can be seen in office of Geo. T. Moore, A.R.C.S.I., M.Inst.C.E.I., 1 and 2, Foster Place, Dublin.

June 4. **CASTLEREA.**—Erection of a new residence for the Sisters of Mercy at Castlerea Workhouse, for the Guardians, in accordance with plans, etc., which may be seen at the office of W. A. Byrne and Son, architects, 20, Suffolk Street, Dublin, or at the Boardroom, Workhouse, Castlerea.

June 4. **DEAL.**—Alterations and additions to the Wesleyan day schools, Union Street, Deal. Plans and specifications, prepared by the architect, Ernest W. May, Walmer, can be seen at Lloyd's Agency, opposite Deal Pier, till May 28, on application to John Prior. Tenders to be delivered to the Rev. M. Allen, Blenheim Lodge, Gilford Road, Deal.

June 4. **EDENDERRY (Ireland).**—Repairs of certain labourers' cottages, for the R.D.C., according to specification which can be seen on application to H. R. Waters, C.E., Edenderry, who will supply all necessary information. Tenders must contain the names of two solvent securities, willing to join in a bond with contractor (at his own expense) for the due performance of the contract. Forms of tender can be had on application to T. Humphrey F. Bor, Clerk of the Council, Boardroom, to whom tenders must be sent.

June 6. **MANCHESTER.**—(See "Miscellaneous.")

June 6. **PENGAM (Wales).**—Erection of an infectious diseases hospital, near Pengam, consisting of two pavilions, lodge, laundry, stables, and administrative block, for the Gellygaer U.D.C. Plans and specifications can be seen and bills of quantities and all particulars may be obtained on application to the Council's architect, P. V. Jones, Bank Chambers, Hengoed, on deposit of £2 2s. Tenders to be delivered to Frank T. James, Clerk, Council Offices, Hengoed.

June 7. **CAERAU (Glamorgan).**—Erection of a new goods shed, stable, etc., at Duffryn Sidings, Caerau, Glamorganshire, for the G.W.R. Plans and specification may be seen and forms of tender and bills of quantities obtained at the office of the engineer at Newport Station. Tenders to be addressed to G. K. Mills, Secretary, Paddington Station, London.

June 7. **WARWICKSHIRE.**—Alteration of the premises at the Aston Lower Grounds to fit the same for the requirements of the Territorial Units who will be there located, for the Warwickshire Territorial Force Association. Bills of quantities, form of tender, etc., may be obtained from the architects, James and Lister Lea and Sons, 19, Cannon Street, Birmingham, on deposit of £3 3s. The plans and conditions of contract may be seen and all further particulars obtained at the architect's offices. The contractor shall pay rates of wages and observe hours of labour not less favourable than those commonly recognised by employers and trades societies in the building and allied trades in the Birmingham district. Further, the conditions of employment generally accepted in the Birmingham district in the trade concerned shall be taken into account in considering how far the terms of the fair wages clauses are being observed. The contractor shall be prohibited from transferring or assigning to any person or persons whatever any portion of his contract without the written permission of the Association. The contractor shall be responsible for the observance of the fair wages clause by the sub-contractor. Tenders should be delivered at the offices of the Association, 46, High Street, Warwick.

June 8. **GRIMSBY.**—Erection of a new Council school in Strand Street, for the Borough Education Authority. Plans may be seen at the offices of Herbert C. Scaping, architect, Court Chambers, Grimsby. Bills of quantities will be supplied on receipt of a deposit of £2 2s. Tenders to be delivered to Douglas Chandler, Clerk to the Education Authority, Education Offices, Grimsby.

June 8. **LAMPHEY (near Pembroke).**—Erection of a new Council school building, for the Education Committee. Drawings and specifications may be seen on application to the Head Teacher at the present school at Lamphey, and also at the office of the architect, D. E. Thomas, 17, Victoria Place, Haverfordwest. Bills of quantities and forms of tender may be obtained at the architect's office upon deposit of £1 1s. Tenders must be delivered to W. Davies George, Clerk, County Education Offices, 9, Quay Street, Haverfordwest.

June 10. **BRADFIELD AND STAINLAND (Yorks.).**—Whole or separate tenders for the following works:—Bradfield: Stannington New Council school; Swinton: Roman Terrace Council school, alterations and additions; Stainland-with-Old-Lindley: Bowling-green Council school, new woodwork centre (builder, joiner, slater, plumber, plasterer, painter), for the West Riding Education Committee. Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders must be addressed to the Clerk of the County Council, Wakefield.

June 20. **WATERLOO WITH SEAFORTH.**—Erection of the Crosby Road North Council school, Waterloo, near Liverpool, for the U.D.C. Bills of quantities may be obtained from John I. Thompson, Clerk to the Council, Town Hall, Waterloo, near Liverpool, upon deposit of £1 1s. Drawings and specifications may be seen at the office of Appleyard and Quiggin, architects, 67, Lord Street, Liverpool. Tenders must be delivered to the Clerk to the Council.

ENGINEERING.

May 31. **BRYCHNI (Wales).**—(See "Buildings.")

May 31. **ROTHERHAM.**—Supplying and fixing complete fittings and apparatus for heating and ventilating, and also for laundry and disinfectant apparatus at the proposed smallpox hospital at Kimberworth, near Rotherham. Plans and particulars may be had on application to the Borough Engineer, Town Hall, Rotherham. Detailed plans and specifications must be submitted with the tender, which must be addressed to W. J. Board, town clerk.

June 1. **SOUTHAMPTON.**—Reconstruction of a portion of the town quay, Southampton (contract No. 4), such tender being based upon proposals to be submitted by the persons tendering, and the particulars supplied by the Harbour Board. Specification, conditions, and copies of the general drawings may be obtained upon application to E. Cooper Poole, A.M.Inst.C.E., Engineer and Surveyor to the Board, at the Board's offices, from 10 a.m. to 12 noon, upon deposit of £5. Tenders must be delivered to Harbour Board Offices, Town Quay, Southampton.

June 4. **EDENDERRY.**—Works at well at Edward Connors, Bunsallagh, and water supply to Carmakill National School, according to specifications, which can be seen on application to H. R. Waters, C.E., Edenderry, who will point out the work and give any information necessary. Tenders must contain the names of two solvent securities, willing to join in a bond with contractor (at his own expense) for the due performance of the contract. Forms of tender can be had on application to T. Humphrey F. Bor, Clerk of the Council, to whom tenders must be sent.

June 4. **HARTLAKE (Somerset).**—Taking down and re-building of Hartlake bridge, on the main road between Glastonbury and Wells, for the Somerset C.C. The new bridge will be constructed of reinforced concrete, and is not designed on any particular patented system. The work comprises reinforced concrete piling, beams and slabs, piers and abutments, and three arches of the following spans, 22ft., 11ft., 11ft.; also masonry parapets and wing walls, roadworks, and temporary bridge. Drawings, specifications, and form of contract may be seen by appointment at the County Surveyor's Office, Bath, when a copy of the bill of quantities and form of tender may be obtained on deposit of £3 3s. Tenders to be delivered to H. T. Chapman, County Surveyor, County Surveyor's Office, Queen Square, Bath.

June 7. **LONDON.**—Construction of a bridge over the waterworks channel of the River Lea for the L.C.C. Drawings, bills of quantities, form of tender, &c., may be obtained on application to the Chief Engineer of the Council, Maurice Fitzmaurice, C.M.G., at the County Hall, Spring Gardens, S.W., upon deposit with the cashier of the Council of £3 Full particulars of the work and conditions of contract may be obtained at the County Hall before the payment of this fee. The contractor will be bound to pay to all workmen employed by him in and about the execution of the contract, or any part thereof, wages at rates not less, and to observe hours of labour not greater, than the rates and hours set out in the Council's list, and such rates of wages and hours of labour will be inserted in and form part of the contract by way of schedule. Full particulars of the Council's Standing Orders on these matters are given in the L.C.C. Gazette.

June 14. **STAFFORD.**—Supply and erection of a triple-expansion vertical rotative direct-acting pumping engine and Lancashire boiler, together with all machinery, pipes, valves, and other works in connection therewith, for the Corporation. Conditions of contract, specification, form of tender, and bill of particulars may be obtained from W. Plant, borough and waterworks engineer, Borough Hall, Stafford, on deposit of £5. Tenders to be delivered at the office of Richd. Battle, town clerk, Borough Hall, Stafford, addressed to the Chairman of the Waterworks Committee.

June 16. **PEMBROKE.**—Supply and erection of a weighbridge at the Union Workhouse, including the erection of necessary house, which must be described in the tender, for the Guardians of Pembroke Union. Persons tendering are requested to submit tenders for a machine of 3 tons, 4 tons, 5 tons, and 6 tons capacity, stating the name of maker of machine. Tenders to be sent to J. S. W. Jones, clerk, Union Office, Pembroke.

SANITARY ENGINEERING.

May 23—June 10. **NEW MILLS (near Stockport).**—Sewerage and sewage disposal works at Birch Vale, for the Hayfield R.D.C., comprising:—1,520 lineal yards of earthenware pipes, 9in. diameter; 150 lineal yards of steel tubes, 9in. diameter, on rubble piers; and 35 lineal yards of cast-iron pipes, 9in. diameter, under railway, with all manholes, lampholes, flush tanks, and ventilators. Also extensions to the existing disposal works, including precipitation and stormwater tanks, percolating filters, and revolving sprinklers (55ft. diameter), dosing tank, carriers, distributors, etc. Plans and specifications may be seen at the offices of the engineers (John Newton, Son and Bayley, civil engineers, 19, Cooper Street, Manchester), and copies of bills of quantities and form of tender may be obtained from them or from J. R. Bowden, clerk, 16, High Street, New Mills, near Stockport, on deposit of £1 1s. Contractors proposing to tender are requested to send their names to the Engineers by May 23. Tenders to be delivered at the Rural Council Offices, 16, High Street, New Mills, by June 10.

May 30. **OSSETT.**—Tenders for the laying of about 300 yards of 9in. earthenware pipe sewers, the construction of ejector chamber, air compressing station, and other appurtenant works at the Healey sewage disposal works, for the Ossett Corporation. The plans may be seen and specification and bill of quantities obtained at the office of the Borough Engineer, Town Hall, Ossett, on deposit of £1 1s. Tenders to be sent to the Town Clerk, Ossett.

May 30. **WAKEFIELD.**—Alterations and additions to existing precipitation tanks, etc., the construction of about three acres of percolating filters, containing approximately 31,000 cubic yards of filtering material, effluent settlement tanks, liming and ferric sulphate houses, offices, mess-room, culverts, carriers, drains, and other appurtenant works at Calder Vale, for the Corporation. The contract drawings may be seen, and specification, bill of quantities, and form of tender obtained at the office of the engineer, J. P. Wakefield, A.M.I.C.E., city surveyor, Town Hall, Wakefield, on deposit of £5 5s. (Bank of England Note). Tenders must be delivered to W. W. Greenhalgh, Town Clerk.

May 31. **SALFORD.**—Sewering, paving, and flagging works, for the Corporation. The plans may be seen and forms of tender with quantities obtained at the Borough Engineer's Office, Town Hall, Salford. Tenders must be delivered to L. C. Evans, Town Clerk, Town Hall, Salford.

May 31. **HADLOW (Kent).**—Laying of new drainage and construction of new offices at the Hadlow Council school, for the Kent Education Committee. Specifications and plan, prepared by the architect, Wilfrid H. Robinson, Caxton House, Westminster, can be seen and further information obtained at above address, or at the offices of Wm. Stow, Hadlow, Kent, to whom tenders must be forwarded.

May 31. **LONDON, N.W.**—Construction and maintenance for twelve calendar months of 3,215ft. lineal or thereabouts of brick sewers of various dimensions, and 555ft. lineal of pipe sewers, together with manholes, gauging chambers and other works incidental thereto at Stonebridge, in the parish of Willesden, for the Willesden D.C. Quantities and specifications may be obtained upon application to O. Claude Robson, M.I.C.E., engineer, Public Offices, Dyne Road, Kilburn, N.W., and deposit of £5 5s. Tenders to be delivered to Stanley W. Ball, clerk, Public Offices, Dyne Road, Kilburn, N.W.

May 31. **LONDON, S.E.**—Construction of about 1,564ft. of 3ft. 6in. brick and concrete culvert in Hither Green Lane and Verdant Lane, Lewisham, for the Lewisham B.C. Plans and specification may be seen and forms of tender obtained at the Town Hall, Catford (Surveyor's Department). Copies of the specification may also be had on payment of 5s., which will not be returned. Tenders must be delivered at the Town Hall, Catford, and placed in the box there provided for the purpose. The works are to be proceeded with immediately on acceptance of tender and execution of contract, and the contractor must employ local labour as far as practicable in carrying out the work. Rate of wages, etc., clause to be observed.

May 31. **DUBLIN.**—Construction of about 4,350 yards run of pipe sewers and works connected therewith within Old City Area, for the Improvements Committee of the Corporation. Drawings, etc., may be inspected at the office of the City Engineer, City Hall, Dublin, and at the office of the consulting engineer, George Chatterton, M.I.C.E., 6, The Sanctuary, Westminster, London, and a limited number of copies of the key plan of the lines of sewers, the specification, form of tender, estimate of quantities, and schedule of prices may be obtained at the offices on deposit of £5 5s. Crossed cheques only will be received in payment. No copies of the documents will be sent to contractors till they have been inspected by a representative of the firm. Tenders must be addressed to the Chairman of the Improvements Committee, City Hall, Dublin.

June 3. **BRADFORD.**—Erection of the superstructure (masonry, brickwork, and 100 tons steelwork) of the sludge disposal works at Strangford, on the Esholt Estate, for the Bradford Corporation. The area covered is about one acre. Copies of specification, form of tender, and conditions of contract may be obtained and the drawings seen at the office of Joseph Garfield, A.M.I.C.E., Esholt Hall, Shipley (Station, Apperley Bridge, Midland Railway), on deposit of £3 3s. The contract will be let subject to the fair contracts clauses of the Corporation, which may be seen at the Sewage Works Engineer's Office, and which the accepted contractor will be required to sign. Tenders must be sent to Frederick Stevens, town clerk, Bradford.

June 6. **GNOSALL (Salop).**—Laying of about 5,000 yards of 12in., 9in., and 4in. glazed earthenware and cast-iron pipe sewers, the construction of manholes, tanks, filters, engine house, etc., and other appurtenant works in the parish of Gnosall, for the D.C. Drawings may be seen and copies of specification, tender, and bill of quantities, may be obtained at the offices of the engineers, Berrington, Son and Watney, Bank Buildings, Lichfield Street, Wolverhampton, and 28, Victoria Street, Westminster, S.W., on deposit of £5 5s. Tenders must be delivered at the office of H. G. U. Elliott, clerk, Newport, Salop.

June 7. **RIPLEY.**—Construction of sewerage, and sewage disposal works, comprising sewerage, subsidence tanks, percolating filters, and other appurtenant works, for the U.D.C. Plans and specifications may be seen and bills of quantities and forms of tender obtained on application to George W. Bird, Surveyor to the Council, Town Hall, Ripley, Derby. A deposit of £1 1s. will be required. Tenders must be delivered at the office of George Whitcombe, Clerk, Town Hall, Ripley, Derby.

June 9. **DAVYHULME (Manchester).**—Construction of about 1,586 yards of brick sewers and 6,523 yards of pipe sewers, with syphons, flushing chambers, and manholes, in the township of Davyhulme, for the Barton-upon-Irwell R.D.C. Plans, sections, and specifications may be seen and forms of tender and bills of quantities obtained (upon deposit of £3 3s.), at the office of A. H. Mountain, A.M.I.C.E., 16, John Dalton Street, Manchester. Tenders to be addressed to J. W. Whitworth, clerk, Union Offices, Patricroft, Manchester.

June 20. **YSTRADGYNLAIS.**—Schemes and estimated cost for sewering the Parish of Ystradgynlais Lower, for the R.D.C., who will pay a sum of £20 for the scheme which they consider most suitable, and the decision of the Council must be accepted as final. Competitors to state their terms for full detailed plans and specifications, and for carrying out the scheme they submit. Particulars of the area to be drained and any other information may be obtained from T. Watkins, Surveyor to the Council, Ystradgynlais. Schemes to be sent in to D. L. Moses Evans, Clerk to the Council, Commercial Street, Ystalyfera.

IRON AND STEEL.

May 30. **DARLINGTON.**—Corrugated iron roofs to tar macadam sheds, for the Corporation. For all particulars apply to George Winter, Borough Surveyor, Town Hall, Darlington.

May 31. **EALING.**—Erection of corrugated iron fencing, for the T.C. Specification and schedule of quantities may be seen, and forms of tender may be obtained from Charles Jones, M.Inst.C.E., Borough Engineer, Town Hall, Ealing, W., on deposit of £1. Tenders must be delivered at the office of Geo. E. Brydges, Town Clerk, Town Clerk's Office, Town Hall, Ealing, W.

June 1. **MANCHESTER.**—Supply of 23 tons of 30lb. steel rails, fishplates, etc., and 2,100 creosoted sleepers, for their Carrington and Chat Moss Estates, for the Cleansing Committee of the Corporation. Specifications may be obtained from Robert Williamson, Superintendent of the Cleansing Department, Town Hall, Manchester.

June 11. **MANCHESTER.**—Iron and steel work.—Supply of iron and steel work required for an installation of horizontal retorts at their Rochdale-road Station, for the Gas Committee. General conditions of contract and specification can be obtained on application to F. A. Price, superintendent, Gas Department, Town Hall, on deposit of £3 3s. Drawings may be seen and any other information obtained on application to the engineer, J. G. Newbigging, M.I.C.E., Rochdale Road Station. Tenders (addressed to the Chairman of the Gas Committee) must be delivered at the Gas Offices, Town Hall, Manchester.

PAINTING.

May 30. **CARSHALTON (Surrey).**—Cleaning and painting works at the children's infirmary, Carshalton, Surrey, for the Metropolitan Asylums Board. Conditions of contract, specifications, and form of tender may be inspected at the office of the Board, Embankment, E.C., and can then be obtained upon deposit of £1 1s. Tenders must be delivered at the office of the Board.

May 30. **BRENTWOOD.**—Cleaning and Painting Works at High Wood School, Brentwood, Essex, for the Metropolitan Asylums Board. Contract and specifications prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., Engineer-in-Chief. The conditions of contracts, specifications, and forms of tender may be inspected at the office of the Board, Embankment, E.C., and can then be obtained upon deposit of £1. Tenders must be delivered at the office of the Board.

May 30.—**RUSTINGTON.**—Cleaning and painting works at Millfield, Rustington, near Littlehampton, Sussex, for the Metropolitan Asylums Board, in accordance with conditions of contract and specifications prepared by W. T. Hatch, M.I.C.E., M.I.M.E., engineer-in-chief. The conditions of contract, specifications, and forms of tender may be inspected at the Office of the Board, Embankment, E.C., and can be obtained upon deposit of £1. Tenders must be delivered at the Office of the Board.

May 31. **LONDON, W.C.**—Painting works executed at their casual wards, in Little Gray's Inn Lane, W.C., for the Guardians of Holborn Union Specification and conditions of contract may be obtained on application to J. Allan Battersby, clerk, 53, Clerkenwell Road, E.C., to whom tenders must be delivered.

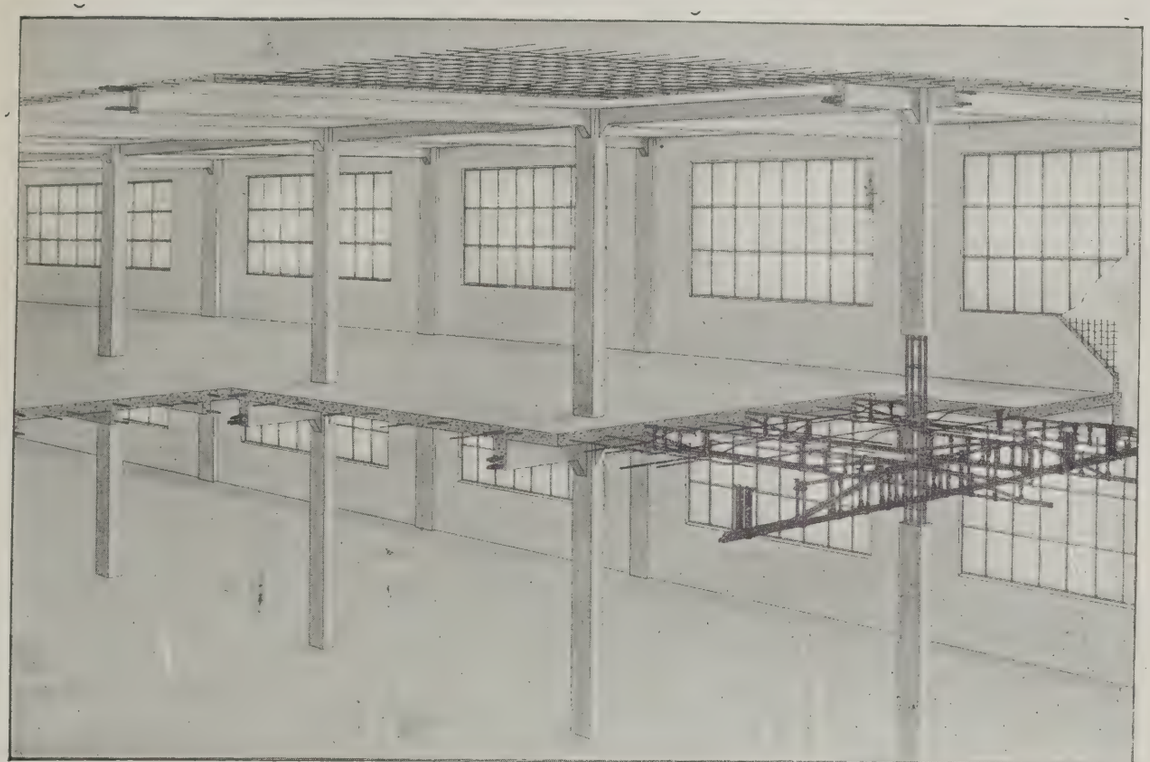
(*Continued on page xvi.*)

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May 31. **DURHAM.**—Painting, etc., of the following schools:—Easlington Lane, Eppleton, North Hetton, Newbottle, Paddock Stile, New Penshaw, Hetton-le-Hole (girls' and infants'). Forms of tenders may be obtained from the District Clerk, J. P. Tulip, Saville House, Houghton-le-Spring, to whom tenders must be sent.

May 31. **SUNDERLAND.**—Painting, etc., at Mere Knolls Cemetery, for the Corporation. Specification may be seen, and schedule and form of tender obtained at the Borough Surveyor's Office, Town Hall. Tenders, addressed "To the Chairman of the Cemeteries Committee," must be delivered at the office of Fras. M. Bowey, Town Clerk, Sunderland.

May 31. **LONDON.**—Cleaning, re-painting, etc., work at Albert, Chelsea, and Victoria Embankments; the stairway to Charing Cross Footbridge; Bow and Lambeth Bridges; and the Bridge over the East London Railway at Rotherhithe Tunnel. Drawings may be inspected and specifications, bills of quantities, forms of tender, etc., obtained on application to the Chief Engineer of the Council, Maurice Fitzmaurice, C.M.G., at the County Hall, Spring Gardens, S.W., upon payment to the cashier of the Council of a deposit of £1. Full particulars of the work and conditions of contract may be obtained at the County Hall before the payment of this fee. The contractor will be bound to pay to all workmen employed by him in and about the execution of the contract or any part thereof wages at rates not less, and to observe hours of labour not greater than the rates and hours set out in the Council's list, and such rates of wages and hours of labour will be inserted in and form part of the contract by way of schedule. Full particulars of the Council's Standing Orders on these matters are given in the "London County Council Gazette."

June 2. **LONDON, S.E.**—Painting, cleaning, etc., work at their Infirmary, East Dulwich Grove, S.E., for the Guardians of the Southwark Union. Specification, conditions of contract, and form of tender may be obtained at the offices of their architect, A. W. Tribe, 120, Clapham Road, S.W., on deposit of £2 2s. Tenders should be addressed to the Guardians, and delivered at the offices of Sydney Wood, Clerk, Union Offices, Ufford Street, Blackfriars Road, S.E. Fair wages clause.

June 3. **WARRINGTON.**—Painting of the various schools, for the Sites and Buildings Committee. Specifications, etc., may be seen, and forms of tender and all further information obtained, at the office of the Borough Surveyor, Town Hall, where tenders must be delivered. A deposit of 10s. 6d. will be required for specification, and cheques are to be made payable to the Borough Treasurer.

PLUMBING.

May 30. **AMMANFORD.**—Execution of private house connections with water mains as follows:—(a) From main to stop cock; (b) from stop cock to the point where the householders may require the piping and tap, for the U.D.C. The contract to be for the period ending March 31, 1911. For form of tender and further particulars, apply to T. M. Evans, Clerk to the Council, Ammanford, to whom tenders must be sent.

ROADS AND CARTAGE.

May 30. **CLAYTON-LE-MOORS.**—Painting or spraying of about 20,000 super yards of roadway with tar compound, for the U.D.C. Further particulars may be obtained on application to Arthur Dodgeon, A.M.I.C.E., surveyor.

May 30. **ST. NEOT'S.**—Supply of about 400 tons broken granite, 500 tons tarred slag macadam, and 100 tons slag chippings and dust, for the U.D.C. Forms of tender and particulars may be obtained of John Edey, Surveyor, Offices: South Street, St. Neot's, Hunts, to whom tenders, accompanied by samples, are to be delivered.

May 30. **HAYWARDS HEATH (Sussex).**—Road-making and sewering works in Petlands Road and Kents Road, for the U.D.C. Drawings and specification may be seen and copies of the bills of quantities and forms of tender may be obtained at the office of Geo. Plummer, surveyor, South Road. Tenders to be delivered to E. J. Waugh, Clerk to the Council, Boltro Road, Haywards Heath.

May 30. **EPSOM.**—Making up Heatherside Road, Ewell, for the Epsom R.D.C. A plan and specification of the works and form of contract may be seen at the office of the surveyor of Highways, T. E. Ware, Waterloo Road, Epsom, where forms of tender and other particulars may be obtained. Tenders must be received by Arthur R. Cotton, clerk, Waterloo Road, Epsom.

May 30. **LONDON, W.**—Providing and laying creosoted deal blocks on the existing foundations in Earl's Court Road (13,950 square yards approximately); Kensington High Street, from Church Street to King Street (1,414 square yards approximately); Gloucester Road, from Kensington Gate to Elvaston Place, and from Cromwell Road to Harrington Gardens (5,486 square yards approximately); Bayswater Road, from Kensington Palace Gardens to Broad Walk (5,200 square yards approximately); and Fulham Road, from Sydney Street to Arthur Street (2,433 square yards approximately), for the Kensington B.C. Specifications can be seen and further particulars obtained at the office of the Borough Engineer and Surveyor, Town Hall, Kensington. The contractors will be required to enter into a written contract to find two good and sufficient sureties for the performance of contract. Rates of wages, etc., clause to be observed. Tenders must be delivered at the office of Wm. Chambers Leete, Town Clerk, Town Hall, Kensington, W.

May 30. **ELLESMERE PORT AND WHITBY.**—Reconstruction of Whitby Road, Ellesmere Port, for the U.D.C. Plans may be inspected, and specification and form of tender obtained, at the office of the Surveyor, J. M. Hudson, Bank Buildings, Ellesmere Port. Contractors are required to state the time within which they will undertake to complete the work. Tenders to be sent to D. Bunting, Clerk to the Council, Bank Buildings, Ellesmere Port, near Chester.

May 31. **HORBURY (Yorks.).**—Kerbing, flagging, concreting, paving, etc., on the Wakefield and Austerlands main road, at Benton Hill, Horbury, for the U.D.C. The drawings and specifications may be seen, and form of tender, together with schedule of quantities and other particulars, obtained from J. H. Drew, engineer and surveyor, Town Hall, Horbury, on deposit of £1 1s. Tenders must be sent to T. Barker, clerk, Town Hall, Horbury.

May 31. **MIDDLETON.**—Making up of the passages between Chester Street and Dorset Street, and at the back of Essex Street, for the Corporation. Plans may be seen and specifications, quantities and form of tender, which will contain a fair-wages clause, obtained on payment of 10s. 6d., on application to Mr. Welburn, Borough Surveyor, at his office, Town Hall, Middleton, between the hours of 9.30 and 10.30 a.m. Tenders must be delivered at the office of Frederick Entwisle, Town Clerk, Town Hall, Middleton.

June 1. **HERNE BAY.**—Paving, etc., of the following streets:—Carlton Hill, St. Louis Grove, for the U.D.C. Plans, sections, and specifications can be seen and forms of tender obtained from F. W. J. Palmer, surveyor to the Council, Town Hall, Herne Bay. Tenders to be addressed to Joseph Jubb, Clerk, Town Hall, Herne Bay.

June 1. **HOVE.**—Providing and laying wood paving (about 5,012 yards superficial) in Sackville Road, between Blatchington Road and Coleridge Street. Plans, specification, and form of contract may be seen, and particulars, with forms of tender, obtained at the office of the Borough Surveyor (H. H. Scott). Tenders must be addressed to H. Endacott, Town Clerk, Town Hall, Hove.

(*Contracts continued on page xviii.*).

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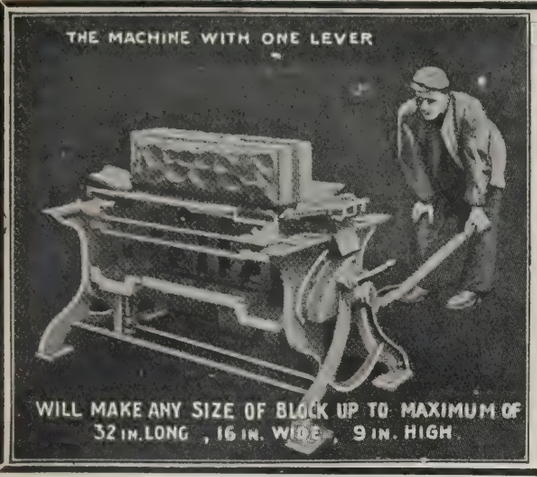
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FLATS AT BERNER STREET, ST. JAMES STREET AND KENSINGTON HIGH ST., KINGSWAY, ETC.
WAREHOUSES AT HACKNEY, SOUTHFIELDS, SMITHFIELD ETC., ETC.

LATE CONTRACTS.

BUILDING.

May 31. **BRADFORD.**—(See "Painting.")

May 31. **ST. NEOTS (Hunts.).**—Alterations and additions to the St. Neots police station. Plans and specification can be seen at the office of Herbert Leete, County Surveyor, 36, High Stret, Huntingdon, to whom tenders must be sent. The acceptance of any tender will be subject to the sanction of the Local Government Board first being obtained.

May 31. **RAMSEY (Hunts.).**—Erection of new police station at Ramsey. Plans and specification can be seen at the office of Herbert Leete, County Surveyor, 36, High Stret, Huntingdon, and copies of the bills of quantities can be obtained on deposit of £2 2s. Tenders to be delivered at the above address. The acceptance of any tender will be subject to the sanction of the Local Government Board first being obtained.

June 1. **PENZANCE.**—Alterations at the Morrab House Library. Tenders to be delivered at the Surveyor's office, where all particulars may be obtained.—Frank Latham, M.I.C.E.I., Borough Engineer, Public Building, Penzance.

June 1. **GOOLE.**—Erection of two cottages at the Pollington Waterworks, for the U.D.C. Plans and specifications may be seen at the offices of the architect, H. B. Thorp, Carlisle Street, Goole. Tenders to be delivered to Robert Tyson, Clerk to the Council, Council Offices, Goole.

June 1. **CARLISLE.**—Extension of buildings at the Central Electric Lighting Station, situate in James Street, for the Corporation. Drawings, stipulations, and conditions of contract may be inspected, and a copy of the specification, bill of quantities, and form of tender obtained at the office of Henry C. Marks, M.Inst.C.E., City Engineer and Surveyor, 36, Fisher Street, Carlisle, on deposit of 10s. 6d. Tenders to be delivered at the office of the above. The lowest or any tender not necessarily accepted; parties tendering must do so at their own cost.

June 2. **FULHAM.**—1.—Painting and decorating works works to be done at the Infirmary Nurses' Home, and Guardians' Offices, Fulham Palace Road, W., and the Receiving Home for Children, 9, Parsons Green, Fulham, S.W.; and 2.—Relaying certain ward and day-room floors at the Infirmary with composition flooring and certain bath rooms, w.c.'s, etc., with impervious material, for the Guardians. Forms of tender and specification may be obtained by application at the office of E. J. Mott, Clerk to the Guardians, 129, Fulham Palace Road, W., or by forwarding a stamped addressed foolscap envelope. Tenders must be returned to the Clerk.

June 4. **STANWIX (Carlisle).**—Erection of the Miles Macinnes Memorial Hall at Stanwix. Drawings and specifications can be seen at the office of John Slack, Architect, 18, Bank Street, Carlisle, to whom tenders must be sent.

June 10. **BENTHAM, LONGSTAFFES (Yorks.).**—Alterations and additions to Bentham, Longstaffes, and Lower Council schools (builder, joiner, slater, plumber, plasterer, painter, asphalter, whole or separate tenders). Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders must be addressed to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

June 11. **HOLMES CHAPEL (Cheshire).**—Alterations and additions to the Agricultural College Holmes Chapel, Cheshire. Plans and specifications can be seen at the office of H. Beswick, F.R.I.B.A., county architect, Newgate Street, Chester, and quantities obtained on deposit of £1. Tenders are to be delivered to R. P. Ward, Director of Education, County Education Offices, Chester.

June 11. **GLOUCESTER.**—Erection of a new Council school, at Deacon Street, Gloucester, for 336 boys, for the Education Committee. Plans and specifications may be seen on application to J. Fletcher Trew, M.S.A., County Chambers, Station Road, Gloucester, and quantities will be supplied on deposit of £1 1s. Tenders to be delivered to P. Barrett Cooke, Secretary to the Committee, Berkeley Street, Gloucester.

No date. **ST. BURYAN (Cornwall).**—Repairs to premises, occupied by John Mitchell, Churchtown, St. Buryan. Particulars on application to Manager, St. Loy, St. Buryan.

IRON AND STEEL.

June 1. **HAMMERSMITH.**—Supplying and erecting wrought iron boundary fencing and gates around Wormholt Park, Hammersmith, for the B.C. Forms of tender and specification may be obtained on application to H. Mair, Borough Surveyor, at the Town Hall. Tenders must be delivered to H. Thompson, Town Clerk, Town Hall, Hammersmith, W.

PAINTING.

May 31. **OXFORD.**—Cleaning, painting, etc., at the Radcliffe Infirmary, and County Hospital. Specification can be had on application to G. C. Rynd, Captain, Secretary-Superintendent, to whom tenders must be sent.

May 31. **BRADFORD.**—Tenders for the following works: 1, St. James's Market, erection of store rooms; 2, St. James' Market, limewashing; 3, Rawson Place Market, painting, etc.; 4, Bolton Lane Slaughterhouses, limewashing, for the Corporation. Drawings and general conditions of contract may be seen and bills of quantities and specifications and forms of tender obtained on application to the City Architect, Town Hall, Bradford. Tenders must be delivered to Frederick Stevens, Town Clerk, Town Hall, Bradford. The contracts will be let subject to the fair contracts clauses of the Corporation, which the accepted contractors will be required to sign.

June 2. **FULHAM.**—(See "Buildings.")

June 2. **SALFORD.**—Painting, etc., required at the Union Workhouse, Eccles New Road, Salford, and Farm Superintendent's House, Hope, Pendleton, and other property, for the Guardians. Forms of tender and all particulars may be obtained on application to the Master of the Workhouse. Tenders to be received by F. Townson, Clerk to the Guardians, Union Offices, Eccles New Road, Salford.

ROADS AND CARTAGE.

June 1. **OUNDLE.**—Supply of granite and slag to be delivered free of charge at the Oundle Station of the London and North-Western Railway, between July 1 and November 30, 1910 (both dates inclusive), for the U.D.C., at such times and in such quantities as the Surveyor may from time to time require. Forms of tender may be obtained on application to Robert Knight, Clerk to the said Council, New Street, Oundle, to whom tenders must be sent.

June 1. **LITTLEHAMPTON.**—Coating with approved tar composition and granite chippings the surfaces of Arundel Road, Terminus Road, Arun Bridge way and approaches, High Street, and part of Beach Road, in all about 13,500 super yards, for the U.D.C. Specification of work can be seen and form of tender obtained on application to the surveyor, H. Howard, F.S.I., Town Offices, Littlehampton. Tenders to be sent to the Chairman of the Council, Town Offices.

[We regret that owing to pressure on our space, we are obliged to hold over our list of tenders till next week.]

PRACTICAL BOOKS
FOR
PRACTICAL MEN.

Art of Building (Dobson and Allen)	2/0
Brickcutting and Setting (Hammond)	1/6
Brickwork (Walker)	1/6
Builders' Price Book, 1910	4/0
Building Construction (Allen)	7/11
Building Inspection (Purchase)	2/9
Bungalow Residences (Harrison)	3/10
Cabinet Making (Bitmead)	2/6
Carpentry and Joinery	3/6
Constructional Iron and Steel Work	3/6
Decorator's Assistant	1/0
Dynamo Management (Paterson)	4/10
Electricity in Factories (Haslam)	7/10
Every Man's Own Lawyer, 1910	7/1
Farm Buildings (Scott)	2/0
Handralling (Collings)	2/6
House Decoration (Facey)	2/6
House Painting (Davidson)	2/6
House Planning (Samson)	3/9
Illuminating (Whithard)	4/4
Joints Used in Building (Christy)	3/0
Lathe Work (Hasluck)	5/0
Magnetos for Automobilists (Bottone)	2/3
Marble and Marble Working	15/0
Masonry and Stonecutting (Dobson)	2/6
Measurement of Boards, Glass, &c.	4/0
Mechanic's Workshop Companion	5/3
Mensuration and Measuring (Baker)	1/6
Motor Car Catechism (Knight)	1/8
Ornamental Alphabets (Delamotte)	2/6
Pattern Making (Horner)	7/11
Petrol Air Gas (O'Connor)	1/8
Plumbing (Buchan)	3/6
Portland Cement (Faija and Butler)	3/0
Practical Masonry (Purchase)	7/11
Rating and Assessment (Webb)	7/11
Recipes, Formulas, and Processes	13/0
Reinforced Concrete Design	12/6
Roof Carpentry (Collings)	2/0
Science of Building (Tarn)	3/6
Slide Rule, How to Use	2/6
Surveying (Baker and Dixon)	2/0
Telephones (Radcliffe and Cushing)	4/9
Valuation of Real Property (Webb)	7/11
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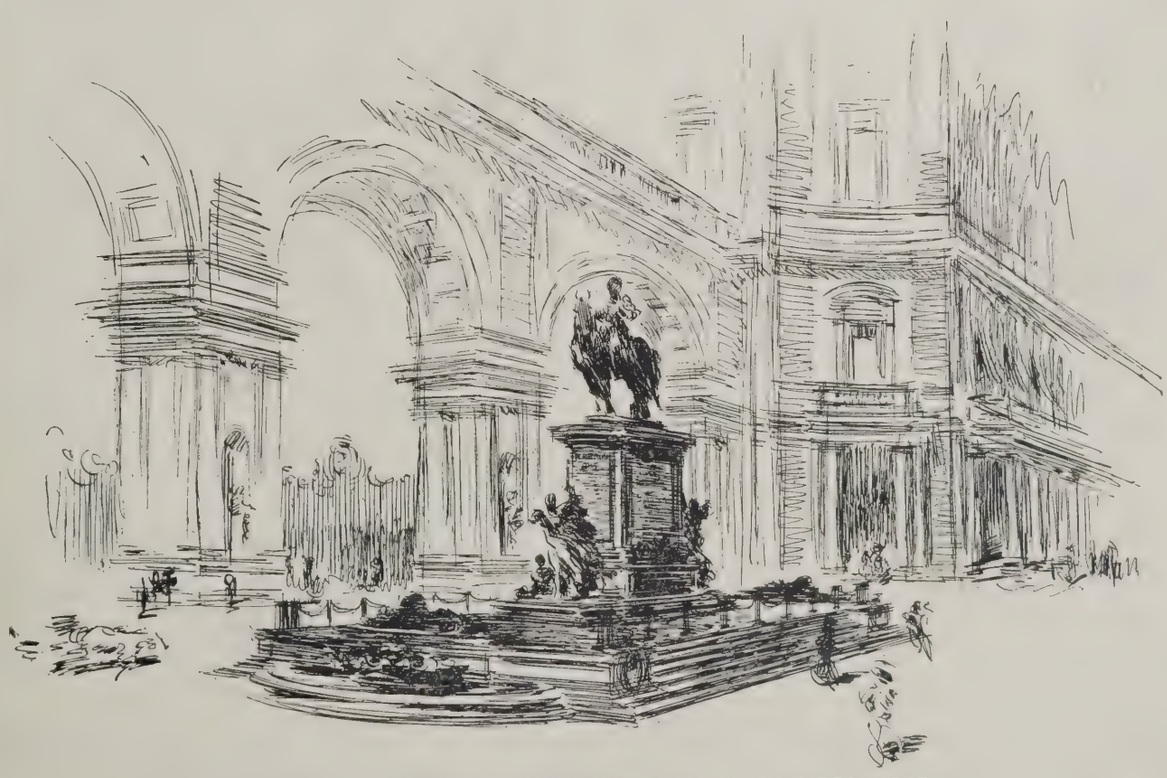
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THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JUNE 1st, 1910.

Volume XXXI. No. 800.



STUDY FOR A COMPOSITE MONUMENT. BY E. A. RICKARDS, F.R.I.B.A.

(*See "The Art of the Monument," page 544.*)



STUDY FOR COMBINED GATEWAY AND MONUMENT. BY E. A. RICKARDS. F.R.I.B.A.

(*See "The Art of the Monument," page 544.*)

THE ARCHITECTS' & BUILDERS' JOURNAL.

JUNE 1st, 1910. CAXTON HOUSE, WESTMINSTER. VOLUME 31. No. 800.

Note: The List of Contents will be found on Page V of the front advertisements in this and subsequent issues.

Builders' Grievances.

EVIDENCE from time to time turns up as to complaints which the building trade make in regard to the treatment which they either do actually receive, or which they think they are liable to receive, at the hands of architects and building-owners, under certain circumstances, in connection with the carrying out of buildings. Some of these are very real grievances, injustices which ought not to be countenanced at any time; some of them, we are inclined to think, are to some extent imaginary, in the sense at all events that they are possible rather than probable. It may clear the ground a little if we consider some of the points that have come under our notice from time to time, not solely from the point of view of either architect, builder, or building-owner, but with the endeavour to represent impartially the claims of each.

Difficulty of Finding Good Workmen.

The first subject on our notes is not a grievance against any person or persons, but against things in general. It is said that there is an increasing difficulty in finding skilled workmen, and that builders are anxious as to the means of maintaining an adequate supply of such workmen, who have become more and more scarce with the decline of the apprenticeship system. And truly, on this head, it is difficult to find any consoling words, or to offer any suggestions. Technical schools, it is said, do not meet the requirements. There are not enough of them in this country at present, in any case, to supply the demand as far as numbers are concerned; but the experience of employers seems to be that the lads who come out of such institutions as the London County Council training schools for instance, however their instruction may have fitted them to work out the problems set them in the schools, have not the faculty for turning their hands to actual building work. It would be of interest to know whether this is the same in Germany, where technical schools are more numerous, larger, and possibly better equipped than in England. But we doubt if the best technical school will really make a workman, though it may give him a better general understanding of principles of construction than he would otherwise have. The only real remedy seems to lie in an endeavour to revive the apprenticeship system—an endeavour which, on general grounds, would evidently receive the sympathy and might count on the support of many people, outside of the actual building trade, who are anxious for the well-being of the country and for the adequate practical instruction of boys of the artisan class. And it is probable that the scarcity of skilled workmen arises to a great extent from the foolish idea that there is something derogatory in working with the hands; that to be a "clerk" and write at a desk is a move up in the world; whereas really the work of a skilled joiner or mason is much more interesting than that of an ordinary clerk, and requires more ability. If these persons could be persuaded of the real dignity and worth of skilled labour, and its value to the community, they might perhaps develop a greater wish to excel in it. At present it seems to be regarded as a degrading form of occupation, to rise above which should be their ambition.

By-laws.

The Federated builders claim that it would be advantageous to call them into consultation when by-laws are being revised, and that for want of this by-laws are passed which are inconvenient and oppressive, as well as unpractical. We should be in favour of such societies being asked if they had any suggestions or criticisms to make, mainly in fairness to themselves, since they would be the persons at whom a new set of by-laws would be mostly aimed. But for that very reason they must remember that they are interested parties whom the new legislation would chiefly affect, and they could hardly expect, therefore, that their judgment could have the same weight as that of persons who were acting solely in the general public interest. Apart from this, the idea is a reasonable one, and we should support it.

Tenders.

It is said that when the lowest tender is not accepted, builders find it difficult to rid themselves of a suspicion that the tenders have been invited with the object of checking the figures of some favoured firm for whom the job was originally intended. That we should regard as one of the wrongs which are "possible, but not probable." There is such a thing as being too suspicious. Corporate bodies are often very stupid, but we do not think they are in general deliberately dishonest; and if they wanted to check the figures of a favoured contractor they could do it by a less clumsy and unprincipled method than setting a number of other contractors to work at a sham competition. And provided that it has been clearly advertised that "the lowest tender will not necessarily be accepted," there are occasions when it is wiser not to accept the lowest tender, i.e., when it is so low that it is obvious that the tenderer could not honestly make a profit out of the work. Such a situation is not likely to lead to results satisfactory to anyone concerned. With the complaint that too short a time is often allowed for the satisfactory preparation of an estimate, we are entirely in sympathy; it is a great mistake, and an entirely unnecessary one, to hurry builders over estimates for an important work—a mistake which may lead to trouble and inconvenience afterwards. Builders are also entirely justified in objecting to their lists of priced quantities being opened, except that of the accepted firm. Those are trade secrets which ought to be respected, and if it is an actual fact (as we are informed) that in a Government competition recently such a sealed list was opened contrary to the advertised conditions, it was a most improper proceeding—so much so, that we should imagine it must have been the result of a misunderstanding or forgetfulness of the conditions on the part of some official. Government departments, in this country, at all events, are not in the habit of breaking faith with those who deal with them.

Quantities.

Much has been said recently on behalf of the builders as to the hardship inflicted on them by the refusal in some cases to

supply quantities; and where it is a case of competition tendering we quite concur in the complaint; in fact, it is not only a hardship, but an absurdity, to compel a dozen or a score of people each to do the same work, by which only one of them can profit. But it ought to be pointed out that the duty of the building-owner, through his architect or surveyor, to supply quantities and pay for them, only arises in the case of competition tendering. We have heard it mentioned as a sort of hardship on a builder that he should have to take out his own quantities, even in a case where there was no competition, and where merely one man's estimate was asked for. That surely implies a forgetfulness of the whole history of the subject. The very existence of the profession of quantity-surveyor arises out of the system of competition tendering; it is employing one man, at a fee, to do what otherwise a number of men would have to do without advantage to any but one of them. But apart from competition tendering, and before that system (a very bad one in many ways) became so general, the quantities were manifestly the builder's own business. It was nothing to the architect or the building-owner how many rods of reduced brickwork, or how many feet run of a stone cornice, there would be in a building; it was for the builder to find out that in order to make his estimate. The competition tendering system makes all the difference, of course; but that was the original position, and it is only in comparatively recent years that the quantities have been supposed to be anyone's concern except the builder's.

Contract Conditions.

No one can be surprised that the builders are beginning to grow restive under the drastic conditions often imposed on them in contracts and specifications, which, as it has been expressed, seem often to be drawn up on the "heads-I-win-tails-you-lose" principle. Everything is to be "the best," and the contractor is made responsible for other people's blunders and even for "the act of God or of the King's enemies," as the legal jargon runs. No doubt there are some contractors who require tying up very tight; there are others whose pride is to make a good piece of work, and who ought to be regarded and treated as allies rather than as enemies. Then the hotly debated question comes in of referees in case of dispute. It may be said that where there is a good architect on one side and a good builder on the other, disputes seldom arise; disputes are usually the result of one party or the other not knowing his business or having done something wrong; and the fault is certainly not always on the side of the contractor. The builders complain very strongly as to the injustice of having a dispute settled by the architect or (in the case of municipal work) by the Borough Surveyor, on the ground that this is putting the decision into the hands of a man who is really retained by one of the parties to the dispute. As far as concerns a salaried engineer or surveyor to a corporation, we quite agree. A professional man in such a position is no doubt a retained advocate; he is officially bound to satisfy his Board or Council, and may be dismissed if he does not. But an independent architect to a private client is not quite in the same position. The proper, the ideal position of a competent and high-minded architect is to be the natural arbitrator between the building-owner and the builder, and to see that neither gets any wrong; and so far from his being necessarily regarded as a retained upholder of the building-owner, we knew an actual case in which, in regard to a dispute, the client said to the architect: "Of course, you naturally lean to the side of the builder"; a soft impeachment which was denied. But the remark showed that the client did not regard the architect as counsel retained on his side; and we could certainly name not a few architects in whose fairness in settling a disputed point all builders would have confidence. Unfortunately, the high-minded and clear-headed architects (for the mere ability to see a thing rightly may be wanting in some) have to pay in reputation for the misdeeds or mistakes of the other kind; and builders who have been victimised by high-handed and unfair treatment not unnaturally wish to safeguard themselves in future by a general recurrence to or threat of arbitration whenever there is a difference. We regret to know that there have been cases which went far to justify this attitude. But we may nevertheless remind them that the real position of the architect (where he is not holding a salaried office) is that of an arbitrator between client and builder; that an architect of the best type of ability and character is likely to be as impartial as any outside arbitrator, and knows much more about the work, and that such a man would regard the calling in of an outside arbitrator over his head as an undeserved insult, and would be justified in feeling it as such; and therefore the provision of arbitrators as a necessary condition of contracting ought not to be pushed too far, or regarded as a *sine quâ non*. There are some architects who would resent it very much, whatever the Institute form of contract may provide; to be sure, they are just the architects who would not be likely to afford any pretext for arbitration.

General.

We may group into one paragraph some miscellaneous subjects of complaint on the part of the building trade. One of these is a very serious one; the frequent delay in the settlement of accounts. We have heard of this complaint often, and we have certainly known cases in which it has arisen from unreasonable delay on the part of the architect to certify accounts. That is acting most unfairly to the builder, who has in some instances been most seriously injured by it. The builders also complain of contractors being eliminated by corporations employing direct labour. That is a question of the public interest. If corporations believe that they can save public money by employing direct labour, they will be justified in doing it. As a general rule, however, experience has shown that direct labour has not resulted in a saving to the ratepayers; there are notorious instances in which it has resulted in very considerable loss; and therefore it is not a system to be encouraged. That, however, is the principle on which the question must be decided. In the case of public work, contractors have no right to claim that they should be employed because it is for their advantage. What they must do is to show that it is not to the public advantage; where hey can do that they win their case.

The complaint that they should be made liable for the consequences of an outbreak of dry-rot in a building is a matter in which, as recent events have shown, builders are in the same boat with architects. It is now beginning to be recognised that dry-rot is a most insidious building disease which may get into a building without the fault of anyone concerned, and without any obvious reason. There are certain mistakes in construction which are favourable to it, which are even likely to cause it; and those mistakes have been more often the fault of the architect than of the builder, who only carries out the orders of the architect. We may suggest, however, that in cases where the builder's past experience has shown him that dry-rot would be likely to result from the construction employed, he would be doing right in calling the architect's attention to this, though we do not say that he is bound to do so. He cannot be considered legally responsible if he carries out the architect's orders, and no one ought to attempt to make him so.

The heavy liabilities which contractors lie under in respect of accidents to workmen in their employ, and which often bear most hardly and unfairly on them, are the result of legislation, some of which is very unwise, but which it is to be feared there is no chance of getting amended now. Liability for accidents to third parties, that is, to the general public, which has also been a subject of complaint, is only a matter of common law, and is in no way peculiar to building operations.

We have endeavoured to consider this chapter of grievances from an entirely impartial point of view, holding a brief neither for architects nor for builders, and sympathising very strongly with the latter in regard to some of their complaints.

In regard to others, as we have endeavoured to show, there is another side to the question which has been sometimes overlooked.

Lead Poisoning.

CASES of lead-poisoning among painters are undoubtedly very numerous—it is stated that 241 have been reported in one year—but since it is not necessary to report them, and since the fatal results are not always made the subject of an inquest, the full extent of the mischief is but little appreciated by the general public. The victim usually dies of a lingering illness, as in the case of a Tooting painter upon whom an inquest was held last week. About eight years ago, his widow told the coroner, the painter had suffered from the too familiar symptom of "wrist-drop," for which he was treated at a hospital. The trouble recurred at intervals, and occasionally the patient lost his speech. Finally he died, at the age of thirty-nine. The man's employer, when asked by the coroner whether there was no way of preventing such misery, replied significantly, "Well, if a man goes to his dinner after mixing paint without washing his hands, he may get lead in his food." "You believe," said the coroner, "that it depends on a man's habits?" "Yes," was the reply, "if a man is careful, there is no reason why he should have it." The pity of it is that so many men are absolutely reckless of their own vital interests as well as of the interests of their employers, from whom compensation is exacted. The law compels the employer to provide facilities for cleanliness; but then arises the difficulty that is recognised in the proverb about leading a horse to the water, and it is obvious that the best intentions may be easily frustrated by the very persons for whose benefit they have been conceived and shaped. The matter of lead-poisoning seems ripe for further inquiry.

Mr. John Slater.

IT is announced that Mr. John Slater has retired from election to the Council of the Institute of Architects, of which he has been a member, if we are not mistaken, for many years. The event ought not to pass without a word of recognition of his valuable work for the Institute, on the Council and in other ways. Mr. Slater's qualities of good sense, tact, exceptional knowledge of the practical side of architecture, and sound judgment in regard to questions of professional practice, rendered him an exceedingly valuable member of the Council, and on his retirement he will carry with him the respect of all those who have been associated with him.

Some Points of Order at the Institute.

THE persistent unpunctuality of the President and Council in making their appearance at the ordinary meetings, which cannot be commenced of course without them, is becoming a serious inconvenience to the general body of members. At the last meeting the chair was not taken till a quarter past eight, a matter which was the subject of a good deal of grumbling among the audience, who had taken their seats at eight. Ten minutes past eight is, as far as we have noticed, the usual thing; but it is a slipshod habit for a society to get into; and when a meeting is advertised in print to be "at eight o'clock precisely," the chair ought to be taken at eight, and not at ten minutes or a quarter past the hour. The stumbling-block is, no doubt, the Council Dinner before the meeting, which gets prolonged a little beyond due time; but that is unbusinesslike. Surely the advertised meeting-hour should be kept in mind and acted on. Another point is that the names of new members coming up to the chair to be received should be audibly announced to the meeting. As it is, the name of the member is usually a kind of confidential communication between the Secretary and the President, and, except the new member's personal friends who may be present, no one knows who he is. A third point is that men who are to be brought forward and formally admitted by the President at a general meeting should show a little respect to the Institute by donning a more formal costume than tweeds for the occasion. We caught a *sotto voce* remark on this head at the last meeting, and hereby give it publicity.

The Cottage Conservatory.

A NEW "petite-culture" cottage that has been evolved from the fertile imagination of an ingenious correspondent of the "Times," has the peculiar advantage that it will not only pay its own rent, but support the tenant and his family. It represents a "departure from the conventional mode of construction which will enable the owner to make it pay for itself, and while blessing the individual will redound to the benefit of the nation." Note the remarkable chain of reasoning which led up to the momentous deduction: "One finds that wherever there is a cottage there is a garden attached"—an important discovery: previously one was rather uncertain as to the universality of the phenomenon. Then, the "cottager or plotholder who wishes to raise early flowers or vegetables must assist Nature to overcome the vagaries of our changeable climate by erecting a greenhouse or setting frames upon hotbeds. . . With every extension of ground under glass there is increased productiveness, for one square yard here is as much consequence as five square poles in the open. The cottager cannot go on indefinitely adding glasshouse to glasshouse. Indeed, many men cannot raise the money to start one. But why not have a glass roof on his cottage from the start? The area is larger than he would think of setting up as an auxiliary in his garden. The roof is strong and serviceable as any other, and the expense of construction—even with the addition of hot-water piping and staging for boxes—will not add more than 10 to 20 per cent. to the price usually paid for a slate or tile roof. Under the best designed roof not less than one-tenth of the whole space is lost or is unavailable, but with the glass roof the whole space is saved, and the practical utility of the building is ample recompense for the augmented first cost." He adds (quite unnecessarily) "that there may be some who think that I am overstepping the bounds of possibility. But it is not so; the thing is done every day, and when the conditions are considered it is not unreasonable." Exactly; and even greater things are done every night under the names of that now eminent firm of architects Messrs. Ventimore and Pringle, at the sign of "The Brass Bottle." We should not be surprised, however, to learn that this great idea may occasionally fail of fruition owing to the obstinacy of cottagers who prefer not to raise families under hot-house conditions. Besides, the suggestion is somewhat inopportune in view of the growing popularity of aviation. When the upper air is thick with aeroplanes, the delicacy of the glass roof is merely physical. The modern Asmodeus would not need to remove the roofs of the cottages in order to pry upon their inmates. But no doubt the ingenuity of the advocate of this new system of construction is sufficient for the pulverisation of these and all possible objections to his very fascinating scheme.

The Institute Premises.

THOSE who are anxious that the extension of the Institute premises should be carried out in the manner most convenient and useful for its members will regret to hear that there is reported to be a backsliding on the part of the Committee towards the heresy of retaining the present meeting-room as such, and dividing the library over three storeys of the building. Such an arrangement would be ruinous for the working of the library, besides needing extra trouble and an increased staff. What is wanted is that the library should be as concentrated as possible, and the meeting-room kept separate from it; and there should be (which could in that case be possible) larger accommodation for readers. It is not uncommon now for a reader coming to study some books to find all the tables occupied.

THE ART OF THE MONUMENT.

By E. A. RICKARDS, F.R.I.B.A.

[*Mr. Rickards, in his paper at the R.I.B.A., thought that he would be expected, most probably, to catalogue the acknowledged masterpieces, analyse them, and derive lessons from the analysis which would amount to something like rules for guidance in composing modern works of art to serve the same purpose. Such ground had "been trodden wearisomely level"; to compile such a list would bore him extremely and weary his audience. His paper therefore turned largely on the ethics of monument design, and the relation of monuments to their surroundings.*]

The point I wish to make about the smaller monument is that its intimate nature demands that it should be easy of approach and yet have nothing of the vulgar display of the shop-window. Its subtle appeal should be apprehended above the din of the noisier world; it should speak as one who speaks in a low tone and yet carries to the farthest limits of the theatre. This is the theory which should underlie its placing, and when this is disregarded the resulting effect brings about the ridicule which is always bestowed when it is thus invited. The very quality of such realism I have attempted to describe, which is so attractive in the smaller monuments, necessitates a small oasis in which we can come to terms with it; and, besides, the *ensemble* of any small composition is neither to be observed in the crowd nor appreciated in the full glare of the open, where it is lost in space. The presentment of a philosopher, for example, seated or standing on a lonely base in the centre of a large piazza or open traffic-space is as ridiculous as that of a graceful allegory raised slightly above ground-level in the heart of city traffic.

Public monuments should be allotted to positions which have been prepared in advance for such adornments; if not to form an integral part of our buildings, at least to be in



STUDY FOR SETTING OF STATUE OF JOHN WESLEY, NEW WESLEYAN METHODIST HALL, WESTMINSTER. BY E. A. RICKARDS.



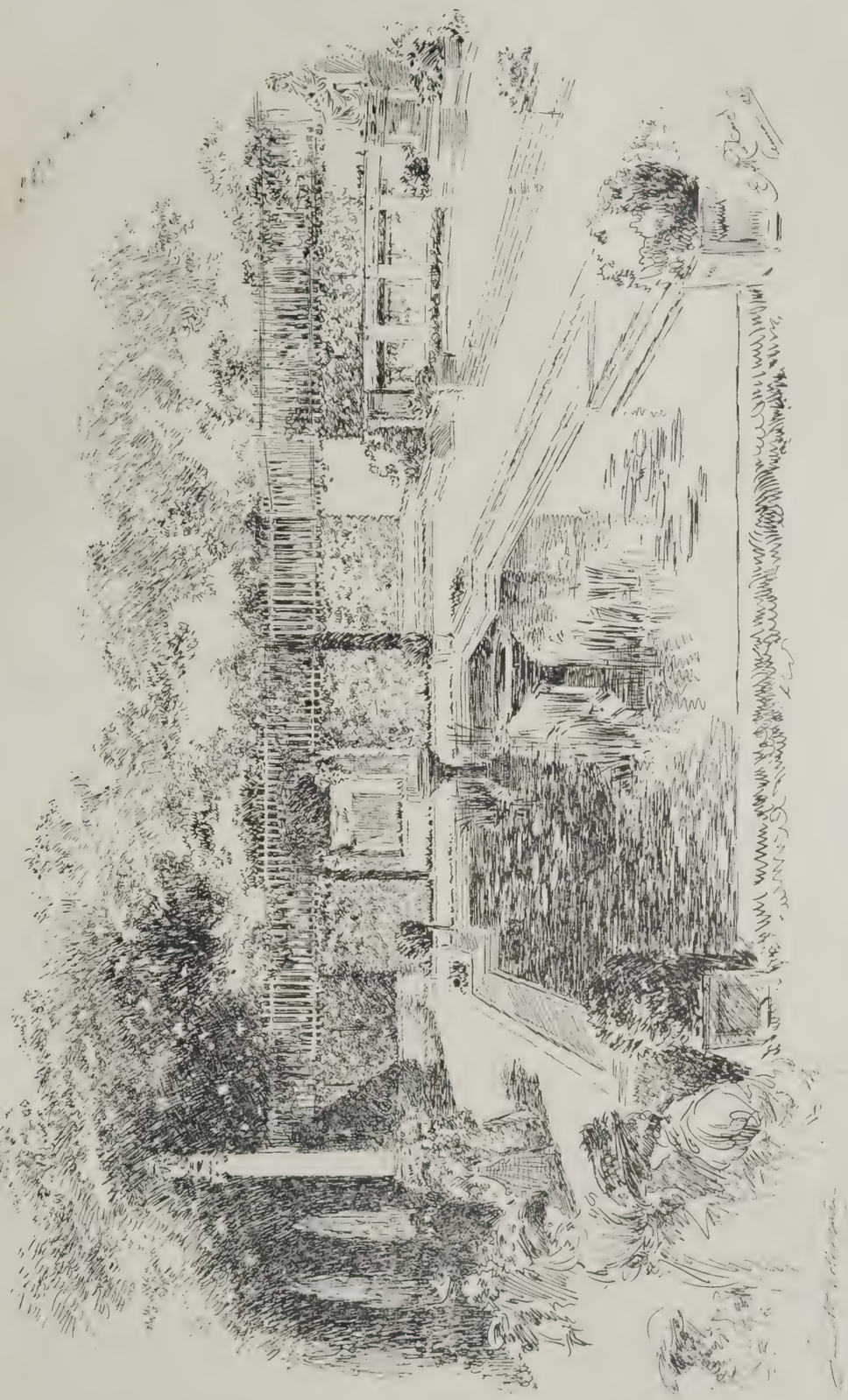
IN THE BOBOLI GARDENS, FLORENCE. FROM THE DRAWING BY E. A. RICKARDS.

the shadow of such of those as have that dignity and breadth which might enhance the more plastic art of sculpture, and, in addition, would suggest material for the architectural portions of each monument itself; so that its harmony with immediate surroundings would be secured, and a resultant scale of detail, perhaps unconsciously, but instinctively, adopted in all its parts. The time is not so far distant, I hope, when those of us who are fortunate in having to carry out work of a large and public character will be allowed some jurisdiction over those things which should really be necessary to the general or dominating composition; but the fact remains that once the building line is crossed this is very rarely allowed us. Yet we are more and more embodying sculpture in our architecture, often as a literal advertisement of the purpose of the building itself, and in some cases the chance of including an almost detached monument or a series of monuments does occur. It would be taken advantage of much more frequently if we, as architects, had not such a cold and an aloof attitude towards the art of sculpture. I mean this literally.

I give an example of setting a monument within the containing lines of a building I am concerned with at the present time. The base to the foundation is made of a continuation of the details of the base to the general building, and the sculpture takes its place with that on the main façade, and will probably be carried out by the same artist.

When the smaller monument, which embodies a single figure, is placed in such an atmosphere as a large park, or garden, or expanse, multiplication certainly enhances the value of each individual design, and I cannot help thinking that some standardisation in the matter of the pedestal and accessory foundations (of course, with every variety of detail suitable to each separate case) would result in a great development of this art of exploiting and enhancing the work of the sculptor. The sculptor would then have something of a definite scale to which to attune his creation, and though free within limits, would be led, as were the Greeks, to a consistency of treatment of portrait figures which might lead to great perfection in style, or at least some parallel methods which might be commonly developed.

In the case mentioned, I presume the figure would be usually a foot or so over life-size, and would be seen in each example from much the same angle and distance. Where it



MEMORIAL TO THE EMPRESS ELISABETH, IN VOLKSGARTEN, VIENNA. FROM THE DRAWING BY E. A. RICKARDS.

would have a standing pose and would be free to be seen from all sides, a pedestal more or less square in form would naturally suggest itself, and the general lines would, I think, find the same proportion and contrasts in relation to the figure.

When I speak of standardising a pedestal, I would admit varieties, of course, and variations in each type; but I suggest this as against the absolute freedom of design so generally allowed. There is a scale in these things, as in any other form of decoration or architecture, and the reason we are not always conscious of this is because the right pitch is seldom maintained in any considerable number of examples in any comprehensive scheme. I give an example of a single figure and pedestal, consisting of a portrait figure in a quiet pose, which might be the same scale and bulk as a hundred others in a city, or portion of a city, such as a park or symmetrically arranged neighbourhood where such adornments might occur. This shows a pedestal simple in effect, which, in the nature of scale and detail, might be designed in harmony with the accessories of adjacent buildings; presuming this to be placed in a position such as I have hinted at in my preceding remarks, it would be seen in fairly close proximity and from all sides.

This raises a point of difficulty with the usual square pedestal—the greater width on the diagnal, which gives the pedestal quite a different proportion against the same bulk of figure, thus presenting the figure in proper proportion with its pedestal from only certain points of view.

You will see by the next figure that this may be overcome without departing materially from the general square lines of the design. In fact, I think it has with it certain advantages in blending the cylindrical form of the single figure with the square lines at the lowest part of the base. The dotted lines show the bulk which a square pedestal would entail, of the same width which this presents from the front view. Yet the reduction in the width on the diagonal is as much as is shown at A. (see p. 548). The result would be a pedestal with all the strong vertical lines of a square pedestal, and from every point of view the bulk shows the same proportion to the figure above. I have not exhibited this idea as the last word in design of a monument of this type, but simply as an example of reasoning out an *ensemble*.

Rather than advocate more conventionality of treatment of the figure, I would appeal for as much plasticity and variety of detail as possible in the treatment of its setting. There is no doubt that delightful freedom is equally welcome in a setting, as I can best instance in the water garden of the Boboli Gardens at Florence. Here the statuary is far removed from the severe forms and strong horizontal lines of the Palace architecture, and just as these are reflected in a softened



THE FOUNTA'N BY DONNER, VIENNA. FROM THE DRAWING BY E A. RICKARDS.



IN THE SCHWARZENBURG GARDENS, VIENNA. FROM THE DRAWING BY E. A. RICKARDS.

manner by the formal clipped hedges and enclosing curved lines of the garden and basin, so the monuments themselves are treated in this freer manner of substituting entirely plastic forms for their architectural portions. It is comedy, but beautifully constructed as any other instance of architectural drama might be.

With nearness of approach, the monument has still to be of very small proportions if the portrait figure is to be sufficient to dominate the whole structure. Even with any accessories which it is possible to group with it, it is difficult to compose a mass of adequate weight to do this unless the scale is increased to proportions too coarse to be considered. It seems to me that more legitimate means might be found to surmount the monument, perhaps by a graceful form of some allegory or purely decorative feature, and the portrait figure introduced rather as a salient feature, within the range of intimate approach, but not necessarily to be seen and recognised from any distant view. Certainly the sculptor's delicacy of treatment in the case of a presentment of a distinct personality would be more appreciated than if silhouetted, as it would be in the former case, sometimes unavoidably against the light, and great opportunity is introduced by the more abstract form which might be employed in its place. The difficulty of designing a monument of sufficiently commanding proportions and yet keeping the sculpture within the necessary limits of legitimate treatment might thus be solved.

With regard to monuments including an equestrian figure, the added bulk of the horse and figure, of course, dominates more successfully any considerable size in the remainder of the design, and a very successful *ensemble* is possible by means of these forms, as many beautiful examples attest. Still, I should like to see an attempt on the lines I have just suggested for the placing of the portrait figure. A most original and beautiful composition, I am sure, could be arrived at in this way provided that an artist or artists of the right understanding were employed.

In considering this art of the monument we therefore arrive at a stage where its size and importance necessitate that the one element should take up its due relation with regard to the whole composition, and by its very reserve and dignity of appeal reach further than in a vulgar attempt to shout down its fellow.

In illustration of this is a sketch of this from the model originally made by Stevens for the Wellington Memorial in St. Paul's. It is well known to us all in the South Kensington Museum, yet I fear that few of us could tell the main points of difference between the complete work and this very beautifully balanced design. There can be no questioning the fact that in the sketch the sculpture is the dominating factor—the architecture is reduced to the merest support for the display of the figures. Its reticence is remarkable; although it is delicately elaborate and in all harmony with the more plastic forms it seems to tie together (witness the resolution of the side figures into the horizontal lines of the cornice to grouped columns around the sarcophagus); there is no architectural form which asserts itself in competition with the sculptured portions of the monument. It frankly asserts its position as furniture of a large interior where these forms can be employed on an adequate scale, and attempts no display of imitation beyond the fine, simply treated and more delicate mouldings which are necessary to secure the balance of the parts and bring the whole design gracefully to the horizontal rest at its base. There is a resiliency and play of design which almost amounts to movement. In a word, there is life in the whole structure, from the horse and figure at the summit to the varying perspective of the grouped columns which screen the beautiful and free lines of the sarcophagus and the recumbent figure of the duke. I think I describe it



STUDY FOR EQUESTRIAN MONUMENT. BY E. A. RICKARDS.

in giving it the quality of furniture, and though it is of considerable dimensions, one must remember the size of the interior for which it was intended.

How much of this quality has been lost in execution it is easy to see by comparison. The introduction of the arbitrary forms of the curved pediment to the arch, the little pediments under the side figures which destroy the beautiful resolution of the swirl of the sculpture into the cornice line beneath, and a general feeling of tightness which is augmented by the harshness of contrast between materials, all go to support my argument that here was a case in which the sculpture was the predominating of the two elements and the insistence of the architectural forms uncalled for.

To pass on to a scale of monument in which the sculpture to predominate would pass all bounds of due relation to the life and surroundings in the midst of which the memorial might be set: The only way, it seems to me, in which it could be conceived satisfactorily would be as a unit of the whole, either as the focal point of interest in a scheme of abstract or architectural forms of design or repeated as points of emphasis and subordinate to the general composition. I can think of no more effective illustration of the former idea than the memorial to the Empress Elisabeth at Vienna which occupies a corner of the Volksgarten adjoining the Hofburg Theatre. This is composed by an enclosure of formal hedge and trellis work, with occasional more solid features inset, surrounding a basin and fountains of square form, the design of which enhances the general placidity and restfulness so appropriate to the scene. At the end of this retreat, on a slight eminence, as though it were a shrine, is placed the portrait statue, and this figure, though only a little above life-size, is the culminating interest of the memorial, which is so arranged as to lead one gradually to the intimacy of a close inspection of the features of the Empress.

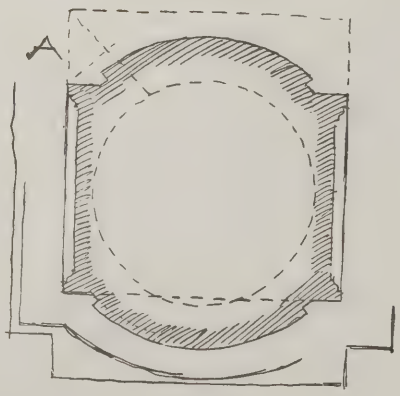
In the case of one placed in an open square under the shadow of buildings of a certain scale, and in close relation to the life and human interest of a city, a repetition of interest spread over the whole monument, or rather what I might call a composite design, might solve the question of scale and relation to the neighbourhood of its setting. In my imaginary illustration I have shown an equestrian figure of little more than the scale which would be fitting if this constituted the whole memorial, but, in combination with the accessory figures at its base and the fountains and other details which complete the group, the whole monument would amount to a general mass of sufficient proportions. The units of this



STUDY FOR A MONUMENT WITH THE FIGURE SUBSERVIENT TO THE ARCHITECTURE. BY E. A. RICKARDS.

composition are all within the range of close inspection which their scale necessitates, and the dignity and scale of the surrounding architecture is left undisturbed by any undue competition with their salient and decorative features.

In compositions of any greater proportion than this last example, sculpture, figuratively speaking, should be at the feet of a master element as its limits of possible scale and treatment are defined, but also I believe that any purely



Plan.



Elevation.

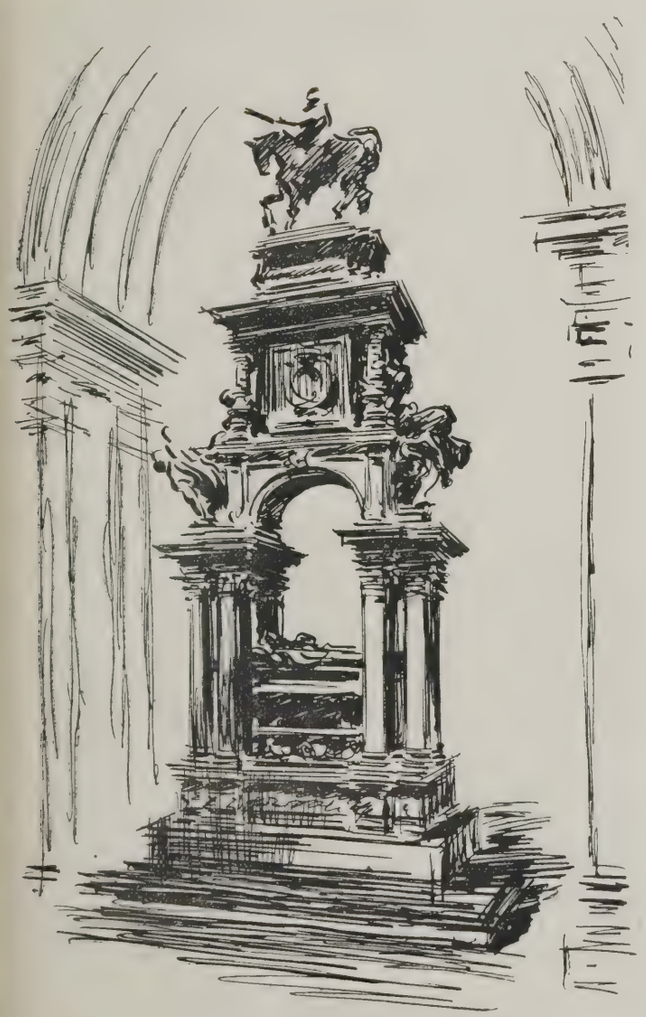
DETAILS OF PEDESTAL TO PORTRAIT STATUE. BY E. A. RICKARDS.

decorative composition, such as we have so far discussed, cannot very greatly exceed in size the dimensions suggested in my illustration, unless it serve some semi-utilitarian purpose, such as a triumphal arch, gateway, or water approach or similar architectural composition. I have endeavoured to show the reasons which define the limits of proportion in sculpture, such as its relation to life and the accessories of buildings within its range, and I think that the same rules might apply to the architectural or abstract forms which in their turn have their vassalage to perform.

I have one more sketch in illustration of the theory of complete subordination of a monument to an architectural mass. It will be seen that this constitutes almost a return to the monument of a smaller scale than that which is of the largest possible size to stand alone with dignity, and is, as it were, sheltered by the containing lines of the gateway behind; the whole forming a monument which we will suppose takes its place in a general decorative and utilitarian scheme in the combination of park and city.

Discussion.

Mr. Howard Ince, in proposing a vote of thanks, said that Mr. Rickards spoke not as a mere theorist, but as one who had given particular attention to his subject. There was, he believed, on the part of the architect a sincere desire to advance the art of the monument in London. The art of the monument was the making of history, and, though the nation might be careless, the degree of civilisation attained would be judged by the work of the sculptor and the architect in combination. This involved on the part of the sculptor a sense of reciprocity—an ability to join hands and work in combination. In this they would only be following the example of their French confrères. He was personally a great believer in æsthetic analogy. They would not think of a picture as being complete without the frame; and, in like manner, no work of sculpture could be complete without its architectural frame. Monuments in London were invariably put on refuges in the midst of traffic, were irregularly formed, and had no basis in architectural *motif*. The speaker then commented favourably on a small monument to Cardinal Newman at the Oratory. The back view of a supported statue, he continued, was usually no more interesting than the stretchers at the back of a canvas. Indian monuments to Queen Victoria had no canopy; but an interesting example of the proper use of the canopy was the Albert Memorial, where the quiet rest of the statue placed beneath gave a very fine effect. The statue of the late Duke of Cambridge occupied a singularly unstrategic position, and he would have preferred to see it in the courtyard of the Admiralty. The screen at Hyde Park Corner, although a fine piece of work, would not lose, but, on the contrary, he believed, would gain by the addition of figures at either end—two facing inward, and two facing outward. It was unfortunate that the Commissioners of Works were not present to gain much instructive information from the lecture. Mr. Rickards had had considerable influence upon his fellow-architects, and he (the speaker) hoped that opportunity might present itself for the utilisation of Mr. Rickards's undoubted qualifications.



SKETCH OF STEVENS'S ORIGINAL MODEL FOR THE WELLINGTON MEMORIAL, ST. PAUL'S CATHEDRAL.

Mr. Bertram MacKennal seconded the vote of thanks, and said it occurred to him that a monument to a man should be set in surroundings significant of his life and work. Take, for instance, a monument to a great horticulturist. This would be utterly ridiculous if not situated in a position having some bearing upon his life. A monument to Darwin, in like manner, would require a huge square to itself. What he wanted was every man to be honoured by his work and his life, and not merely by his image.

Mr. H. H. Statham supported, and said, with regard to the remark about French sculptors and architects working together, this was not an innate virtue, as Governmental authority always saw that an architect designed the pedestal. Nothing was more depressing than the figures of the frock-coated gentlemen to be seen at the Octagon Room of the Royal Academy. He wanted to urge that the French had hit on the right way of treating monuments. They put a bust on top of a pedestal, and arranged around it symbols of the subject's work.

With regard to the placing of a monument in a fit setting, an example ignoring this requirement could be seen in that to Alfred de Musset. It seemed quite out of place in its present setting, and should have been withdrawn from the material world. A suggestion had been made by an anonymous writer in the "Times" that the best possible monument to the late King would be a new façade to Buckingham Palace. It was an excellent suggestion; otherwise, at the completion of the Victoria Memorial, this great sculpture group would have but a poor background. He had great pleasure in supporting the vote of thanks to Mr. Rickards for his lecture, and for his fine drawings.

Mr. Rickards, in reply, said he was not disappointed with the audience, in spite of the absence of Commissioners of Works. They heard much about the Victorian frock-coat in sculpture, but he was not sure that the sculptor of the period could altogether afford to ignore it. He disagreed with Mr. Statham about the monument to Alfred de Musset, which he had intended to mention as an appropriately situated example, not altogether satisfactory, perhaps, but approximating the desired setting.

NOTES AND NEWS.

Restoration of Chester Cathedral.

In connection with the restoration work the Dean and Chapter have issued a fresh appeal for help. Two years ago they asked for £6,000 for the rebuilding of the organ and the restoration of the south transept door. Subscriptions amounting to £4,500 were received, and the work has been done, and payments amounting to £5,490 have already been made. The Dean and Chapter now wish to raise the remaining £1,500, and an additional £1,500. The last-named sum is required, partly for urgent repairs to the cloisters, which it was discovered last year were in a dangerous state, and for extra work done, by order of the architect, to the south transept. The restoration account is overdrawn at the bank to the extent of £972, and £699 is owing to the organ builders.

Kirkwall Cathedral Restoration.

The Town Council of Kirkwall have again considered the question of the restoration of St. Magnus Cathedral. Bailie Garden moved that it was desirable that the Town Council and the Presbytery of Kirkwall should hold a joint meeting to discuss the draft agreement with regard to the restoration, and endeavour to adjust existing differences of opinion, and that the Town Clerk be authorised to approach the Clerk of Presbytery so as to arrange for the joint meeting being held on an early date. Bailie Baikie and Mr. Scott suggested that the opinion of counsel which had been obtained should be published. They were dealing with public property, and were attempting to drive a bargain, while the public did not know what they were bargaining about. Bailie Garden's motion was agreed to, on the understanding that the conference with the Presbytery would be arranged within a month.

The Art of the Landscape Architect.

Mr. Thomas H. Mawson, Lecturer on Landscape Design at the School of Civic Design, Liverpool University, writes to correct "an obvious but pardonable error" in an abridged extract from his remarks made at the annual meeting of the Country and Municipal Engineers. Speaking to Mr. Haynes's admirable paper on "Town Planning," he said that if engineers wished to secure a scholarly grasp of the principles of town planning, they could no longer afford to neglect the work of the landscape architect—a profession which had given us Le Notre, Alphand, Dr. Stuben, the Olmstead brothers, and Mulford Robinson. The two first-named had given us the "grand manner" in town planning, arranging boulevards, squares, streets, parks, and buildings in one coherent scheme; and the last-mentioned has given us the lead in an enthusiastic form of literature with the theme of civic art as its inspiration. In order to emphasise the loss suffered in this country, due to ignoring the profession of landscape architecture and its principles, Mr. Mawson "compared our private gardens—which are superb, and by general consent the most beautiful in the world—with our public parks and open spaces, which, in so far as they depend upon design, are the worst in Europe. This," he continues, "is far from saying that our national and public parks and gardens are visually disreputable. The fact is that the ideal sought in private gardens is different from what should be the ideal in a public park. In a garden a person initially begins with a slice of our beautiful country, and seeks to conserve what is there and suitably adapt, dress, and add to its charm, so that it may minister to his private rest, seclusion, and delight. To secure this happy consummation the landscape architect's advice is usually sought and followed. In a public park, where the object is 'the greatest good to the greatest number,' you must first study grand and comprehensive effects, ease of access, and the composite civic perspective; afterwards, where possible, you may adorn and beautify according to the art of the garden designer. Thus, then," he explains, "it was not the parks dependent upon natural features which I spoke against, but the fact that in this country what is added is the work of amateurs, practical gardeners, or nurserymen, whereas on the Continent and in America they are arranged in accord with the anatomy of their respective towns by professional landscape architects. This statement can be substantiated by reference to the officials entrusted with this work in almost any of our important towns, from the London, Liverpool, Manchester, and Glasgow County Councils downwards. For our art, and also nationally, it is unfortunate that foreign municipalities send to Paris, Berlin, or America for qualified advisers; they would come to England if we could show stimulating examples."

"The Siege of Edwardes Square."

Apparently because just now there seems to be rather a dearth of news, the daily papers have given up many columns to the incidents that have occurred in the attempt to assert a right of way or right of entry to Edwardes Square, near Kensington Road. The "picturesque" descriptive writer has been let loose on the subject, and has in some instances succeeded in getting himself arrested as a trespasser. In others he has let himself go in similar terms to these: "The beautiful gardens where Miss Evelyn Millard has been wont to study her parts, where Laurence Housman has dreamed his poetry, where Professor Bradley has mused, and Frank Cadogan Cowper the artist has got new ideas of colour scheme, were abandoned to the birds." It is also insinuated that they are likely to be abandoned to the builders. The freeholders have asserted their rights by padlocking the gates, the public, supported by the Kensington Borough Council,



EXAMPLE OF SIMPLE PORTRAIT STATUE AND PEDESTAL.

("*The Art of the Monument.*")

See previous pages.

who are under obligation to maintain a certain carriage-way that is involved, have retaliated by sawing and filing through the chains. Then the freeholders set up barricades, which were soon chopped away. Huge balks of timber were next set up, and whether they remain in position we do not know; but a practical-minded war correspondent at the front ("of the railings," it is explained) remarks that "the local timber trade is looking forward to a period of unexampled prosperity." We understand that this expectancy is shared by the lawyers.

Manchester Society of Architects.

The "Programme of Summer Visits and Prize Competitions, 1910," of the Manchester Society of Architects contains particulars of the prizes offered for designs, for measured drawings and sketches, for the result of the year's work as a whole, for the best set of architectural notes, and for the best work done in the School of Architecture Elementary Design Class. The summer visits take place on Tuesdays and Saturdays, as follows: May 28, Gawsworth Church, Hall, and Rectory; leader, Mr. A. E. Corbett. May 31, St. Michael and All Angels' Church, Bramhall (Messrs. H. Gibbons and Son. Bramhall Hall, architects; leader, Mr. Roger Oldham. June 11, Over Peover Hall; leader, Mr. Isaac Taylor. June 14, Middleton, Two Schools (Messrs. Edgar Wood and Sellers, architects). June 28, Royton, Church (Mr. Temple Moore, architect). July 2, Shrewsbury; leader, Mr. H. B. Laycock. July 23, Nantwich; leader, Mr. J. H. Somerset. July 26 "The Oaks," Fallowfield (Messrs. T. Worthington and Son, architects); leader, Mr. J. H. Woodhouse. August 16, St. Augustine's Church, Pendlebury (the late G. F. Bodley, architect). August 20, Leeds, St. Chad's Church, additions (Messrs. J. H. Gibbons and Son, architects); St. Margaret's Church (Mr. Temple Moore, architect; leader, Mr. J. H. Sellers. September 6, Y.M.C.A. premises, Peter Street (Messrs. Woodhouse, Corbett, and Dean, architects). September 10, Ormskirk and Latham Hall; leader, Mr. P. S. Worthington, M.A. The Tuesday visits take place in the evenings. Mr. J. Herbert Somerset is hon. sec. of the Education Committee, and Mr. J. Theo. Halliday, 16, St. Mary's Parsonage, Manchester, hon. sec. for summer visits.

Crosby Hall Rebuilt.

In the intervening three years since Crosby Hall disappeared from its City site much work has been done, with the result that the old building has been very carefully and reverently re-erected on part of the country garden of one of its famous mediæval owners. At least it is contended that Sir Thomas More wrote part of his Utopia within its walls, and as cruel fate condemned the old hall to be either destroyed or taken down and re-erected in another place, the best possible course has been taken in rebuilding it on its present site, where it will form part of the New University Hall of residence. Needless to say, the work of transferring the building has entailed unremitting care on the part of the architects, Messrs. Wratten and Godfrey, of Carteret Street, S.W., and the builders, Messrs. Trollope and Colls, West Halkin Street, S.W. The initial work involved an exhaustive examination and measuring up of the old building, and the plotting on paper of the various stones and timbers, so that they could be placed in the same positions on re-erection. The materials themselves as they were taken down were also marked to correspond to the charts that had been made, and the care and labour required to carry out these necessary preliminaries can hardly be over-estimated. The old stone floor was too damaged to be removed; and so a wooden one replaces it. The floor timbers of the Musicians' Gallery have been re-erected; but the oak screen below it and the wooden front to the Gallery will have to be replaced, as they had been improved away in the old structure. Two new windows have been inserted at one end of the Gallery to correspond with those at the other end of it; they had been blocked up by adjoining buildings in Bishopsgate. A roof lantern has also been added. The exterior stonework was faulty in many places, but has been retained and re-used wherever possible.

Engineering Institutions' New Homes.

The Institution of Civil Engineers, the Institution of Electrical Engineers, and the Institution of Mechanical Engineers are securing new homes. The first-named, who have occupied premises in Great George Street, Westminster, since 1838, are about to begin building on a site at the corner of Great George Street and Princes Street. Their present building, which was erected in 1896, is to make way for new Government offices. Although the existing premises are so recent and so large, the Institution, which has now a membership of more than nine thousand, and may reasonably anticipate further expansion, is apparently in need of further accommodation. Its new building will occupy an area of about 21,000 sq. ft. The first floor will be occupied by the lecture theatre, the great hall, and the main library, these apartments being conveniently planned for the accommodation of large assemblies. An interesting feature in the construction will be the introduction of timbers and certain other products of various parts of the British Empire, so as to symbolize the widespread membership of the Institution. Mr. James Miller, F.R.I.B.A., is the architect. The Institution of Electrical Engineers is not building, but, having acquired the Examination Hall of the Royal College of Physicians and Surgeons on the Victoria Embankment, has carried out an extensive scheme of reconstruction which is now so near completion that occupation will begin on June 1st. In its remodelled form the building will possess a handsome marble entrance hall, through which access will be gained to the lecture theatre, which has been doubled in size. The floor of the new hall is of teak, laid on a solid concrete foundation, and the walls are of Spanish mahogany. Invisible top lighting by metallic filament lamps will be employed, while in the space above the glass roof powerful arc lamps will, it is understood, be fixed. The offices of the institution will be in the east wing, adjoining the entrance hall, the west wing being utilised for the council chamber and tea and smoking rooms. On the first floor will be located the library, a spacious room over 100ft. long overlooking the river Thames. The second and third floors of the building will be retained by the old proprietors pending the erection of their new premises in Queen Square. In the wiring for the lighting of the reconstructed building the "Kalkos" watertight system has been employed, every joint being soldered. The contractors for the reconstruction are Messrs. Prestige and Co., the amount of the contract being £12,000. An enlargement scheme is also being put in hand by the Council of the Institution of Mechanical Engineers. The necessity for additional accommodation has long been evident, and the adjoining site to the existing premises has now been acquired. This will give the institution an unbroken frontage along Princes Street from Great George Street to Old Queen Street.

German Professor's Profound Researches.

For five-and-twenty years a German professor, with appalling patience, has devoted himself to investigation and experiment with respect to noises in dwelling-houses. He has made some tremendous discoveries—as that "the more solid and tough and strong the building material is, the more quickly and loudly it conveys sound." We suppose that he is prepared to prove, with every circumstance of scientific ascertainment, what we had long dimly suspected—that sounding brass and tinkling cymbal respond more promptly and stridently to percussion than, for instance, freshly gauged plasterers' putty. When, however, the savant proceeds to develop the theory that "another sound-law in building is that the conductivity increases with the tension, as is perceivable in the case of the wires of a piano," we must confess to some slight suspicion that he is straining after sensational effect. There are limits to human credulity. Nor do the results of

the professor's experiments with partition walls greatly reassure us that his imagination is not more luxuriant than is quite becoming in a German professor. "The loudest noise," we are told, "was transmitted by those of tiles and cement, while the last was transmitted through walls of solid clay." This deduction is so startling that one would like to follow step by step the doubtless very complete series of delicate experiments which led up to it. Other daring propositions (derived from careful experiment) are that the more a brick is burned, the more noise it carries; that when a floor is covered with sand, and cork mats are spread over it, hardly any noise penetrates to the room below; that the thicker the walls the less penetrating the sound; that double windows and double doors sensibly diminish sound, and that wall curtains and hangings have a like effect. It takes (in Germany) a quarter of a century of unwearied research to establish these staggering conclusions, and thus to enrich the world's scanty store of scientific knowledge. The proofs that fire burns and ginger is hot i' the mouth presumably lie outside this learned professor's lines of investigation. We observe, by the way, that his name is given as Nussbaum, which, being interpreted, is "Nut-tree." Can it be a chestnut?

Excavation and Architecture.

The chief results of the work of the British School of Archæology in Egypt during the first half of the season have been in illustrating the rise of the architecture and sepulchral system. The field of the work—at Meydum, about forty miles to the south of Cairo—is, says a "Times" correspondent, important in the history of architecture, as it contains the oldest of the pyramids and the earliest group of tomb sculptures. In the burial chamber of the largest tomb (which is a mound 340ft. long), it was found that a short sloping way led to a lofty passage 45ft. long, from the middle of which branched a cruciform hall, 31ft. long and 20ft. wide. At the head of this was a sarcophagus of red granite—the oldest known, having been cut about half a century before that of the Great Pyramid. The chamber is 16ft. high, and is finer than any private tomb known, even



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exceeding many of those in the pyramids. The main discovery at Memphis has been the remains of a large shrine built of quartz rock by Amenhotep III., from which two fine blocks with figures of the king and a goddess have been brought away, as well as a perfect portrait head of King Amasis. Photographs of the discoveries were shown at the annual meeting of the British School on May 24th. The work that is being done by the various excavating schools is gradually producing a mass of data which, in a short time, must necessitate the extensive revision, if not the rewriting, of architectural history.

The Strand Improvements.

The Improvements Committee of the London County Council propose to proceed with the rebuilding of 143 and 145, Strand, and have accordingly considered the question of arranging for the setting back of the frontage of the premises to a line agreeing with the frontage of the Strand at its junction with Wellington Street, and inquiring whether in the event of the improvement proceeding, the Westminster City Council would contribute one-sixth of the cost of the improvement, which was estimated at £7,500. The Westminster Council recommended the Council to make a one-sixth contribution.

The Illuminating Engineers.

With the annual general meeting of the Illuminating Engineering Society at the Society of Arts last week, the work of the first session of the society was brought to a close. The society was created in order to bring together engineers, architects, members of the medical profession, and others who are interested in various aspects of lighting, so that they might exchange views and help to bring about better conditions of illumination. In their report presented to the meeting the council stated that the anticipations of success have been fully realised. Lectures and papers dealing with various aspects of lighting had been read, and the fundamental ideas in which the society was interested had spread in all directions. The desirability of better educational facilities in connection with photometry and illumination at technical institutions and colleges had been discussed. A movement to organise lectures on the subject was on foot. The membership of the society exceeded 230. Three distinguished

honorary members of the society had been elected: Sir William Preece, one of the earliest to study the measurement of illumination; Sir Joseph Swan, one of the inventors of the electric incandescent lamp; and Professor A. G. Vernon Harcourt, the inventor of the ten candle-power Pentane standard of light. The society had also received an official invitation to be represented at the International Medical Congress to be held in Brussels this year, and proposes to send delegates. At this Congress the question of the hygienic conditions of factories and schools and the effect of light on the health of employees would be studied in connection with the engineering aspects of illumination.

THE EIGHTEENTH CENTURY ARCHITECTURE OF BATH.

A REJOINDER BY HAROLD FALKNER.

[*Mr. Falkner speaks strongly in favour of Baldwin and his work, and denounces the destruction of Bath Street, which he says is an "everlasting disgrace" to the City of Bath and the present generation of architects.*]

I was amused to read the discussion on Mr. Mowbray Green's paper at the Architectural Association. We were told that the architecture is "dull monotony," and that the houses are "unsavoury." Mr. Green says that Baldwin's mouldings are "attenuated and poor"; the detail of a door by him "is debased, and it lacks the strength and vigour of that of the two Woods."

This sort of thing is all very well for an Architectural Association meeting, where a certain amount of exaggeration is necessary to command the attention of the very young; but it is apt to be repeated, and in fact has been, in the arguments for the destruction of Bath Street. The layman hears these varying voices, and concludes that Architecture is a word of very doubtful meaning, and—as it suits his convenience—down goes the finest thing in Bath!





The real fact is that Baldwin was a very great architect who has been much under-rated. His work is—as was the work of his time—refined to the last degree. He was a master of detail. Compare the detail of the Cross Bath with a recent small addition to it on the South End, and you will see that we are not even able to copy it. Like all great masters of detail, he was by no means a copyist. Suiting his detail to his building, or the occasion, he arrives at results which, when compared with the copy-books, may be termed "debased," and what he gained in refinement he lost in coarseness or "vigour," as our critics term it.

Not only was he a master of detail, but also of planning. The Pump Room, with its arcades; Bath Street, with its colonnades; and the approach to the Tepid Bath and the Quadrants (forming an approach and setting to the Cross Bath) are, or *were*, one of the finest examples, rare enough in all conscience, of town planning in this country; and it is to be remembered that they were carried out with many existing difficulties concerning buildings and sites which had to be preserved, and in the face of a cantankerous corporation for employers.

Part of this, to the everlasting disgrace of the City of Bath, and the architectural profession of our time, has now been destroyed. It is perhaps a curse on the architects of Bath, who took so little heed of the older architecture, that the work they spent their lives, their energy, and, in some cases, their fortunes upon, should be destroyed by a later generation of vandals.

[The four excellent sketches on this and the opposite page are by Mr. Falkner.]

THE ROYAL INSTITUTE AND ITS LATE PATRON, KING EDWARD VII.

Representatives at the Memorial Service.

The President, Vice-Presidents, and Hon. Secretary attended the Service of Solemn Supplication at St. Paul's Cathedral on Friday, May 20th, as representatives of the Royal Institute.

Address to the King.

The following address has been forwarded to His Majesty King George V.:—

THE HUMBLE AND LOYAL ADDRESS OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

To His Most Gracious Majesty the King.

May it please Your Majesty.—We, your dutiful subjects, the President and Council, on behalf of the Members of the Royal Institute of British Architects, and of the Societies both in the United Kingdom and in the Dominions beyond the Seas in alliance therewith, beg leave humbly and respectfully to approach your Majesty, and to offer our deep and heartfelt sympathy in the loss your Majesty, the members of the Royal Family, and the Nation have sustained by the death of your Royal Father, our late Most Gracious Sovereign King Edward VII. His late revered Majesty encouraged with his Royal and generous patronage the art that is so dear to us, and we mourn with deepest sorrow not only in common with the rest of the British Empire our beloved Ruler, but also the gracious and beneficient Patron of the Royal Institute. We most respectfully and dutifully tender to your Majesty our sincere devotion and loyalty on your Accession to the Throne, and earnestly pray that the Almighty will grant your Majesty and your Royal Consort Queen Mary a long, happy, and glorious reign, during which the Nation may prosper, the Arts flourish, and your Empire enjoy all the blessings of peace.

Given under the common seal of the Institute.

Town Planning Conference Postponed.

The Town Planning Conference of the Royal Institute of British Architects (July 11-16), and the Annual Dinner of the Institute (July 16) have been postponed till October owing to the lamented death of His Majesty King Edward VII., the Patron of the Royal Institute.—IAN MACALISTER, Secretary.

NOTES FROM ROME AND ITALY.

The publicity which has been given to the discussion in regard to the Passeggiata Archeologica or Zona Monumentale at Rome has produced a useful effect. It became clear that the Commission which had been placed in absolute charge of the work, while its intentions were good, was not realising them in the best way. Its conception of an "archæological park" was apparently a boulevard (or several parallel boulevards with gardens between them), in the valley 150 yards or so wide, through which the Via Appia passes between the Aventine and Cælian Hills, on each side of which the monuments already visible were to stand. A considerable amount of levelling and demolition of buildings, in some cases necessary, in others regrettable, has already been carried out—the disappearance of the Renaissance casino, attributed to Vignola, is one of the instances of the latter class—and trees and verdure were not respected as they should have been. But the Italian Press was on the watch, as were the foreign correspondents, and the resignation of Commendatore Boni brought matters to a head. His protest has not been without its effect, for when his place, after an interval, was taken by Professor Lanciani, it was under different circumstances, and, it seems, under better auspices. Public opinion had been thoroughly aroused, a committee of the Chamber of Deputies had been appointed, and the work of the Commission is to be continued under different principles; the natural contours of the ground are no longer to be altered, trees are to be respected, cart traffic is to be diverted from the zone by a subsidiary road, and it is to be hoped that the boulevards, which are by no means necessary in this part of Rome, will be far less extensive than under the original scheme. Excavation is for the present expressly excluded, the idea being to expropriate as much ground as possible with a view to the future; but it is to be hoped that nothing will be done to compromise the possibility of thorough archæological investigation.

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In Rome itself no discoveries of great importance have been made during the past winter; the clearing of the Basilica Aemilia is still going on, and some fine architectural fragments belonging to the interior have been brought to light. The Doric order of the exterior was known to the architects of the Renaissance, and a very good measured drawing of it is given by the unknown draughtsman whose sketch-book, now in the Soane Museum, is attributed to Andreas Coner (*Papers of the British School at Rome*, ii. pl. 74), but remains of the architecture of the interior were unknown until the excavations of the last few years. On the Palatine the examination of the House of Livia is proceeding, and the building presents some complicated problems.

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Investigations have been carried on under the church of S. Crisogono, on the right bank of the Tiber, resulting in the discovery of remains of the house of the saint, into which was built the earlier church; paintings of the eighth (?) century have been found, some of which show a strange similarity with the so-called Cosmatesque decoration, and may throw some light on its origin. Further excavations have also been made under the church of SS. Giovanni and Paolo, on the Cælian, and more rooms belonging to the house of the saints, over which the present church was erected, have been brought to light. The removal of a considerable portion of the slum quarter of the Via di Marterio, under the north-east side of the Capitoline Hill, in order to give a better view of that side of the Monument to Victor Emmanuel, is leading to the discovery of brick walls belonging to the south-west hemicycle of the Forum of Trajan, upon which the modern houses were built. To this work neither archæologists nor artists can have any objection; but the demolition of the picturesque Palazzetto di Venezia, which to a certain extent obstructs the view of the front of the monument, is more regrettable. It was built in 1466-9, and contains a beautiful Renaissance arcaded court, while outside it is battlemented. It is, however, to be re-erected on the other side of the Piazza di San Marco, and this may be some consolation to us.

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Those portions of the Baths of Diocletian which were not already the property of the State have now been expropriated. They are to be freed of the modern buildings which disfigure them, and the church of S. Maria degli Angeli is, as far as possible, to be restored to the state in which it was left by Michelangelo, with the entrance at the south-east end, instead of on the south-west side, as at present (the change was made in 1749 by Vanvitelli); the scheme for a new façade on the south-west, facing the Via Nazionale, is therefore to be abandoned. That part of the Baths which was previously a Carthusian monastery has for some years been the seat of the national archæological museum; and the parts now expropriated are to serve in the first instance to contain the archæological exhibition of 1911 (the fiftieth anniversary of the proclamation of the Italian kingdom), which is in large measure to consist of objects from the various provinces of the Roman Empire, illustrating their relations with Rome itself. On the same occasion a "retrospective art exhibition" is to be held in Castel S. Angelo, dealing with the Middle Ages and Renaissance, and containing sections devoted to Roman topography, costume, armour, etc., and also to the relations between Rome and foreign countries, as exemplified in the life and works of the artists, architects, men of letters, etc., of the various nations.

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There has been considerable activity at Ostia, where the work of excavation, after an intermission of twenty years, was resumed in 1908. Several streets have been discovered, one of them of considerable width, flanked by a large brick portico, while a portico of the Republican period has also

been brought to light; the city gate towards Rome has been found, with a portion of the town wall. A number of tombs have been excavated along the Via Ostiensis, and various inscriptions and works of art have already been added to the treasures that this city has produced. The construction of an electric tramway has been projected, and, as the distance from Rome is only 14 miles, and there are no natural difficulties in the way, it is not inconceivable that it may be completed by 1911. In interest it can in some ways rival with Pompeii, though of course the perfect preservation of even the smallest objects found at the latter city is one of the greatest factors in its charm. There the excavations still continue, slowly but surely, and the policy of having as much as possible on the spot, and restoring the buildings sufficiently to allow of this being done, e.g., with frescoes and mosaics (instead of their being, as before, transported to the museum at Naples), is being carried on with success. In the modern Calabria we may mention the commencement of work at the temple of Hera Lacinia, near Croton, and its continuation at Locroi Epizephyrioi, at the southern extremity of Italy (where a necropolis of two periods, seventh and fifth centuries B.C., the burials in both cases being under tiles, is being excavated), under the direction of Professor Orsi, who has added the charge of Calabria to that of Eastern Sicily, where he has for many years been in charge of the museum at Syracuse, and of archæological investigations in its neighbourhood, while in Sardinia the Italian authorities have been carrying on excavations in a prehistoric sanctuary, with results of considerable interest.

MANCHESTER'S MISTAKE.

The Manchester City Council appears to be suffering from a severe fit of—let us, in politeness, call it—economy. It has decided (by a majority of one vote) not to make the annual supply of £2,000 for the purchase of works of art, and it has also refused the customary further grant of £400. The gain to the ratepayer, we understand, will be about one-fifth of a penny in the pound; the loss to the community in values that are indefinable in the terms of single and double entry is incalculable, and the loss in prestige to the city is by no means inconsiderable. Hitherto, as we found occasion to remark only a fortnight ago, we had always looked to Manchester for exemplary policy in the matter of art, but it would now appear that for once in a way the City Fathers of Manucium have been less noble than themselves, and have to a slight degree discredited their descent from those ancestors who in remote antiquity may perchance have imbibed from the Greeks of Marseilles with whom they traded some of that respect for art which to-day they have seemed to renounce. Perhaps by now they have repented of their hasty action, and of their momentary forgetfulness that, as one of their excellent daily newspapers promptly reminded them, "a municipal collection of pictures is a civilising force; from the largest and sanest point of view it is hardly less a necessity for the inhabitants of a large and closely populated industrial and commercial community than their parks and open spaces." Wise and true economy does not starve and belittle and estrange the arts, but fosters and encourages them; whereas near-sighted niggardliness in this respect loses most where it is most grasping. Nor is the action of the Council regrettable upon æsthetic grounds only. It strengthens the hands of the opponents of economy, who will not be slow to point a moral from their own point of view. They will see here a proof that what is called economy is really unenlightened parsimony, and one can only hope that the Corporation will take prompt steps to rob this fallacious argument of its sting so far as Manchester is concerned. Important issues, affecting the welfare of a large community, should not be determined by a bare majority of one, obtained, apparently, as the result of most inadequate discussion. Such a result is a serious reflection on municipal methods of administration, and suggests the necessity for revision of the rules of procedure.

SOCIETY FOR THE PROMOTION OF ROMAN STUDIES.

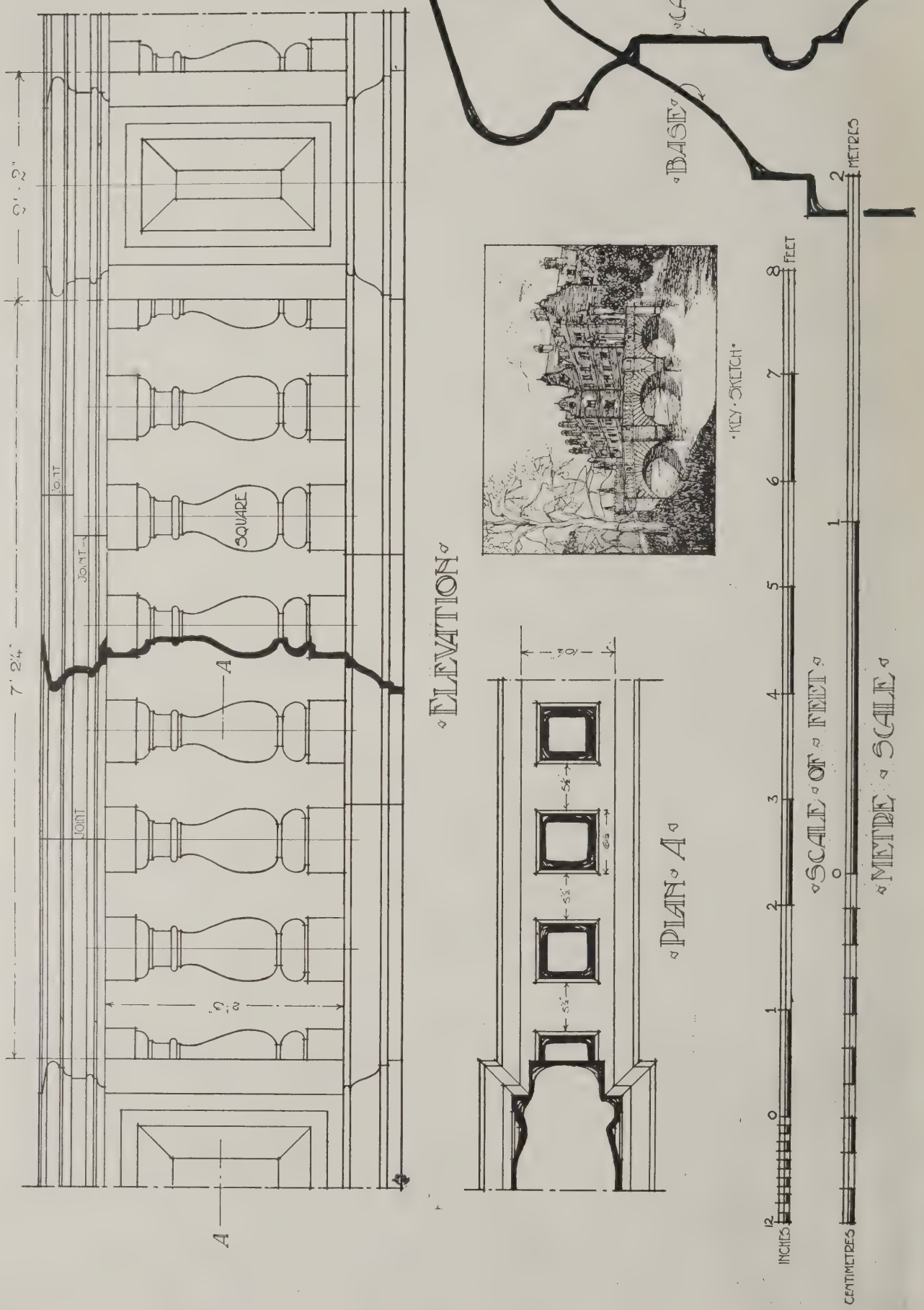
It is now announced that the Hellenic Society, the Classical Association, and the British School at Rome have come to an agreement to promote the foundation of a new society for the special study of Roman Archæology, and for the conducting of a Roman Journal on the same lines for Roman work as that of the Hellenic Society for Greek work. A special meeting is to be held on June 3rd, at the lecture theatre of the Civil Service Commission, in Burlington Gardens, to consider the subject in detail, and pass some formal resolutions as to the status and aims of the proposed society, for which no precise title seems yet to have been formulated. The objects of the Society, as stated in the second Resolution to be brought forward on that occasion, are as follows:—

To deal with the archæology, art, and history of Italy and the Roman Empire down to about A.D. 700, by publishing a journal, forming a library, holding meetings, assisting (as soon as funds permit) the British School at Rome, and generally promoting a better knowledge and understanding of the Roman world.

The union for this object of the British School at Rome with the other two Societies named above, it is observed, "would prevent that overlapping of publications and of work which causes so much waste of energy." But surely this object would be still better attained by adopting the title of "British School at Rome" for the new Society, and simply regarding it as an enlargement of the British School with wider objects and more powers. The Annual Volume of the existing British School at Rome is already an important publication; to found a new Journal for Roman Studies under another title would really be to promote that "overlapping of publications" which is deprecated, besides making confusion by creating another Society for Roman Studies where one already exists. The true policy, as it seems to us, would be to start the existing "British School at Rome," under the same name, on a new and wider basis, instead of endeavouring to keep up two different societies to do the same work.

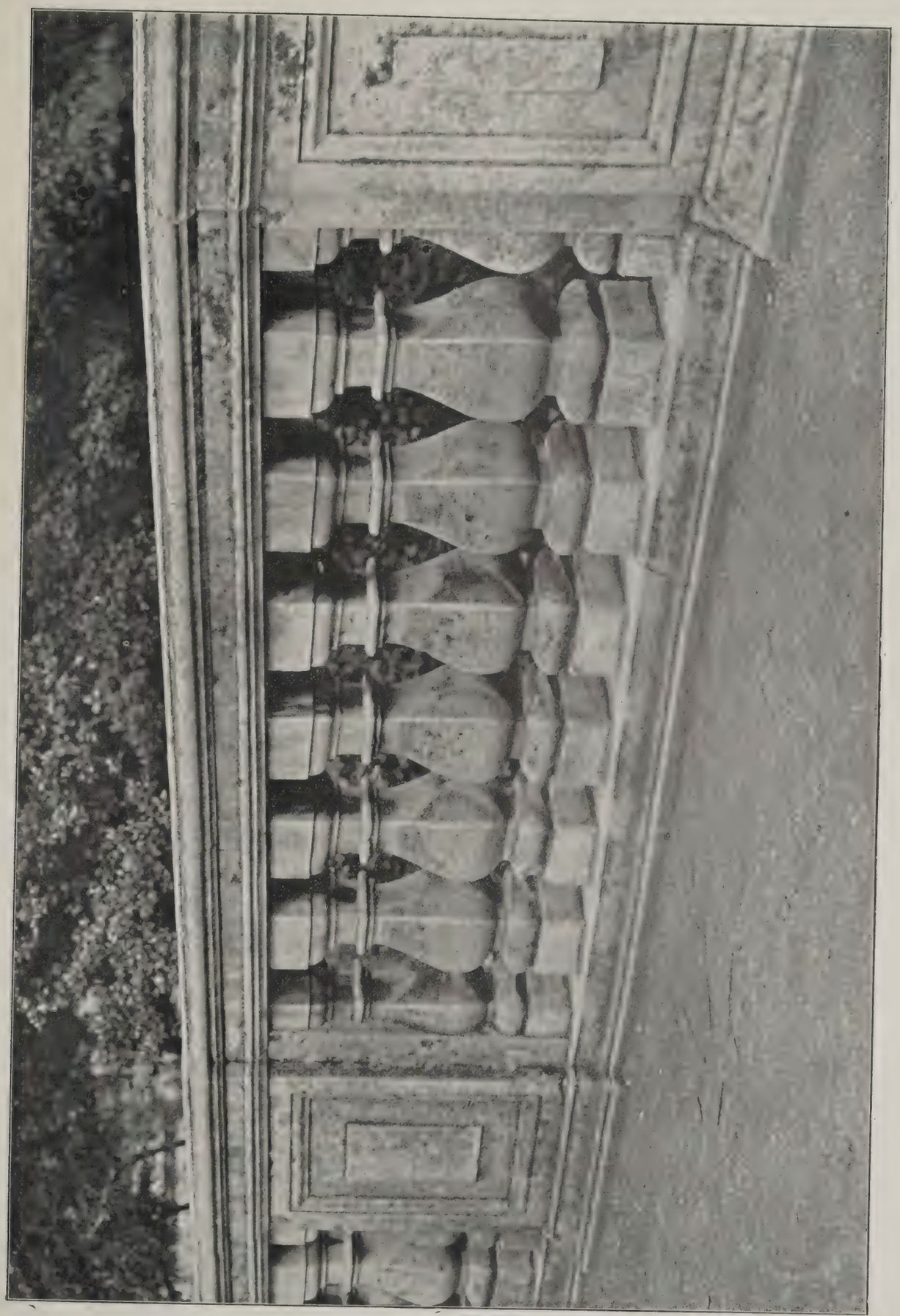
FOUNDATIONS OF ART STUDY.

Sir W. B. Richmond, R.A., opened the Byam Shaw and Vicat Cole School of Art, in Campden Street, Kensington, and in an interesting address said that art was a very serious thing. It was not only a pastime, but it was an intellectual pursuit, which, in his opinion, was so serious that it would be better if people who did not intend to go through all the labour which success implied contented themselves by remaining only amateurs. The amateur was very valuable, but one did not see in him the accomplishment that one saw in a professional artist. Sometimes, however, he had an enthusiasm and freshness of view which perhaps became a little obliterated by professional life. Art covered a great field, and though it might be regarded as a platitude he must enforce the principle that a student must first learn to draw. Drawing was the skeleton of all art, and unless the student was able to draw well he would never be able to paint well. It was very difficult to make young people understand how essential it was that they should study drawing and form. Design was the basis of true art, and for those who wished to succeed he would recommend the study of artistic anatomy. It should not be restricted to human anatomy, but should be comparative, which would help them to arrive at the wonderful unity of Nature. He hoped that there might be in time schools for painting out of doors, which was one of the distinguishing features of what was called the new art. He disliked the term, but it was, at any rate, a new phase of art. Observation was the note of the present moment, but students must first prepare themselves with a certain amount of academic study. There was such a thing as tradition, and if they lost tradition they would not recover it for a hundred years.



St. John's vies with Clare in being the most graceful of the little bridges that span the river at the rear of the Cambridge Colleges. The bridge, of stone, was built in 1696-1712, the work being executed by Robert Grumbold, Freemason, though, from an entry—"spent with Mr. Longland and others in advising a modell for ye Bridge, 0.19.9"—it seems evident that the design is not to be attributed to him. But, whoever may have been the designer, the bridge is certainly a fine composition, and the treatment of the balustrade is excellent in every respect.

BALUSTRADE TO ST. JOHN'S BRIDGE, CAMBRIDGE. MEASURED AND DRAWN BY FRANK T. DEAR.



BALUSTRADE TO ST. JOHN'S BRIDGE, CAMBRIDGE.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

NEWS IN BRIEF.

A fund has been started for rebuilding the south transept of Selby Abbey. Mr. William Liversedge, of Millgate House, Selby, has promised £1,000, and hopes that the transept will be erected as a memorial to King Edward VII.

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"The Little Theatre," which is being constructed in part of the old premises of Coutts's Bank, Adelphi, is to be decorated, very appropriately, in Adam style. The colour scheme is to be blue-grey and white, suggestive of Wedgwood ware; and the old chimney-pieces are to be retained. Miss Gertrude Kingston, for whom the work is being carried out, has notions as to the setting of scenery, and she contends that sky borders have usually a very unreal effect, and ruin an otherwise fine piece of work. To her artistic soul it was suggested that above the stage should be an arched ceiling of pale blue to represent the heavens, and this theory is being put into practice.

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Mr. Nicholas White Reed, aged 80, a retired builder and contractor, has died at his residence in St. George's Terrace, Newcastle. His firm built the Newcastle County Court, Bath Lane Church and Schools, Hexham Hydropathic, St. Augustine's Church, Westmorland Road Board Schools, Newcastle Workhouse Hospital, St. Luke's Church, Wallsend, the Abbot Memorial Schools, Gateshead, and extensions to Ushaw College.

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An Aldgate builder has been fined £5 and £2 4s. costs for breaches of the L.C.C. by-laws. The foundation of a large building erected by him was found to be composed of broken bricks and builders' rubbish, and not mixed with lime or cement. When the building was completed there was a settlement of seven inches. The structure was condemned as dangerous by the District Surveyor. For other breaches the defendant had to pay an additional sum of £3 12s., time to pay being refused.

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The Yorkshire Building, Sanitary, and Allied Trades Exhibition, which will be held in the Artillery Drill Hall, Edmund Road, Sheffield, October 14th to 22nd, 1910, will be "under the direct patronage of the Sheffield Master Builders' Association, the Sheffield Society of Architects, and the Yorkshire Federation of Building Trades Employers; the honorary executive committee consisting of the following gentlemen, who are all connected with the Sheffield Master Builders' Association: W. Longden, president; Charles Boot, vice-president; A. T. Biggin, treasurer; Thos. Smith, secretary; and the following vice-presidents: A. J. Forsdike, J. D. Cook, A. Mastin, T. Roper, G. E. Powell, T. Eshelby, and W. W. Mears. The Sheffield office is at 12, York Street.

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In our issue of May 11th we gave illustrations and particulars of the town hall extension at Stoke-on-Trent (Messrs. Wallis and Bowden, architects). We are requested to state that the constructional steelwork for this building is being carried out by Messrs. E. F. Blakeley and Co., Vauxhall Ironworks, Liverpool, who are also supplying and erecting steelwork at the Carnegie Library, Brassey Street, Birkenhead, for the Picture Theatre at Crewe, in the building for the Electrical Engineer, Blackpool, and the steel and ironwork for Messrs. Lever Bros., Ltd., Port Sunlight. The same firm have, during the last 18 months, erected 18 skating rinks, steelwork for car sheds, generating stations, etc., etc.

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Already Cardiff and Sheffield are moving for monuments to the late King. At Cardiff it has been informally suggested that a memorial should be erected on the space immediately in front of the City Hall. The site is near the King Edward VII. Avenue opened by his late Majesty during his visit to Cardiff to open the Queen Alexandra Dock. The citizens of Sheffield are anxious to adorn the city with a statue of the late King, "not merely as a monument of a beneficent reign, but as a memorial of his Majesty's visit to Sheffield in 1905," and it is suggested that a statue might well be erected in front of the University, which King Edward then opened.

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The Easton Lift Company, Ltd., announce that owing to the increase of their business they have been compelled to seek larger and more commodious premises in London. They have therefore vacated their workshops at College Street, Lambeth, and their offices at Broad Sanctuary Chambers, Westminster, and the address of their head office is now "Express" Works, Short Street, Southwark, S.E., which is five minutes from Waterloo Station. The new premises (to which offices are attached) will afford increased facilities for quick delivery generally, and for prompt attention to repair work.

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The Hexham Urban Council have refused to purchase the Abbey grounds offered by Lord Allendale for £6,000. It was announced that a contribution of £1,000 had been offered by the Benson family of Allerwash towards the cost; but the Council thought the whole of the sum might be raised by subscription.

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Nottingham house owners appear to be suffering from the extension of the City suburbs. The older property within a mile radius of the Market Place is becoming exceedingly difficult to let, and an enormous amount of new property built or building on the outskirts of the City is drawing people from the centre.

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There is a proposal to erect at Aberdeen a statue of the late King, in granite, facing Marischal College. Mr. A. Marshall Mackenzie, A.R.S.A., F.R.I.B.A., LL.D., is of opinion that, given the right sculptor and the right material (which he thinks should be Corennie granite), they ought to have a statue which would command instant admiration, and be worthy memorial of a great monarch and his great reign.

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Presiding at a meeting of the Medico-Legal Society, Sir John Tweedy said a movement had been started for the inauguration of a memorial in memory of the late Dr. Stanley B. Atkinson. It was proposed that the memorial should take the form of a permanent series of health lectures on the prevention and extirpation of infectious and communicable diseases, particularly phthisis, and that a bust should be prepared and placed where the Stepney Borough Council should direct. The chairman of the movement is the Hon. Harry Lawson, M.P.

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Messrs. Henderson and Duncan are contractors for the foundation work, site levelling and road-making of the new barracks at Redford, near Edinburgh. The drainage work contract is in the hands of Messrs. G. Mackay and Son, of Edinburgh. A railway line for the conveyance of material from Slateford is being constructed by Mr. William Jackson and Messrs. J. and A. Leslie and Reid, a steel girder bridge across the canal at Slateford forming part of the work.

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The tender of Messrs. Martin and Co., Calcutta, at 5,469,926 rupees (£364,662) has been accepted for the erection of the Queen Victoria Memorial Hall, Calcutta. Sir William Emerson, F.R.I.B.A., is the architect.

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The Swansea Cottage Exhibition appears to be hanging fire a little. About 27 cottages are to be erected, and as the majority are to be in blocks of two or four, there will not be many different types of buildings. "The Cambrian" says that having regard to the preliminary expense of between £600 and £700, and the £4,000 spent by the Corporation in laying out roads, the result does not seem adequate to the outlay.

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The battle of Flodden is to be commemorated by a memorial to be erected near the centre of the battlefield, on Piper's Hill, Branxton, Northumberland. The memorial is to be erected in rough grey, Rubislaw granite, and consists of a cairn or base, built with about twenty stones, 6ft. high, over which there is to be a monolith Celtic cross 14ft. high. Around the memorial is a 12ft. square enclosure, formed with posts of rough granite carrying iron rails.

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According to a circular issued from the Emigrants' Information Office, 31, Broadway, Westminster, the building trade of the Transvaal is stated to be in a better position than it has been for some years, and a great many buildings are being constructed. There is not, however, reported to be any difficulty in procuring sufficient labour.

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After six weeks of the lock-out, the representatives of the masters and men in the German building trade accepted the renewed offer of the Government to mediate, and negotiations for a settlement were subsequently resumed. The employers claim to have enforced the lock-out against 180,000 men.

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The Works Committee of the Holborn Borough Council has received a letter from the chief ordnance officer of the London district forwarding a list of old guns and carriages for sale. The committee are unable to suggest any suitable position for any of these relics, and recommended that the offer of the chief ordnance officer be declined with thanks. The ordnance officer might meet with more success "along the shores that round our coast from Deal to Ramsgate span," where the taste for that kind of decoration seems to be more luxuriantly developed.

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It is reported that cottages on Penistone Road, Sheffield, have changed hands at from £20 to £30 apiece. It is stated that not very long ago it was new property occupied by translated slum dwellers. "Whereupon some of our readers may wish to be left alone to their own reflections," says the "Sheffield Independent." Our contemporary seems at a loss for an explanation of the slump, but it adds "Doubtless the Corporation could furnish one." What is the mystery?

At a meeting of the Southampton Harbour Board, it was decided to authorise the Works Committee to advertise for tenders for carrying out the dredging of Thorn Knoll, just outside Southampton Docks, the cost of which, about £16,000, is being borne in equal proportions by the Harbour Board and the South-Western Railway Company. It was further decided, on the recommendation of the special sub-committee which has been dealing with the matter for some time, to dredge other portions of the river between Thorn Knoll up to Fawley Beacon to a depth of thirty-five feet. This work, which will cost £12,000, will be undertaken solely by the Harbour Board.

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Messrs. Griffiths and Co., Ltd., of London Wall, E.C., have secured the contract at £4,250,000 for the southern section of the Chilian Government Railways. The new line will be about 375 miles long, and will run from Cabildo—which is in railway communication with Valparaiso—to Toledo, near Copiapo. The system is intended to open up nitrate deposits and copper mines which have in the past suffered for want of a railway running north and south. In places the gradients will be so steep as to necessitate the use of a rack rail.

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A correspondent of the "Liverpool Daily Courier" proposes, as a memorial to the late King from the Liverpool Church-people, the completion of the two centre towers of the Cathedral. One tower, he suggests, should be called the Edward Tower, and one the Alexandra Tower.

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Mgr. Duchesne, who is at the head of the French School of Archæology at Rome, was on May 26th elected a member of the French Academy. He was born at St. Servan, Brittany, in 1843

TOWN-PLANNING TOPICS.

Tring Adopts Town Planning. The Tring District Council has announced its intention of putting the Town Planning Act into force. Lord Rothschild has therefore determined to build some 50 cottages in order to find homes at suitable rents for some of the tenants who will be dispossessed, and has given notice that he is prepared to buy in deserving cases the condemned properties of some of the poorer owners or to compensate them on terms arranged by an independent authority. But for his lordship's action many poor owners would be practically ruined.

A National Park for New York. Americans are now planning the acquisition and development of a wonderful national park for the people, which will be worthy of the metropolitan City of New York. The site begins at New York and stretches right along the left bank of the Hudson River almost to Newburg, including a magnificent driveway, with a view of the beautiful scenery of mountain, lake, and river of over fifty miles. This park, concerning which great enthusiasm has been aroused, is contingent upon the action of the Senate of the State of New York, and its consent for the issue of £500,000 worth of bonds, and also the acceptance of various gifts by the Park Commission, including £500,000 from private subscription, £100,000 from the State of New Jersey, and various sums given by Messrs. Pierpont Morgan, John Rockefeller, William Vanderbilt, and William Rockefeller, with the sum of £200,000 and a great tract of land from Mrs. Harriman, the widow of the Railway King. Some of the ground is a virgin wilderness, and many of the sites adjacent to the banks of the Hudson to be enclosed offer unexampled opportunities for millions in search of health and pleasure. Here, as elsewhere, vandals, in the form of jerry-builders, rural advertisers, and real estate speculators, are spoiling much of the most beautiful country adjacent to the big cities, and prompt action is necessary on the part of the State Park Commission to develop the project.

The Edinburgh Society. The annual meeting of the Garden Cities and Town Planning Association (Edinburgh and East of Scotland Branch) was held in the hall of St. Andrew's U.F. Church, Edinburgh, last week, Sir James P. Gibson, Bart., M.P., in the chair. It was intimated that Mr. J. H. Whitehouse, M.P. for Mid-Lanark, who was to have delivered an address on the Housing and Town Planning Bill, was too ill to attend. He had started on the journey to Edinburgh, but had had to return home. Professor Lodge submitted the annual report. He said that if they could solve the housing problem they would have gone far towards solving a number of other problems. When one contemplated the moral evils of the time and their suggested remedies, one was frequently driven to the conclusion that the ordinary attempt to deal directly with moral evils was an attempt to put the cart before the horse. So many of those moral evils were associated with and largely caused by physical evils that it was, he thought, often impossible to look for a moral cure unless one could remedy those physical ills. What seemed to him the most efficient, at any rate partial, remedy of those evils was to bring the land to the towns—that was to say, to produce in town life something like the conditions of country life. That was the basis of the garden city movement. Mr. W. Robertson, of the Carnegie Trust, Dunfermline, spoke of the great practical difficulties facing them in dealing with virgin soil such as they had at Rosyth. The attention of the association must centre largely in what was done with the 600 acres of land which the Government was prepared to feu. He did not see how it was possible to be generous in the way of wide roads, open spaces, low houses, and low feus. The Admiralty might be willing to feu their 600 acres at a very low price, and a fairly good start would be made. The best solution would be if the Government handed over the acres to the Garden City Association to develop.

Town Planners Tour. A party of nearly seventy delegates left Charing Cross on May 25th to take part in the International Housing Congress at Vienna. The next day was spent in Paris, where the City Council have a great town planning scheme in hand. This was fully explained at a municipal reception at the Hôtel de Ville in the afternoon, the morning being devoted to a visit to the Eiffel Tower, where the Chief of the Paris Parks Department gave an account of the planning of Paris parks. On May 27th the party went to Ulm; Sunday was spent at Salzburg; and on Monday Vienna was reached. The next four days were to be devoted to the sittings of the Congress. On Saturday, June 4th, a visit will be paid to Dresden, where the party will remain on Sunday and Monday, proceeding to Berlin on the evening of the latter day. Here the International Town Planning Exhibition will claim attention. On June 8th the return journey to London will be made viâ Cologne. Among those who are going to the Congress, and taking part in the tour, are Councillor W. Wilkins (treasurer), Councillor Harold Shawcross (Chairman of the Finance Committee), and Mr. H. R. Aldridge (Secretary), of the National Housing and Town Planning Council. In addition, there are representatives of the Civic School of Design, Federation of Master Builders, British Medical Association, and medical officers of health.

OBITER DICTA.

"Stone Parlours." The smoking-room is not so recent as some people suppose. Sir John Collum's "History of Hawsted" describes Hawsted Place as boasting a smoking-room as early as 1570, and mentions that right from Elizabethan days almost every house possessed such a room. Paved with flagstones to guard against fire, in the North of England these rooms were often referred to as "stone parlours."—"*Daily Chronicle.*"

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The Late Prof. Aitchison. We lose more than the architect in Mr. George Aitchison, who died last Monday. True, he began with wharves and offices and warehouses, but when he came to know Leighton he had the chance to develop his natural taste for the finer arts. All through he loved the classic Greek, and his detailed work in marble and stone is witness of this. As lecturer and teacher his influence was widely felt, and the societies at home and abroad gave their honours perhaps more to the teacher than to the craftsman. His erudition was deep, but did not dull the edge of his conversation or blunt his fine perception of the beautiful. He could always brighten a lecture with anecdote of all ages, and in discussion was full of parallels and instances. Moreover, to the end his mind was never shut to new ideas and methods.—"*Saturday Review.*"

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Jungle Cities. Modern man (in his sick reaction) is ready to march nowhere—so long as it is the other end of nowhere. The case of building houses is a strong instance of this. Early in the nineteenth century our civilisation chose to abandon the Greek and mediæval idea of a town with walls, limited, and designed with a temple for faith and a market-place for politics; and it chose to let the city grow like a jungle, with blind cruelty and bestial unconsciousness; so that London and Liverpool are the great cities we now see. Well, people have reacted against that; they have grown tired of living in a city which is as dark and barbaric as a forest, only not as beautiful, and there has been an exodus into the country of those who could afford it, and some I could name who can't. Now, as soon as this quite rational recoil occurred, it flew at once to the opposite extreme. People went about with beaming faces, boasting that they were twenty-three miles from a station. Rubbing their hands, they exclaimed in rollicking asides that their butcher only called once a month, and that their baker started out with fresh hot loaves which were quite stale before they reached the table.—*G. K. Chesterton in "Daily News."*

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Inches. 12 9 6 3 0 1 2 3 4 5 6 7 8 9 10 11 12 13

The design of this front, which is for a furniture shop, is essentially French, and meets the requirements in a very

MODERN SHOP FRONT IN THE RE



16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 Feet.

tory way. It is executed in wood (the pilasters being in marble) and the detail is very delicate and refined.

FAUBOURG ST. HONORÉ, PARIS.

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CORRESPONDENCE.

The Editor declines responsibility for the statements made or opinions expressed by correspondents.]

"Licentiate R.I.B.A."

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In recent issues of your journal you have published letters from Associates regarding the use of the affix L.R.I.B.A. for Licentiates. I do not know if my view is correct, but my reading of the Bye-Law is that Licentiates may use the affix "Licentiate R.I.B.A.," *not* L.R.I.B.A. If this view is not correct, then I agree with your correspondents that it is most unfair to Associates, as the general public will not be able to discriminate.

ANOTHER ASSOCIATE.

THE POSTAL TRADE AND BUILDERS' SUPPLIES.

By ALFRED B. SEARLE.

A large company has recently been started in Kansas in order to sell builders' supplies direct through the post instead of by the more usual method through dealers, and already a considerable amount of uneasiness has been caused by the success of this firm. Now we learn that a similar firm is to be started in this country, if the necessary capital can be raised, with a view to cutting out the ordinary dealer by forming a ring of manufacturers of different articles and products and selling direct to the builder.

It is quite unlikely that in a country the size of Great Britain any notable success will be gained, and the proposition may never be fully launched, for the difficulties in the way are enormous. In a rapidly developing country like the United States the matter is somewhat different, as there is plenty of room for competition, but with trade in the same state as in the past few years a postal business would fail except in a very small number of lines, on account of the present ability of builders to select what they require from so many places.

The manufacturer of bricks, tiles, and pipes, for example, can never sell from a catalogue only, or even from the distribution of a few samples—the methods chiefly adopted in the firms running postal businesses —for the colour and general appearance of these articles vary so greatly as to necessitate their being seen in bulk before any accurate ideas can be obtained.

Building materials can only be profitably handled through dealers of good standing, and even then only when the dealers are disposed to make efforts to create a trade. This s especially noticeable in the case of special rticles such as patent gullies, chimney-pots, and goods of a special design or possessing some particular advantage which the customer will not appreciate at the first glance.

It is obviously unfair for a dealer to accept an agency for an article unless he is prepared o display it, know its selling points, and to push its sales in a definite, instead of in a desultory, manner.

Too many dealers are so short-sighted that they will not give a new line any consideration, but go on steadily with "stock lines," forgetful of the fact that in a live business full regard must be paid to changed conditions and improved appliances. It is these firms which create in the minds of the manufacturers a desire to deal direct with the builders, particularly where new products are concerned, and it is precisely these dealers who are the first to complain if a firm cuts them out and begins a mail order business or adopts some other form of direct sales for the articles which the dealers are disinclined (for whatever reason) to sell.

A firm of sanitary ware manufacturers recently sent one of its partners—an excellent and experienced traveller—round to the chief supply dealers in the country with what appears to be a good proposition, but in almost every case he was refused a hearing even though the firms in question knew nothing of the qualities or special advantages of the goods or terms offered. Most of these dealers had long-established connections with other firms, and felt that there was ample capacity in these to supply any demand that was likely to arise, and consequently they turned the new firm away with scant courtesy. The natural result—inevitable with any progressive firm with a strong conviction of the merits of its goods—was the direct sales to the builders; and a number of the firms who had previously adopted the "high and mighty" spirit would now—to judge by their correspondence—be glad to accept an agency. This is, however, refused, as the more direct methods have proved to be more satisfactory.

This attitude is peculiarly unfortunate as far as general supplies are concerned, for the dealer must later suffer more than the manufacturer if it is to continue. There may be the best of reasons why the maker should not deal direct with the user, but these are nullified if the dealer is not willing to play his part.

Such articles as cement and lime may be sold direct, because they are of standard quality or composition, but others such as bricks must be stored in bulk so that they may be seen. In the case of bricks for ordinary building purposes it is not unusual for the works to be of so local a nature that the user may go direct and select what he requires, but with many other supplies the manufacturer is too far away for this to be done when a comparatively small order is to be given, or when the builder or his employer is uncertain as to his requirements. This being the case, the supply dealer is essential for the efficient storage and distribution of most supplies, and his familiarity with the needs and requirements of his customers gives him special advantages as a salesman which cannot be possessed by a firm conducting its business largely through the post.

Direct sales to be effective are expensive, because they need either a large expenditure on advertising in some form or other, or because they necessitate the employment of a staff of travellers whose expenses are necessarily much greater than those of the dealer who can assist a number of firms at the same time.

Quite apart from the ethics of the trade, it is, therefore, unwise for manufacturers to attempt to build up a trade on direct sales and for the dealers to continue, as many of them do, to neglect opportunities for enlarging their business by the introduction of new lines. The objections against this latter course are well known and need not be referred to, as it will be found on careful study that they are greater in appearance than in reality.

SOCIETIES' REPORTS.

Edinburgh Architectural Association.

Mr. John Watson, F.R.I.B.A., presided at the annual general meeting. It was agreed at the outset, on the motion of Mr. Hippolyte J. Blanc, to send to His Majesty King George an expression of the Association's sympathy and condolence on the death of King Edward, and congratulations to King George on his accession to the Throne. Reports by the Chairman of the Council, the librarian, and the convenors of various committees were submitted and approved of. That of the Committee of Management bore that at the suggestion of the Associate section the Committee considered the change made by the Edinburgh College of Art in shortening the summer term. This curtailment was considered detrimental to the studies of the students attending the art classes. On the matter being brought before the College of Art, the Board of Management resolved to alter the arrangements in order to meet the views of the Association. Prizes were presented by the Association to (1) Mr. Frank E. B. Blanc, and (2) Mr. J. S. Bennet (apprentices) for the design of a stone bridge across a small river. In the competition open to draughtsmen for a design for a rood screen with wood in a Renaissance college chapel, the prize was awarded to Mr. J. R. Mackay. Mr. J. S. Bennet was awarded the prize for measured drawing awarded on work done in the College of Art Summer Sketching Class. Office-bearers were elected for the ensuing session as follows:—President, Mr. J. B. Dunn, F.R.I.B.A.; past president, Mr. John Watson; vice-presidents, Mr. E. C. H. Maidman and Mr. J. Inch Morrison; hon. secretary, Mr. Jas. Kerr, 122, George Street; hon. treasurer, Mr. W. G. Walker, C.A.; hon. librarian, Mr. J. A. Arnott, hon. assistant librarian, Mr. John D. MacLeod. On the motion of the Chairman, seconded by Mr. H. J. Blanc, the Association extended to Mr. Thomas Ross hearty congratulations on his having conferred upon him by Edinburgh University the degree of LL.D. The president thereafter read his valedictory address, entitled, "The Duties of the Architect towards himself, his professional brethren, and his clients."

COMPETITIONS.

LIST OF COMPETITIONS OPEN.

JUNE 11. COVENTRY. ENLARGEMENT OF SCHOOL at STOKE. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

JUNE 15. ELEMENTARY SCHOOLS, ACTON. Particulars given in our issue of March 16th. The Royal Institute of British Architects has requested architects not to compete.

JUNE 20 YSTRADGYNLAIS SEWERAGE SCHEME. The Rural District Council will pay £20 for the most suitable scheme for sewering Ystradgynlais Lower. Competitors to state terms for full detailed plans and specifications, and for carrying out the scheme they submit. Particulars from Mr. T. Watkins, surveyor to the Council, Ystradgynlais.

JULY 9. PROPOSED USHER HALL, EDINBURGH. Particulars given in our issue of April 20th. Inquiries to be addressed to Thomas Hunter, Town Clerk, City Chambers, Edinburgh.

AUGUST 31. COVENTRY. NEW ELEMENTARY SCHOOL in Centaur Road. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

NO DATE. THE QUEEN'S UNIVERSITY OF BELFAST. The Senate of the University are prepared to receive designs for the enlargement of the present buildings at a cost of about £52,000. The Assessor appointed is Sir Aston Webb, R.A. Two premiums of £150 and £100 are offered for the two designs placed second and third respectively. Full particulars of the accommodation required, with plans of the site and the existing buildings, together with conditions of the competition, can be obtained on application to J. M. Finnegan, Esq., B.Sc., Secretary, the Queen's University, Belfast, on payment of £2 2s., which sum will be refunded on receipt of a bona-fide design, or on the return of the particulars within three weeks.

COMING EVENTS.

Wednesday, June 1.

ROYAL SOCIETY OF ARTS.—"The Restoration and Discoveries at the Guildhall, London," Mr. Sydney Perks.

CARPENTERS' HALL.—Exhibition of works in Wood and Wood-working. Opening by the Lord Mayor, 4.30.

Saturday, June 4.

NORTHERN ARCHITECTURAL ASSOCIATION.—Visit to Sunderland.

Monday, June 6.

R.I.B.A.—General Business Meeting. 8 p.m.

SOCIETY OF ENGINEERS.—Mr. C. V. Biggs on "The Inspection and Testing of Engineering Materials and Machinery." 7.30 p.m. at Room 18, Caxton Hall.

TRADE AND CRAFT.

A Steelwork Catalogue.

Now that the London Building Act has been amended to provide for steel-frame construction, such becomes almost a commonplace of modern building methods. Official sanction and official ruling bring the need for revision of the catalogues of steelwork specialists, and this new edition of Messrs. Drew, Bear, Perks, and Co.'s catalogue is particularly interesting in this respect. This firm have now achieved a foremost position in the trade of supplying architectural steelwork, and this catalogue illustrates many of the very important buildings for which they have been the engineers or have carried out the steelwork to consulting engineers' designs. Their factory at Battersea, which is also illustrated, is equipped with the latest and most powerful machinery, and they keep a large quantity of standard sections in stock, so that they are in a position to do the best and speediest work of the kind. This catalogue comprises tables giving safe loads on steel joists and beams and stanchions calculated in accordance with the requirements contained in the London Building Act Amendment Act, 1909. The formulæ for eccentric loads and grillage foundations are given in connection with stanchions, while load tables are given for solid steel and cast-iron columns. Other useful tables are those giving areas and weights of angles, tees and flats, and weights of black bolts and nuts, shearing and bearing values, and weight of rivets. Standard cleats or connections for beams are illustrated. The address of the firm is Battersea Steelworks, Wellington Road, London, S.W.

The Patent "Amalgaline" Lead Joint.

It cannot be said that the old methods of jointing lead are entirely satisfactory. The wiped joint, for instance, is not a thing of beauty, and it is never easy to make, and this difficulty is much intensified where it is necessary to make an upright joint against a wall. In these circumstances it is not surprising that there should be considerable demand for a more efficient form of joint, and an invention recently introduced by the Metal Jointing Company, Ltd., of Adelphi House, 71, Strand, London, W.C., appears to supply the need. "Amalgaline," as the product in question is called, consists of a metallic ribbon 0.05 millimetre thick, treated with a composition to prevent the formation of oxides. Upon placing a strip of this material between any two cleaned surfaces to be joined, and applying heat sufficient to melt the strip, the surfaces of the lead fuse, and in fusing amalgamate. The advantages of such a method as this are obvious. A new and unquestionably neater joint than that resulting from the old method is obtained by the use of a special tool which the company supplies. With this tool it is possible to cut the ends of the pipes to be joined to a true fit in the form of spigot and socket or coned joint. A piece of Amalgaline then being inserted, heat is applied, and a perfectly sound joint is made. By a test imposed by the Metropolitan Water Board, the strength of the joint is conclusively verified. A piece of half-inch No. 30 gauge service pipe four feet in length was fitted at one end with a brass nipple, and a joint was also made, Amalgaline being in each case the bonding substance. The pipe, having been bent round a piece of one and a half inch iron barrel, was then subjected to a pressure of 1,000lbs. per sq. in., which was increased to 1,200lbs. per sq. in., whereupon the pipe burst, neither the joint nor the nipple, however, giving way. Waste and soil pipes, and flanging pipes are also capable of successful treatment. By use of a special mould supplied by the Metal Jointing Co., much trouble is obviated in the last-mentioned type, the flanging and plumbing being reduced to a single operation. To a variety of uses, in fact, Amalgaline may be applied, as, for instance, to brass and copper unions, zinc sheets, and power cables. Tee joints on cables, telegraph, telephone, and dry-cove cables lend themselves also to this convenient and single method of amalgamation. By its simplicity and efficiency, the process should commend itself to the trade.

Ronuk Company's New Premises.

New premises for the Ronuk Company were opened at 16, South Molton Street, W., on Thursday last. Beautifully panelled in oak, which with the oak block floor has been treated and polished by the company's staff of workmen, the showroom furnishes a good example of the best English joinery, and bears testimony to the excellent results obtained by the use of Ronuk. The appearance of the room is considerably enhanced by the heavy oak beams in the ceiling, while the exterior, with its oak shop-front, is exceedingly attractive. A notable feature of the interior is the entire absence of the characteristics of the ordinary shop carved oak Jacobean chairs, tables, Persian rugs, blue and white Delft china on the ledges over the panelling, combining to produce an extremely pleasing effect. To meet the difficulties which attend the introduction and maintenance of polished wood floors, the Ronuk Company has invented a sanitary floor polish, the use of which has been adopted by the leading art galleries, hospitals, and public institutions of the country, and is in use in many private mansions. They have also established a polishing Contract Department, and undertake the initial preparation of floors and their proper maintenance by a staff of specially trained workmen. Some of the many advantages of the use of Ronuk are that scrubbing and the dampness resulting are dispensed with; the pores of the wood are filled up, and a hard, bright and durable surface is produced, in which germs cannot obtain a harbouring, while the floor can be cleaned with little labour at a small cost. Another invention of the company is a special staining by which floors of ordinary deal can be converted into polished floors. Information with regard to prices and contracts for polishing can be obtained at the company's new London depot. Their head office and factory is at Portslade, near Brighton, while they have in addition a depot at 285, Deansgate, Manchester.

FEDERATION NEWS.

National Federation.

A meeting of the Journal Committee was held on May 23rd.

The annual meeting of the National Board of Conciliation was held on May 24th, and lasted from 10.30 a.m., with an interval of an hour for lunch, until 5 p.m., in addition to the usual formal business, in the course of which Mr. Jas. Storrs was again elected chairman, and Mr. Stranks, Operative Stonemasons' Society, was elected vice-chairman; Mr. A. G. White and Mr. F. Chandler being re-elected joint secretaries. Consideration was given to various proposals to amend the rules, most of which failed to carry. The following were adopted unanimously:—

(a) Recommendation to the parties to the scheme for a new rule to provide:—

"That members of the various Conciliation Boards, who may be members of any Board having considered a case, shall not sit personally on any subsequent hearing of the said case, but shall send substitutes."

(b) An amendment to Rule 12.

"The side which fails to provide a quorum at any meeting shall pay the 3rd class railway fares and 10s. a day expenses of the representatives of the other side who have attended."

(c) A new rule as to giving notices for alterations of rules while cases are before Conciliation Boards.

"If any dispute or question has been referred to any of the Boards of Conciliation it shall not be competent for either side to give notice for an alteration of any local working rules having reference thereto, pending completion of the procedure for Conciliation set forth in these rules; but in the event of no decision being arrived at, or if a decision is given without stating the period for which it shall endure, it shall be competent for the appellants to give notice for alteration of rules if delivered within 14 days thereafter, and counter notices, if delivered within a further 14 days, notwithstanding the provisions of any local working rule as to notice; provided always that such notices shall expire on the date given in the said local working rules."

An appeal of the Operative Bricklayers from Nottingham was brought before the Board, but was deemed not to be quite in order. After some discussion it was resolved "that without creating a precedent, in the circumstances this case be heard." The result was that a decision was given by which the operatives receive an advance of ½d. per hour, as from 1st January next, to remain in force for three years, and some minor alterations made in the proposed rules.

Consideration was given to a report on the working of the Workmen's Compensation Act, with special reference to Arbitration Committees and the Durham Miners' Scheme, and eventually the matter was referred to a sub-committee to further consider and report as to the feasibility of adopting something analogous for the building trade.

The question of sub-contracts from lower paid districts was also discussed, with special reference to the increasing practice of inserting large provisional amounts in contracts which the workmen claim results in much work being imported from low paid districts to the detriment of both contractors and their workmen. This question was also remitted to the aforesaid sub-committee.

Cardiff.

The monthly meeting of the committee of Cardiff Master Builders' Association was held at the association rooms on Thursday, May 19th, the President (Mr. S. Shail) in the chair..

With respect to the tenders for additional wards for Merthyr Tydfil Union, the president reported that the advertisement inviting tenders contained a paragraph stating that the contract would contain a trade union clause involving employment of trade unionists. He considered this condition highly objectionable, and against the public interest, as it would prevent the contractor from employing free labour if it should become necessary to do so, and would also enable the trade unionists to dictate their own terms. The president reported that representations had been made to the Clerk to the Guardians on the subject, and letters had also been written to the Master Builders' Associations at Swansea, Newport, and Pontypridd, calling their attention to the matter, and requesting them to take such steps as they might consider advisable with a view to getting this objectionable condition withdrawn. The secretary read a letter received from the Newport Association, stating that they had written a strong letter of protest to the Clerk to the Guardians on the subject, and enclosing copy, which was considered satisfactory, and the hope was expressed that in view of the representations made, the objectionable condition would be withdrawn.

The secretary reported that the new Speculative Builders' Association wished to know on what terms they could become affiliated with our association. It was resolved that the matter stand over for further consideration.

A letter was read from the general secretary of the National Federation, written on behalf of the Bristol Association, asking for particulars as to how "pointing" is done in our town, and particularly as to whether the men employed to do "pointing" are bona-fide tradesmen, or merely labourers, or men who have "picked it up." It was resolved that a reply be sent stating that in our city bricklayers do the pointing in brickwork, and masons in stonework. In no case are labourers employed to do this work, and a preference is given to those men who have been engaged in the building.—I. Watkins, Secretary.

Wakefield and District.

A meeting of the members of Wakefield and District Master Builders' Association was held at the Great Bull Hotel, Wakefield, on May 3rd. In the absence of Alderman Judge (president), who was in London on Corporation business, Mr. Henry Fallas (a vice-president) was elected to the chair.

The secretary submitted to the meeting the printed form of building contract for sub-trades, which he had received from the secretary of the Yorkshire Federation, and, on perusing same, it was found that certain amendments which the Association had suggested for insertion in the Agreement for the protection of sub-contractors had not been included therein, and a strong feeling was expressed that the Agreement as printed was, from a sub-contractor's point of view, unfair, and, on the proposition of Mr. Crook, seconded by the chairman, the secretary was directed to write to the secretary of the Yorkshire Federation and explain to him the objections of the association to the form as it now stands, and suggest the insertion therein of certain provisions for the better protection of the interests of sub-contractors.—J. Beaumont, Secretary.

OBITUARY.

We regret to announce the death of Mr. George Humphreys, founder of the firm of George Humphreys and Son, builders and contractors, of Woodborough Street, Stapleton Road, Bristol. Mr. Humphreys was a valued member of the Bristol Master Builders' Association for forty years. He filled the presidential chair on two occasions, and was honorary treasurer of the association for twenty years. At the recent annual banquet he was presented with a silver tray as a mark of appreciation of his services in that capacity. He was a regular attendant at the annual meeting of the National Federation.

We regret to have to record also the death of Mr. A. Krauss, of Bristol, Past President of the Nat. Fed. of B.T.E. If report speaks truly, Mr. Krauss was a self-made man, who came to Bristol a stranger from a strange land, and yet raised himself to the position of a contractor for large public works. He enjoyed an enviable reputation for straightforwardness and reliability.

NEW BUILDINGS.

PROPOSED.

Aldershot.—The following plans have been approved by the District Council: Additions to Wellington Works for Gale and Polden; two houses, Ash Road, for W. Elliott; proposed additions to Prince of Wales, High Street, for Friary Breweries, Ltd.; proposed alterations to the Alexandra Hall; additions to stable and coach-house, St. George's Road, for Mr. Pfrangley; extensions to West End Farm.

Avonmouth.—Mr. R. H. Bicknell, M.I.C.E., one of the Local Government Board Inspectors, held an inquiry recently at the Council House concerning an application of the Town Council to borrow £2,300 to defray the cost of erecting cottages for firemen and policemen at Avonmouth.

Barnsley.—The Town Council has approved the following plans:—Greenhouse, off Park Grove; 2 dwelling-houses, West View; villa, Huddersfield Road; 8 dwelling-houses, Charles Street and St. John's Road; 2 dwelling-houses, Park Grove; scullery to house, 137, Doncaster Road; enlargement to shop, Dodworth Road; stable, cart shed, etc., Beaconsfield Street; wash-house to Miners' Rest, Old Town.

Brentwood.—The Urban Council has approved the following plans: Motor garage, in the High Street; two lock-up shops and two shops and houses combined in the High Street and Ingrave Road.

Chorley.—The Rural Council has approved the following plans:—Three dwelling houses, Chapel Lane, Coppull; six houses, Coppull Moor Lane, Coppull; two houses at Whittle-le-Woods; alterations at Town Lane Farm; Whittle-le-Woods; stable to Green Lane Farm, Coppull; drainage of additions to farm buildings, Rigby's Farm; Ulnes Walton; and drainage of additions to farm buildings, Billinge Farm, Eccleston.

Hendon.—Owing to the rapid growth in the population of the district, it is proposed to enlarge the parish church of St. Mary, Hendon, at a cost of £6,000, and to increase the seating accommodation from 457 to 807. The edifice was built in the fourteenth century.

Irvine.—The Dean of Guild Court has passed the plans of the new drill hall, which is to be erected in the High Street at an estimated cost, with offices, of £2,800.

Kingskerswell.—A new Wesleyan Church and Institute is to be erected in this village, Mr. F. G. Moore, of 9, Fleet Street, Torquay, being the architect.

Margate.—The Town Council has approved the followings plans:—One house, Beresford Gardens; four houses, Victoria Avenue; motor spirit store, Railway Goods Yard, Margate Sands Station; amended plan of Windsor and Richmond Avenue.

Newcastle.—Mr. Courtenay Clifton, of the Local Government Board, has held an inquiry at the Town Hall regarding an application by the City Council for leave to borrow £1,256 for the purpose of providing a new mortuary for the city.

Rawtenstall.—The following plans have been approved by the Town Council:—Additions to Albert Works, Whitewell Bottom; wash-house, etc., at St. Anne's Vicarage, Edgeside, Waterfoot; closets in The Fold, Rawtenstall; cart and tool shed at Bonfire Hill Lane, Crawshawbooth; out-building at 10, Alder Street, Rawtenstall; and porch at St. James' Rectory, Rawtenstall.

Richmond.—The following plans have been passed by the Town Council: Additions to Firfield, Broomfield Road; two new houses, Mortlake Road, North Sheen; two new houses, Beechwood Avenue; additions to No. 4, Spring Terrace, Paradise Road.

Seaforth.—The Liverpool Consistory Court has granted a faculty for the erection of a parochial hall on a portion of the churchyard of St. Thomas's Church, Seaforth, at a cost of about £1,650.

Sedgefield (Durham).—The Rural Council has approved the following plans: House and shop at West Cornforth; warehouse at Sedgefield for J. Newcombe; 3 houses and flats at Bishop Middleham; and 4 houses at Windlestone Colliery.

Slough.—The Urban District Council has approved the following plans:—Two houses in Upton Road, one in Alexandra Road, three in Uxbridge Road, motor garage in High Street, and extension of a shop front in High Street.

Southend-on-Sea.—The Town Council has approved the following plans:—Alterations, "Sudbury," Leigh Road, E.; one house, Bournemouth Park Road; two houses, Beedell Avenue; two bungalows, Branksome Road; one house, Tintern Avenue; six houses, Fleetwood Avenue; one house, Galton Road; conversion of two shops into one, Clarence Street; additions, Park Road; eight houses, Stromness Road; bungalow, Trinity Road; bungalow, Victoria Avenue; stable, Southchurch Road; two houses, Tintern Avenue; three houses, Leigh Road East; three houses, Carnarvon Road; three houses, Central Avenue; one house, Grand Drive; infants' department, Chalkwell Hall Schools; two bungalows, Glenwood Avenue; one house, Drake Road; one house, Leigh Road East; two houses, Kingsway, Chalkwell Park; alterations to premises, Alexandra Street; addition to "Shirley," Southchurch Road; addition to house, 106, Valkyrie Road; seven houses, Wenham Drive; six houses, South Avenue; two houses, Shaftesbury Avenue; lavatories, Queen's Hotel; two houses, Tintern Avenue; and two houses, Northview Drive.

South Shields.—A Local Government Board inquiry has been held at South Shields into the application of the Corporation for sanction to borrow a further sum of £10,000 in respect of the new municipal buildings, bringing the total amount required for the purpose up to £70,000. The Town Clerk stated that the original estimate of the architect for the main building was £44,175. When the foundations were being laid it was discovered by boring that the sub-soil was water-logged, and this had necessitated an additional cost of £4,000. Other contingencies, such as the clock tower, the clock, the fore-court, and the furnishings, had involved the expenditure of £8,566, and he proposed to add £1,061 for contingencies, bringing the additional expenditure up to £9,627. They had borrowing powers for £60,000, repayable in 60 years.

Spennymoor (Durham).—The Urban Council has approved the following plans: Two houses in North Road, iron staircase for exit door of gallery at the theatre; two cottages in Rock Road; alterations to premises in Coulson Street; stable, etc., in South Street; 20 cottages in Pearson Street; photo studio in Barnfield Road; extension to mineral water works.

West Hartlepool.—The Town Council has approved the following plans: Alteration to house, 37, Hutton Avenue; alteration to premises, Roker Street; altering house into house and shop, Tower Street; five houses, Granville Avenue; alteration to shop, 30, Church Street (on the understanding that the premises are not to be occupied as a dwelling-house); altering four houses into club premises, Walter Street; bringing forward shop front, Elwick Road; alteration to basement of Cafe, Church Street; alteration to house, Park Square.

Wosbro'.—The following plans have been approved by the Urban Council:—Two houses at Birdwell, and house in West Street.

Yarmouth. — The Town Council has approved the following plans:—Additions to fishing premises, Admiralty Road; new roads, Lowestoft Road, Gorleston, West Cliff estate; extension of garage, Northgate Street; shed, Row 138; rebuilding salt store, Fish-wharf; additions to offices, Factory, Messrs. Grout and Co., Ltd.; villa, Park Road, Gorleston; shop front, Bell's Road, Gorleston; footbridge, over Row 70; shed, 18, Stafford Road, Southtown; fishing shelters, Bell's Marsh Road, Gorleston; stable Avondale Road, Gorleston.

IN PROGRESS AND COMPLETED.

Bridgwater.—A new church and schools are being built on a site in Monmouth Street to cost £4,052.

Brighton.—The Duke of Devonshire has laid the foundation-stone of the additions to the church of St. Michael and All Angels, which comprise the erection of a nave and tower at a cost of £8,000. Mr. Granville Streatfield is the architect, and the contractors, Messrs. Mark Martin and Sons.

Scarborough.—A new Baptist Church is in course of erection at Columbus Ravine at a cost of £2,500, and the foundation-stones were recently laid. The building will be of brick with stone dressings, and the contracts have been let as follows:—Brickwork, masonry, and plastering, Hunter and Smith; joinery, T. Marshall and Son; slating, Joseph Hardgrave; plumbing, R. Simpson; ironwork, Brogden and Wilson; painting, H. Dodgson. Mr. Caleb Petch is the architect.

Cambridge.—The foundation stone of the new Museum of Archæology and Ethnology, has been laid by the Baroness Von Hugel. The new building, which consists of three storeys, immediately adjoins the Law Schools in Downing Street, and is being built on to the party wall of the Law School lecture rooms. It will occupy the space between the Law Schools and Tennis Court Road, having a frontage of 70ft. to Downing Street and 72ft. to Tennis Court Road, and is being built so as to harmonise with the existing block of buildings of which it will be a partial completion. When the whole range of buildings is completed it will extend along Tennis Court Road to the south end of the Botany School, and the cost is estimated at something like £30,000. The cost of the block now being erected, which was concluded in December last, and which, it is hoped, will be finished in about twelve months, is about £10,000. The builders are Messrs. Kerridge and Shaw, and the building will be warmed by hot water radiators and coils by Messrs. Crittall, of London. Mr. T. G. Jackson, R.A., is the architect.

Gosport.—The contract for the new Wesleyan Church and schools in Stoke Road has been placed with Messrs. Lear and Son, of Alverstoke, and building operations will commence forthwith The new church will adjoin Oak Street, and the schools will be at the Peel Terrace corner, Messrs. Gordon and Gunton, of London, being the architects. Eight months is allowed for the completion of the buildings.

Seven Sisters (Cardiff.)—The new St. Mary's Church is in course of erection near the site of the present iron building, at a cost of £5,600, and the corner stone was recently laid. The church will be Gothic in treatment, and consists of nave, with north and south aisles and organ chamber, the latter being divided off from the nave by arcading with clerestory chancel and clergy and choir vestries. Accommodation is provided in the nave for 386 worshippers, and in the chancel for 20, making a total of 406. The walls are faced with blue native stone, with Doulton stone dressings, with the interior dressings of Bath stone and Portland stone. The building will be heated by means of the low pressure hot-water system. The roof will be in wrought open timber work in pitch pine, and covered with green Westmorland slates. Mr. J. Cook Rees is the architect, and Mr. Evan Thomas, the contractor.

Wigston Magna (Leicester).—The new hall and stores built by the Co-operative Society, and situate in Long Street, have been formally opened on completion. The ground floor consists of three large shops, over which is the New Public Hall, occupying the whole of the first floor, and which is capable of seating about 400 people. It is 65 feet in length by 30 feet in width, and can be divided into two smaller halls of different sizes by a large folding screen. The whole block has been erected at a cost of about £3,600, Mr. F. H. Jones, M.S.A., Leicester, being the architect, and Mr. Joseph Hassall, of Wigston, the contractor.

COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about five days or longer after the date of this issue. Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders. The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

May 30—June 8. **TIDWORTH, HANTS (Assaye Barracks).**—Erection of twelve blocks of troops' stables, including drainage, water supply, pavings, etc., at Assaye Barracks, Tidworth, Hants, for the Secretary of State for War. Plans, specification, and conditions of contract may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., or at the Barrack Construction Office, Tidworth, on May 25, 26, and 27. Those desiring to tender and to receive a copy of the bills of quantities must apply to the Director of Barrack Construction not later than May 30, and the application must be accompanied by a deposit of 10s. Cheques or orders to be made payable to the Assistant Financial Secretary, and crossed "Bank of England for Credit to Army Funds." Tenders to be delivered addressed to the Director of Army Contracts, War Office, Whitehall, London, S.W.

May 30—June 8. **TIDWORTH, HANTS (Mooltan Barracks).**—Erection of twelve blocks of troops' stables, including drainage, water supply, pavings, etc., at Mooltan Barracks, Tidworth, Hants (or other selected site within the barrack area), for the Secretary of State for War. Plans, specification, and conditions of contract may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., or at the Barrack Construction Office, Tidworth, on May 25, 26, 27. Those desiring to tender and to receive a copy of the bills of quantities must apply to the Director of Barrack Construction not later than May 30, and the application must be accompanied by a deposit of 10s. Cheques or orders to be made payable to the Assistant Financial Secretary, and crossed "Bank of England for Credit to Army Funds." Tenders must be delivered addressed to the Director of Army Contracts, War Office, Whitehall, London, S.W.

May 30—June 15. **DUNSTABLE.**—Erection of a new Council school, for the Bedfordshire C.C. Drawings, specifications, and form of contract may be inspected at the office of Gotch and Saunders, architects, Kettering. Builders desirous of tendering must send their names and addresses to the architects on or before May 30, together with a deposit of £1 1s., when a copy of the bill of quantities and form of tender will be forwarded to them. The contractor will be required to find sureties for the due performance of the contract. The acceptance of a tender will be subject to the approval of the Local Government Board. Tenders must be sent to W. W. Marks, Clerk of the County Council, Shire Hall, Bedford.

June 4. **SHOSCOMBE (near Bath).**—Erection of schools, offices, etc. Contractors desirous of tendering must make application, in writing, to the Rev. Le Gendre Horton, Wellow Vicarage, Bath, on or before June 4th.

June 6. **MANCHESTER.**—(See "Miscellaneous.")

June 6. **ASTON.**—(See "Sanitary Engineering.")

June 6. **OSWALDTWISTLE (Lancs.).**—(See "Engineering.")

June 6. **ARNSIDE.**—Erection of additional school buildings at Inglemere girls' school, for Herbert Higham Llewellyn. For all particulars apply to R. Bradley Barker, architect and surveyor, Arnside.

June 6. **CHESTERFIELD.**—Erection of new warehouses, stabling, etc., in Theatre Yard, for the Corporation. Plans, etc., may be seen, and bills of quantities, etc., obtained on application to the Borough Surveyor's Office, Salter Gate, on deposit of £1 1s.

June 6. **EAST PRESTON (Worthing).**—Erection of a verandah to the Infirmary, and the conversion of existing premises as a meat store, at the workhouse, for the Guardians. Plans and specifications may be seen at the workhouse. Tenders must be sent to "The Chairman of the Board," East Preston, near Worthing.

June 6. **ABERFAN (Merthyr Tydfil).**—Erection of covered play shed at Pantglas boys' school, Aberfan, for the Merthyr Tydfil Education Committee. Particulars can be obtained from the Deputy Surveyor, Town Hall, Merthyr Tydfil. Tenders to be delivered to E. Stephens, clerk to the Education Committee.

June 6. **KENDAL.**—Erection of proposed garage and power station at Hawesmead, Kendal, for Mr. C. H. Clegg (whole or separate tenders). Plans may be seen and quantities and specification may be obtained at the office of John F. Curwen, F.R.I.B.A., F.S.A., architect and sanitary engineer, 26, Highgate, Kendal, to whom tenders must be sent.

June 6. **FOREST HALL (Northumberland).**—Erection of proposed police station (whole or separate tenders). Plans may be seen at the office of J. A. Bean, county architect, The Moot Hall, Newcastle-on-Tyne, and bills of quantities will be forwarded on receipt of cheque for £2 2s. as deposit. Tenders to be delivered, in envelope supplied, at the Architect's office.

June 6. **GRIMSBY.**—Erection of a new Council school in Strand Street, for the Borough Education Authority. Plans may be seen at the offices of Herbert C. Scaping, architect, Court Chambers, Grimsby. Bills of quantities will be supplied on receipt of a deposit of £2 2s. Tenders to be delivered to Douglas Chandler, Clerk to the Education Authority, Education Offices, Grimsby.

June 6. **PENGAM (Wales).**—Erection of an infectious diseases hospital, near Pengam, consisting of two pavilions, lodge, laundry, stables, and administrative block, for the Gellygaer U.D.C. Plans and specifications can be seen and bills of quantities and all particulars may be obtained on application to the Council's architect, P. V. Jones, Bank Chambers, Hengoed, on deposit of £2 2s. Tenders to be delivered to Frank T. James, Clerk, Council Offices, Hengoed.

June 7. **OLDHAM.**—Alterations to gas and water offices, Greaves Street, for the Corporation Gas Works Committee. Plans may be inspected and copies of specification and quantities obtained on deposit of £1 1s., on application at the Gas and Water Offices, Greaves Street.

June 7. **HENSINGHAM.** — Erection of two houses. Plans, specifications, and conditions of contracts may be seen on application at the office of the architect, J. S. Stout, 36, Lowther Street, Whitehaven, and to whom tenders are to be delivered.

June 7. **UPPINGHAM (Rutland).**—New music-rooms at Uppingham school. Bills of quantities can be obtained by application to the Bursar, the Bursar's Office, Uppingham school, at whose office the plans can also be inspected by appointment. Tenders are to be delivered to above address.

June 7. **CAERAU (Glamorgan).**—Erection of a new goods shed, stable, etc., at Duffryn Sidings, Caerau, Glamorganshire, for the G.W.R. Plans and specification may be seen and forms of tender and bills of quantities obtained at the office of the engineer at Newport Station. Tenders to be addressed to G. K. Mills, Secretary, Paddington Station, London.

June 7. **CORTACHY (Scotland).**—Mason, joiner, slater, and plasterer works at (1) addition to dwelling house at Rottal, Cortachy, and for joiner and corrugated iron roofing of covered court at Do; (2) new barn, cart shed, and granary, etc., at Coiliamy, Cortachy, joiner and slater works only. For all information, etc., apply to John Black, factor, Airlie Estate Office, Cortachy.

June 7. **WIMBLEDON.**—Erection of two cottages at the rear of the central fire station, Queen's Road, for the Corporation. Plans and specification may be inspected, and bills of quantities obtained at the Borough Engineer's office, Town Hall, Wimbledon, upon payment to the Borough Treasurer of a deposit of £1 1s. Tenders must be addressed to the Chairman of the Watch Committee.

June 7. **KILKEEL (Ireland).** — Enlarging labourer's cottage, No. 81, in Tollymore, for the R.D.C. The works must be executed in accordance with the Council's standard specification, and a plan prepared by John M'Aleenan, C.E., Castlewellan, at whose office and the office of the Council the documents may be inspected. Tenders must be on the prescribed form, which may be obtained on application to W. Hughes, clerk, Board Road, Kilkeel.

June 7. **SNATCHWOOD (Abersychan).**—Erection of 18 houses, with boundary and retaining walls and formation and making of roads at Snatchwood, Abersychan, for the Abersychan, British, and Talymain Industrial Co-operative Society, Ltd. Plans and specifications, with sections of ground, may be seen at the office of A. Gordon Babbidge, Architect and Surveyor, Clarence Chambers, Pontypool. Tenders to be delivered to the Managing Secretary, at the Central Stores, Abersychan.

June 7. **WARWICKSHIRE.**—Alteration of the premises at the Aston Lower Grounds to fit the same for the requirements of the Territorial Units who will be there located, for the Warwickshire Territorial Force Association. Bills of quantities, form of tender, etc., may be obtained from the architects, James and Lister Lea and Sons, 19, Cannon Street, Birmingham, on deposit of £3 3s. The plans and conditions of contract may be seen and all further particulars obtained at the architect's offices. The contractor shall pay rates of wages and observe hours of labour not less favourable than those commonly recognised by employers and trades societies in the building and allied trades in the Birmingham district. Further, the conditions of employment generally accepted in the Birmingham district in the trade concerned shall be taken into account in considering how far the terms of the fair wages clauses are being observed. The contractor shall be prohibited from transferring or assigning to any person or persons whatever any portion of his contract without the written permission of the Association. The contractor shall be responsible for the observance of the fair wages clause by the sub-contractor. Tenders should be delivered at the offices of the Association, 46, High Street, Warwick.

June 8. **LONDON, W.C.**—(See "Sanitary Engineering.")

June 8. **EBBW VALE.**—Erection of 64 cottages, for the U.D.C. Plans and specification may be seen at the office of T. J. Thomas, the Town Surveyor. Tenders should be delivered at the office of Tho. Hughes, Clerk, Ebbw Vale.

June 8. **BUCKINGHAM.**—Re-erection of almshouses, for the Trustees of the Buckingham General Charities. Drawings, etc., may be seen on application to Henry Small, solicitor, Town Hall, Buckingham, or to G. H. Manning, architect, 6, Walton Street, Aylesbury, and forms of tender may be obtained on deposit of £1 1s.

June 8. **LAMPHEY (near Pembroke).**—Erection of a new Council school building, for the Education Committee. Drawings and specifications may be seen on application to the Head Teacher at the present school at Lamphey, and also at the office of the architect, D. E. Thomas, 17, Victoria Place, Haverfordwest. Bills of quantities and forms of tender may be obtained at the architect's office upon deposit of £1 1s. Tenders must be delivered to W. Davies George, Clerk, County Education Offices, 9, Quay Street, Haverfordwest.

June 9. **LEICESTER.**—Extension of the engine-room, offices, etc., at the tramways power station, for the Corporation. Plans may be seen and copies of the general conditions, specification and bill of quantities obtained, at the Borough Surveyor's Office, on deposit of £2. Cheques, etc., should be crossed and made payable to the Leicester Corporation. Tenders must be addressed to "The Chairman of the Tramways Committee, Town Hall, Leicester."

June 9. **MANCHESTER.**—(See "Miscellaneous.")

June 10. **STAINLAND-WITH-OLD-LINDLEY (Yorks.).**—Stainland-with-Old-Lindley, Bowling Green Council School, new woodwork centre (builder, joiner, slater, plumber, plasterer, painter), for the West Riding Education Committee. Plans may be seen and specifications, etc., obtained, on application to the Education Architect, County Hall, Wakefield. A deposit of £1 must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield.

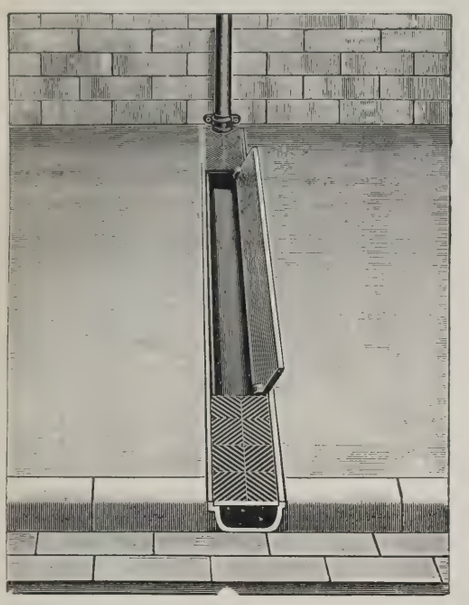
June 10. **KIRKCALDY.**—Extension of Kirkcaldy post office, for the Commissioners of H.M. Works and public buildings. Tenders are required for the whole work and not for separate trades. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the postmaster of Kirkcaldy. Sketch plans may be seen, and bills of quantities and forms of tender obtained, at H.M. Office of Works, 3, Parliament Square, Edinburgh, on deposit of £1 1s. Tenders must be delivered addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

June 10. **BRADFIELD AND STAINLAND (Yorks.).**—Whole or separate tenders for the following works:—Bradfield: Stannington New Council school; Swinton: Roman Terrace Council school, alterations and additions; Stainland-with-Old-Lindley: Bowling-green Council school, new woodwork centre (builder, joiner, slater, plumber, plasterer, painter), for the West Riding Education Committee. Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders must be addressed to the Clerk of the County Council, Wakefield.

(*Continued on page xii.*)

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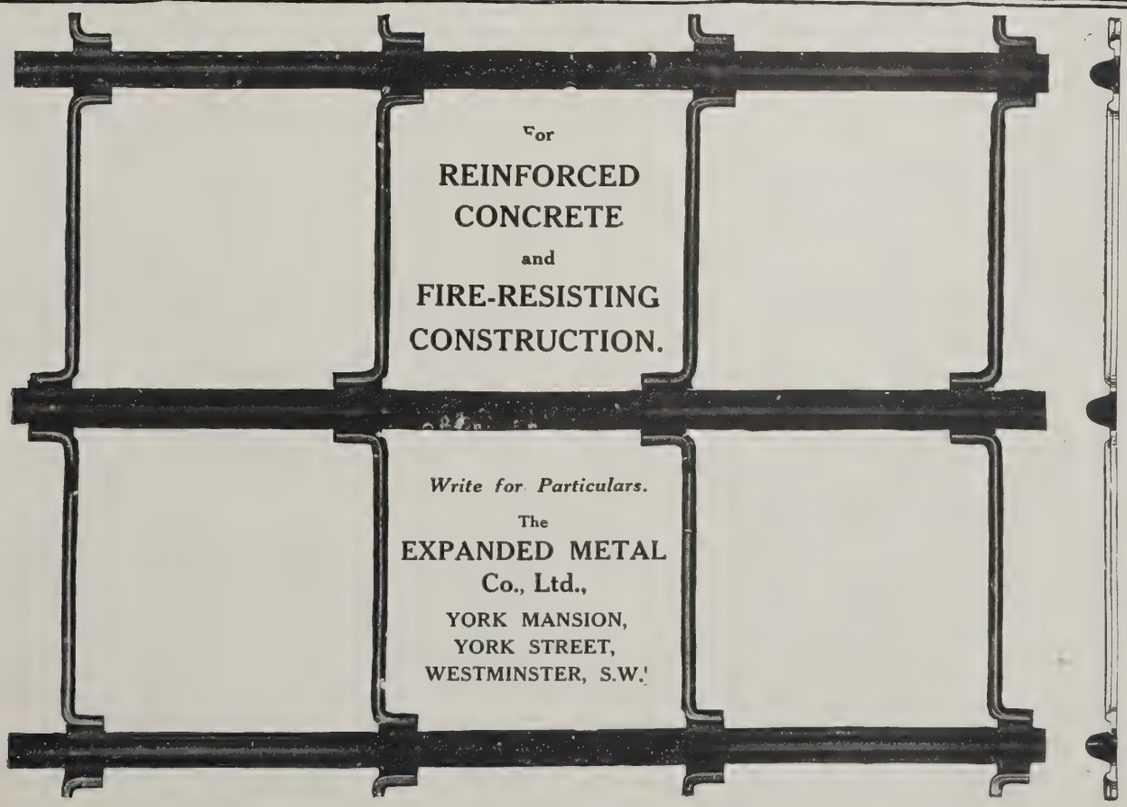
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June 10. **BENTHAM, LONGSTAFFES (Yorks.).**—Alterations and additions to Bentham, Longstaffes, and Lower Council schools (builder, joiner, slater, plumber, plasterer, painter, asphalter, whole or separate tenders). Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders must be addressed to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

June 10. **BRISTOL.**—Extensions of the Royal Infirmary, comprising the erection of new wards for about 180 beds, operating theatres, and casualty department, on a site in Marlborough Street, Bristol, for the Committee, in accordance with plans, specifications, and conditions of contract prepared by H. Percy Adams and Charles Holden, architects, 28, Woburn Place, Russell Square, London, W.C. Bills of quantities and forms of tender may be obtained from the quantity surveyors, Bernard and Son, 26, Orchard Street, Bristol, on deposit of 5s. Tenders to be delivered to W. E. Budgett, Secretary and House Governor, Bristol Royal Infirmary.

June 10. **LYDFORD, UGBOROUGH AND HARFORD (Devon).**—Construction of the works necessary for developing and working a China clay sett in the parishes of Lydford, Ugborough, and Harford, in the County of Devon, for the Directors of the China Clay Corporation, Ltd. The works will comprise adits, shafts, removal of overburden, C.I. pipe-line, mica drags, tanks, about eight miles of 9in. stoneware double pipe-line, about eight miles of light railway, four clay drys or kilns, with tanks and other works. Plans and specifications may be seen, and bills of quantities obtained, on deposit of a £5 Bank of England note at the office of R. Hansford Worth, Mem.Inst.C.E., 42, George Street, Plymouth, to whom tenders must be sent. Note.—The Directors are also prepared to consider alternative schemes and plans, which must be delivered at the same time and be accompanied by specification and lump-sum tender.

June 11. **HOLMES CHAPEL (Cheshire).**—Alterations and additions to the Agricultural College Holmes Chapel, Cheshire. Plans and specifications can be seen at the office of H. Beswick, F.R.I.B.A., county architect, Newgate Street, Chester, and quantities obtained on deposit of £1. Tenders are to be delivered to R. P. Ward, Director of Education, County Education Offices, Chester.

June 11. **GLOUCESTER.**—Erection of a new Council school, at Deacon Street, Gloucester, for 336 boys, for the Education Committee. Plans and specifications may be seen on application to J. Fletcher Trew, M.S.A., County Chambers, Station Road, Gloucester, and quantities will be supplied on deposit of £1 1s. Tenders to be delivered to P. Barrett Cooke, Secretary to the Committee, Berkeley Street, Gloucester.

June 11-20. **LONDON, E.**—(See "Painting.")

June 13. **HULL.**—(See "Engineering.")

June 13. **BIRKENHEAD.**—(See "Miscellaneous.")

June 14. **DURHAM.**—Alterations and additions at Black Boy and Eldon Council Schools, Manual Instruction Room, at Cockton Hill, and Caretaker's House at Murton Colliery, for the C.C. Sole tenders are invited for the above. Plans, specifications and general conditions of contract may be seen and bills of quantities obtained as follows:—1, for Black Boy Council School, at the office of F. H. Livesay, architect, Newgate Street, Bishop Auckland; 2, for Eldon Council School and Murton Caretaker's House (plans, specification, and general conditions only for the latter), at the office of F. E. Coates, Shire Hall, Durham; 3, for Cockton Hill Manual Instruction Room, at the office of W. Rushworth, Shire Hall, Durham. Tenders (endorsed with name of school) are to be sent to A. J. Dawson, Clerk to the Education Committee, Shire Hall, Durham.

June 15. **TROON.**—Erection of a new orchestra at the United Methodist Church. Plans and specifications can be seen at Joseph Rodda's House, Treslethan Road, Troon, to whom tenders must be sent.

June 15. **CHISLEHURST.**—Erection of a new post-office, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster, Chislehurst. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be delivered addressed to the Secretary, H.M. Office of Works, Storey's Gate, London, S.W.

June 20. **WATERLOO WITH SEAFORTH.**—Erection of the Crosby Road North Council school, Waterloo, near Liverpool, for the U.D.C. Bills of quantities may be obtained from John I. Thompson, Clerk to the Council, Town Hall, Waterloo, near Liverpool, upon deposit of £1 1s. Drawings and specifications may be seen at the office of Appleyard and Quiggin, architects, 67, Lord Street, Liverpool. Tenders must be delivered to the Clerk to the Council.

June 27. **MERTHYR.**—Alterations and additions for the conversion of Cyfarthfa Castle into a secondary school, and the erection of science laboratories, art and lecture rooms, with latrines, playgrounds, and other works in connection therewith. Specification, quantities, and form of tender may be obtained from T. F. Harvey, M.Inst.C.E., Borough Engineer, on and after June 6, on deposit of £5 5s. Plans and drawings may be seen at Cyfarthfa Castle, and other information obtained, on and after June 6. Tenders must be sent to T. Aneuryn Rees, Town Clerk, Town Hall, Merthyr Tydfil.

June 13. **CHELMSFORD.**—Heating and ventilating works at the Trinity Road Council School, which is now in course of erection, for the Borough Education Committee. Persons tendering are to submit their own schemes for these works. The plans of the school building may be inspected at the office of the architect, W. H. Pertwee, the Institute, London Road, Chelmsford, from whom all particulars may be obtained. The contract for the erection of the school building has been let to Henry Potter and Son, of Chelmsford, and the person whose tender is accepted for the before-mentioned works will be, and act as, sub-contractor to, and will be paid by, that firm. Tenders, which must be on forms to be obtained from the architect, together with detailed schemes or specifications, must be addressed to W. Smith, Town Clerk, Municipal Offices, 16, London Road, Chelmsford.

June 14. **STAFFORD.**—Supply and erection of a triple-expansion vertical rotative direct-acting pumping engine and Lancashire boiler, together with all machinery, pipes, valves, and other works in connection therewith, for the Corporation. Conditions of contract, specification, form of tender, and bill of particulars may be obtained from W. Plant, borough and waterworks engineer, Borough Hall, Stafford, on deposit of £5. Tenders to be delivered at the office of Richd. Battle, town clerk, Borough Hall, Stafford, addressed to the Chairman of the Waterworks Committee.

June 16. **PEMBROKE.**—Supply and erection of a weighbridge at the Union Workhouse, including the erection of necessary house, which must be described in the tender, for the Guardians of Pembroke Union. Persons tendering are requested to submit tenders for a machine of 3 tons, 4 tons, 5 tons, and 6 tons capacity, stating the name of maker of machine. Tenders to be sent to J. S. W. Jones, clerk, Union Office, Pembroke.

No date. **KIRTON (Boston).**—Erection of a brick and slate warehouse (size 26oft. long, 38ft. wide), in two floors, and proposed to be built on a site adjoining Kirton Station Yard, for W. Dennis and Sons, Ltd. Plan and specification may be seen by application to Mr. Henry Kidd, Solent House, Kirton.

ENGINEERING.

June 6. **MARGATE.**—Excavating and refilling trenches and laying jointing and fixing about 1,030 yards of six inch main in the west and centre roads on the Cliftonville Estate, with all necessary valves, hydrants and fittings. Specification and plan can be seen, and particulars and form of tender obtained, on application to F. Stanley, Waterworks Manager, 13, Grosvenor Place, Margate. Tenders to be sent in to Edward Brooke, Town Clerk, Town Clerk's Office, Margate.

June 6. **OSWALDTWISTLE (Lancs.).**—Excavating, concreting, and brickwork, etc., in the building and constructing of waterworks filters, clean water tank, and other works at the Jackhouse reservoir, for the U.D.C. Plans and specifications of the works may be seen on application being made to R. N. Hunter, water engineer, Town Hall, Oswaldtwistle, and a copy of conditions, specifications, bills of quantities and form of tender obtained on deposit of £2 2s. Tenders must be addressed to the Chairman of the Waterworks Committee, and delivered to B. T. Westwell, clerk, Town Hall, Oswaldtwistle.

June 7. **CHATTERIS (Cambs.).**—Work connected with a steel water storage tank, including foundations, connections, and laying about 140 yards of 6in. pipe, for the U.D.C. Specifications and general conditions, with forms of tender, may be obtained of A. Harold Ruston, clerk, Chatteris, Cambs., on deposit of £1. Plans of the work can be obtained from the Clerk at a cost of 5s. each, which will not be returned. Tenders to be sent to the Clerk.

June 9. **LEICESTER.**—(See "Iron and Steel.")

June 10. **UXBRIDGE.**—Construction of an underground pumping chamber, the laying of about 1,093 lineal yards of cast iron rising main and appurtenant works at Vine Lane, Hillingdon East, for the Uxbridge R.D.C. Plan and section can be seen and copies of specification and quantities obtained at the office of John Wm. Harrison, engineer and surveyor, Corn Exchange, Uxbridge, on deposit of £1 1s. Tenders to be sent to the office of Charles Woodbridge, clerk, 38, High Street, Uxbridge.

June 13. **WEXFORD.**—Erection of ferro-concrete bridge (Hennebique principle) over River Slaney, for the C.C. Plans, etc., can be seen at Mouchel and Partners, 38, Victoria Street, Westminster, London, S.W.

SANITARY ENGINEERING.

May 23—June 10. **NEW MILLS (near Stockport).**—Sewerage and sewage disposal works at Birch Vale, for the Hayfield R.D.C., comprising:—1,520 lineal yards of earthenware pipes, 9in. diameter; 150 lineal yards of steel tubes, 9in. diameter, on rubble piers; and 35 lineal yards of cast-iron pipes, 9in. diameter, under railway, with all manholes, lampholes, flush tanks, and ventilators. Also extensions to the existing disposal works, including precipitation and stormwater tanks, percolating filters, and revolving sprinklers (55ft. diameter), dosing tank, carriers, distributors, etc. Plans and specifications may be seen at the offices of the engineers (John Newton, Son and Bayley, civil engineers, 19, Cooper Street, Manchester), and copies of bills of quantities and form of tender may be obtained from them or from J. R. Bowden, clerk, 16, High Street, New Mills, near Stockport, on deposit of £1 1s. Contractors proposing to tender are requested to send their names to the Engineers by May 23. Tenders to be delivered at the Rural Council Offices, 16, High Street, New Mills, by June 10.

June 6. **GNOSALL (Salop).**—Laying of about 5,000 yards of 12in., 9in., and 4in. glazed earthenware and cast-iron pipe sewers, the construction of manholes, tanks, filters, engine house, etc., and other appurtenant works in the parish of Gnosall, for the D.C. Drawings may be seen and copies of specification, tender, and bill of quantities, may be obtained at the offices of the engineers, Berrington, Son and Watney, Bank Buildings, Lichfield Street, Wolverhampton, and 28, Victoria Street, Westminster, S.W., on deposit of £5 5s. Tenders must be delivered at the office of H. G. U. Elliott, clerk, Newport, Salop.

June 7. **RIPLEY.**—Construction of sewerage, and sewage disposal works, comprising sewerage, subsidence tanks, percolating filters, and other appurtenant works, for the U.D.C. Plans and specifications may be seen and bills of quantities and forms of tender obtained on application to George W. Bird, Surveyor to the Council, Town Hall, Ripley, Derby. A deposit of £1 1s. will be required. Tenders must be delivered at the office of George Whitcombe, Clerk, Town Hall, Ripley, Derby.

June 8. **STANLEY.**—Construction of sewers, for the U.D.C. Drawings, etc., may be seen, and quantities, etc., obtained, by personal application to the Surveyor to the Council (Joseph Routledge).

June 8. **LONDON, W.C.**—Construction of an above-ground convenience for both sexes, in Brooke's Marget, for the B.C. Forms of tender may be obtained, and drawing and specification inspected, on application to the Borough Surveyor at the Council's Offices. Quantities will not be supplied. Tenders must be delivered to Lionel Walford, Town Clerk, Council Offices, 193-197, High Holborn, W.C. The contractor will be required to indemnify the Council against all liability (including third party risk) under the Workmen's Compensation Act, Employers' Liability Act, and the Common Law. The firm whose tender is accepted will be required to enter into a contract and bond with two sureties, which contract and bond will be prepared by the Town Clerk, at whose office the form may be inspected.

June 9. **DAVYHULME (Manchester).**—Construction of about 1,586 yards of brick sewers and 6,523 yards of pipe sewers, with syphons, flushing chambers, and manholes, in the township of Davyhulme, for the Barton-upon-Irwell R.D.C. Plans, sections, and specifications may be seen and forms of tender and bills of quantities obtained (upon deposit of £3 3s.), at the office of A. H. Mountain, A.M.I.C.E., 16, John Dalton Street, Manchester. Tenders to be addressed to J. W. Whitworth, clerk, Union Offices, Patricroft, Manchester.

June 11. **PENISTONE.**—Kirkwood Sewer Extension—Contract No. 6.—Construction of about 300 yards of 9in. earthenware pipe sewers, with manholes, and all contingent works, for the U.D.C. Drawings and specifications may be seen, and quantities and form of tenders obtained, at the office of the Engineers, Spinks, Piling, and Rodwell, 20, Park Row, Leeds, on deposit of £1 1s. Tenders are to be delivered to Chas. Hodgkinson, Clerk, Council Offices, Penistone.

June 14. **DUNDALK.**—Providing and laying of about 1,100 yards of sewer, together with the building of manholes and other works, for the U.D.C., shown or described on the plans, sections, and specification prepared by Maurice Sellars, town surveyor, which can be seen at his office, Town Hall, Dundalk, and from whom forms of tenders, etc., can be obtained, on deposit of £2. Tenders, giving the names and addresses of two solvent sureties willing to join in a bond of £500, to be lodged at the office of Mathew Comerford, town clerk, Town Hall, Dundalk. The acceptance of any tender sent in will be contingent on the loan being granted by the Board of Works, and the accepted contractor must be prepared to await the granting of same, and to proceed with the work when called upon without any extra to the amount of the accepted tender in consequence of such delay.

June 14. **WEYMOUTH.**—Constructing and maintaining surface-water and other sewers for the diversion of surface water, Park District, Melcombe Regis, consisting of 16in. and 21in. cast-iron sewers, 21in. and 24in. steel-ribbed granite concrete sewer tubes, manufactured by John Ellis and Sons, Limited, Leicester; 6in., 9in., 12in. and 15in. glazed stoneware socket drain pipes, with outlet and flap chamber, manholes, overflows, stoneware gullies, and other works incidental thereto, for the B.C. Plans and specifications may be seen, and form of tender obtained at the office of the Engineer, W. Barlow Morgan, 4, York Buildings, Weymouth. The contractor must deposit with his tender Bank of England notes to the value of £10, also state on his tender the name and address of a properly-registered Guarantee Association willing to be jointly and severally bound with him in the sum of £1,000 for the due performance of his contract. Tenders, addressed H. A. Huxtable, Clerk to the Council, to be delivered at the Municipal Offices, Clarence Buildings, Weymouth.

(*Contracts continued on page xiv.*).

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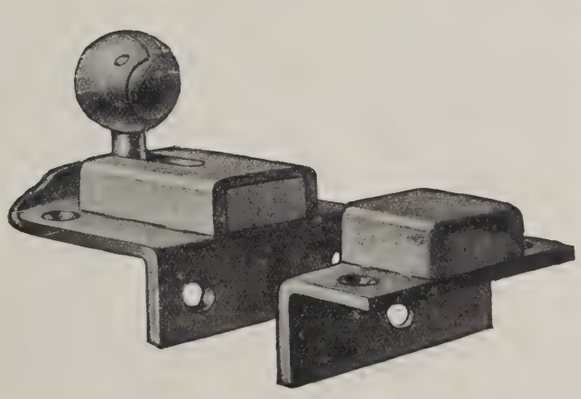
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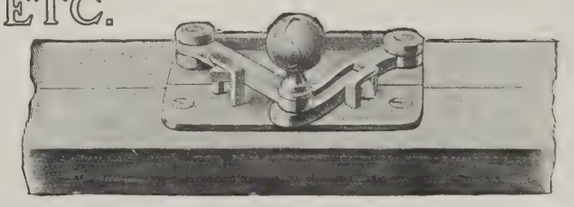
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June 15. **WORKINGTON.**—Provision and laying of about 2,900 lineal yards of 18in. diameter stoneware pipe sewer, with sea outfall, consisting of about 714 lineal yards of 18in. diameter cast-iron pipes supported on timber piling, together with manholes, lampholes, storm water overflow chambers, and other works in connection therewith, for the Corporation. Drawings may be seen at the office of H. Bowman Williams, Borough Engineer and Surveyor, Town Hall, Workington, from whom copy of the specification, bill of quantities, and form of tender, can be obtained on deposit of £3 3s. Tenders to be delivered to the Town Hall, addressed to John Warwick, Town Clerk, Workington.

June 20. **YSTRADGYNLAIS.**—Schemes and estimated cost for sewering the Parish of Ystradgynlais Lower, for the R.D.C., who will pay a sum of £20 for the scheme which they consider most suitable, and the decision of the Council must be accepted as final. Competitors to state their terms for full detailed plans and specifications, and for carrying out the scheme they submit. Particulars of the area to be drained and any other information may be obtained from T. Watkins, Surveyor to the Council, Ystradgynlais. Schemes to be sent in to D. L. Moses Evans, Clerk to the Council, Commercial Street, Ystalyfera.

IRON AND STEEL.

June 6. **WREXHAM.**—Supply of wrought-iron entrance gates, ornamental railings, and unclimbable fencing, for the "Parciau," for the Corporation. Plans may be seen, and specification, bill of quantities, and form of tender obtained on application to John England, borough engineer, Willow Road. Tenders to be delivered to Lawson Taylor, town clerk, the Guildhall, Wrexham.

June 6. **RUTHERGLEN.**—Steelwork to be provided in the reconstruction of Farme Loan Road bridge, Rutherglen, at 98 miles 75 chains, for the Directors of the Caledonian Railway Company. Drawings may be seen at the office of the company's engineer, Buchanan Street Station, Glasgow, where copies of the specification, etc., may be obtained on deposit of £2 2s. Tenders must be sent to J. Blackburn, Secretary, Caledonian Railway Company's Offices, 302, Buchanan Street, Glasgow.

June 7. **LONDON (for India).**—Supply of steelwork for piers, for the Secretary of State for India. Conditions of contract may be obtained on application to the Director-General of Stores, India Office, Whitehall, S.W., to whom tenders must be delivered.

June 9. **LEICESTER.**—Supply and erection of steel roof trusses and other work for an extension of the engine-room at the tramways power station, for the Corporation. Plans may be seen, and copies of the general conditions, specification, and bill of quantities obtained, at the Borough Surveyor's Office, on deposit of £1. Cheques, etc., should be crossed and made payable to the Leicester Corporation. Tenders must be addressed to "The Chairman of the Tramways Committee, Town Hall, Leicester."

June 11. **MANCHESTER.**—Iron and steel work. —Supply of iron and steel work required for an installation of horizontal retorts at their Rochdale-road Station, for the Gas Committee. General conditions of contract and specification can be obtained on application to F. A. Price, superintendent, Gas Department, Town Hall, on deposit of £3 3s. Drawings may be seen and any other information obtained on application to the engineer, J. G. Newbigging, M.I.C.E., Rochdale Road Station. Tenders (addressed to the Chairman of the Gas Committee) must be delivered at the Gas Offices, Town Hall, Manchester.

PAINTING.

June 6. **NORMANTON.**—Painting the outside of Cemetery House and the entrance gates, for the Burial Board. Specifications and full particulars may be had from Edwin Backhouse, Clerk and Curator, Cemetery House, Normanton.

June 8. **CHERITON (Kent).**—Painting cottage homes, for the Guardians of Elham Union. Tenders to be sent to R. Lonergan, clerk, 29, Bouverie Square, Folkestone. Specification can be seen at the Clerk's office.

June 8. **LONDON, S.W.**—Painting, distempering, general repairs, etc., at their Infirmary in the Fulham Road, S.W., for the Guardians of St. George's Union. Specifications may be obtained from Thomas Worlock, Clerk to the Guardians, Prince's Row, Buckingham Palace Road, S.W., to whom tenders must be sent.

June 9. **KING'S NORTON AND NORTHFIELD.** —Painting of the following schools:—Stirchley Street Council School (exterior); Rubery Council School (exterior); Woodgate Council School (interior); Tiverton Road Council School (interior and exterior); Moseley C.E. School (interior); Bartley Green C.E. School (interior), Northfield C.E. School (interior); Dawlish Road C.E. School (interior); Selly Oak St. Mary's C.E. School (interior); St. Edward's R.C. School (interior), for the U.D.C. Education Committee. Forms of tender, together with copies of the conditions and specification, may be obtained from John F. Moore, Secretary, Education Offices, King's Norton, to which address tenders must be sent. When applying for forms contractors should specify the schools for which they wish to submit tenders.

June 11-20. **LONDON, E.**—Cleansing, repairs, and painting of thirteen schools, new covered playground at one school, for the Education Committee of the Borough of West Ham, to be executed during the summer vacation. Contractors desiring to tender for either are requested to make written application to William Jacques, A.R.I.B.A., Architect to the Education Committee, 2, Fen Court, Fenchurch Street, E.C., for copies of specifications, conditions, and forms of tender, not later than June 11. Each application must be accompanied by a deposit of £1 (cheques will not be accepted). Tenders must be delivered by registered post at the Education Department, 95, The Grove, Stratford, E. The contractor whose tender is accepted, and with whom a contract is entered into, will be required to pay to the whole of his workmen such rate of wages and observe such hours of labour as are recognised by the workmen's trades unions and in force at the time of signing the contract.

June 14. **CHORLEY.**—Painting and decorating of the secondary school, Union Street, for the Education Committee, according to specification and conditions, which may be seen at the Borough Surveyor's Office, Town Hall. Tenders to be sent to Jno. Mills, Town Clerk, Town Hall, Chorley.

June 16. **LONDON, E.**—Painting at the Scattered Homes, or elsewhere, for the Mile End Guardians. Forms of tender, with specifications, may be obtained upon application to Benjamin Catmur, Clerk to the Guardians, Guardians' Offices, Bancroft Road, Mile End, E., by letter, enclosing stamped directed foolscap envelope. Persons tendering will be required to state in their tender that they pay such rates of wages and observe such hours of labour as are generally accepted as fair in the trade to which the work refers. Tenders to be sent to the Clerk to the Guardians.

ROADS AND CARTAGE.

June 4. **DORSET.**—Supply and delivery of about 22,000 tons of best description of hard road stone, at various seaports and railway stations in the county, for the repair of the rural main roads during the ensuing year, for the C.C. For further particulars and forms of tender apply to Walter J. Fletcher, County Surveyor's Office, Wimborne, Dorset. Tenders to be sent to the County Surveyor, Shire Hall, Dorchester.

June 6. **SOUTHAMPTON.**—Carting of material for the repair of main roads, New Forest Division and Romsey Division. Specification and form of tender from W. J. Taylor, County Surveyor, The Castle, Winchester.

June 6. **ILFORD.**—Supply of about 5,860 superficial yards of either Norway granite, Jarrah wood, or grey royal granite paving, laid on each side of the tramway in High Road, Ilford, from the Broadway to Green Lane, for the Highway Committee of the Essex C.C. Plans can be seen, and specification and form of tender obtained, at the Chief Surveyor's Office, Chelmsford.

June 6. **PONTYPRIDD.**—Carrying out of the following private street works, for the U.D.C.:— Contract No. 1, St. Michael Street (Stow Hill); (2) Tower Street, Graig; (3) Tyvica Road extension; (4) lane at rear of Richard Street and William Street, Cilfynndd; (5) Laundry Road, Pwllgwaun. Plans and specifications may be seen and forms of tender obtained on application at the office of W. E. Lowe, engineer, and surveyor to the Council, upon receipt by the clerk of a deposit of £1 1s., in respect of each contract. Tenders, on the prescribed form, must be sent to J. Colenso Jones, Clerk, Municipal Buildings, Pontypridd.

June 6. **THORNABY-ON-TEES.**—Forming, draining, paving, curbing, flagging, and channelling of Palmer Street; Langley Avenue (part of); Teesdale Terrace (part of); and for forming, sewering, and paving Back Britannia Street, Trafalgar Street, and Norton Place; Back East Mansfield Avenue (part of); Back Langley Avenue and Ellerburne Street; Back West Mansfield Avenue (part of); Back South Langley Avenue (part of); Back East Salisbury Street; Back South Langley Avenue (part of); Back Roseberry View, and Salisbury Street, for the Corporation. Plans and specifications may be seen, and copies of the bills of quantities obtained, at the Borough Engineer's Office, Town Hall. Tenders must be delivered at the Town Clerk's Office, Town Hall, Thornaby-on-Tees.

June 6. **ELY.**—Supply and delivery of 1,142 tons (more or less) of Leicestershire granite (separate prices for machine and hand-broken to be quoted), to be delivered as follows, for the U.D.C.:—100 tons of 11in. to 1¼in. Leicestershire granite at Ely railway station; 300 tons of 1¼in. Leicestershire granite at Ely railway station; 12 tons of 1¼in. Leicestershire granite at Chettisham railway station; 20 tons of 1¼in. Leicestershire granite at Black Bank station; 150 tons of 11in. clean screenings to Ely railway station; 140 tons of 1¼in. Leicestershire granite by water to Adelaide Bridge; 160 tons of 1¼in. Leicestershire granite by water to Prickwillow Bridge; 30 tons of 1¼in. Leicestershire granite by water to Burnt Fen Bank, between Prickwillow Bridge and Mr. John Sindall's house; 100 tons of 1¼in. Leicestershire granite by water for Miles End Drove, to be delivered at Burnt Fen Bank, and tipped into carts near Mr. John Sindall's house; 130 tons of 1¼in. Leicestershire granite, in heaps every ten chains along the bank of the River Lark, towards the Branch. No form of tender is issued by the Council. All the above to be delivered at such times and in such quantities as the Council by its Surveyor may from time to time appoint. Samples should be sent to W. McKelvie at the City Surveyor's Office, Ely (carriage paid), by June 4. Tenders to be delivered or sent by post to Geo. Martin Hall, Solicitor and Clerk, Market Square, Ely. Each contractor will be required to enter into the Council's usual contract, and give security for the due performance of his contract.

June 7. **PORTSLADE-BY-SEA.**—Supply of team labour for the U.D.C. Form of tenders and full particulars can be obtained on application to the Surveyor, 46, St. Andrews Road, Portslade-by-Sea.

June 7. **LONDON.**—Repaving with wood blocks of a portion of the carriageway of the Victoria Embankment, for the L.C.C. Persons desiring to submit tenders may obtain drawings, specifications, bills of quantities, forms of tender, etc., on application to the Chief Engineer of the Council, Maurice Fitzmaurice, C.M.G., at the County Hall, Spring Gardens, S.W., upon deposit to the Cashier of the Council of £1. Full particulars of the work and conditions of contract may be obtained at the County Hall, before payment of above fee. Rate of wages, etc., clause to be observed.

June 7. **BROMLEY (Kent).**—Sewering, levelling, paving, metalling, channelling, and making good a portion of Southlands Road, in accordance with the plans, sections, and specifications, which may be seen, and bills of quantities, etc., obtained, at the office of the Borough Engineer, on deposit of 10s. at the office of Fred. H. Norman, Town Clerk, Municipal Offices, Bromley, Kent, to whom tenders are to be sent. Tenders, endorsed "Southlands Road," must be delivered not later than 3 o'clock on Tuesday, the 7th day of June, 1910. The Council does not bind itself to accept the lowest or any tender.

June 8. **ORSETT.**—Supply of about 1,100 yards of 2in. broken Cherbourg quartzite, 600 tons of 2in. broken granite or basalt, about 1,100 yards of 2½in. Kentish rag, and about 1,500 yards of Kentish flints, to be delivered to the various wharves and railway stations during the period ending March 31, 1911, for the R.D.C. Forms of tender can be obtained from F. T. Johnson, Highways Surveyor, or James Beck, Clerk to the Council, 2, Orsett Road, Grays, and tenders must be sent to the latter.

June 8. **LOUGHTON.**—Supply of the following materials, and for hire of steam roller, for the U.D.C.:—(1) Six hundred tons of granite, broken to pass 1¼in. ring; (2) twelve hundred tons of clean, sharp gravel; (3) fourteen hundred feet run of 4in. by 10in. rough granite edge kerb; (4) hire of a six-ton steam roller for rolling granite and gravel, at per day, including all firing, oil, use of water cart, etc.; (5) for the supply of destructor clinker, brick hard core, and clean, sharp hoggin, in truck loads as required. The granite and gravel will be required to be delivered at Loughton or Chigwell Lane stations (G.E.R.) in quantities as directed, and all other materials at Loughton station in quantities as directed. Further information and forms of tender may be obtained from Horace White, District Surveyor, Loughton, Essex, upon receipt of a stamped and addressed envelope. Tenders for each item are to be in a separate sealed envelope, endorsed with the names of the material or work tendered for, and are to be delivered (with samples in the cases of tenders for granite, gravel or hoggin) at the office of Leonard W. Liell, Clerk to the Council, Loughton, Essex.

June 8-15. **EPPING (Essex).**—Making-up of Smeaton Road, Chigwell, Essex, and for laying a surface water drain therein, for the Epping R.D.C. Plans and specifications can be seen and bills of quantities can be obtained of H. Tooley, surveyor, Council Offices, Buckhurst Hill, Essex. Applications for quantities must be made before June 8, accompanied by a deposit of £2. Tenders to be delivered at the office of R. D. Trotter, clerk, Epping, Essex.

June 9. **CASTLEFORD.**—Tarring, etc., of a number of street surfaces for the U.D.C. Full details may be obtained and specification inspected on application to the surveyor, W. Green.

June 11. **STRETFORD (Manchester).**—Paving with granited rock asphalte, etc., Carlton Street and Norton Street, for the U.D.C. Drawings and specifications may be seen and forms of tender, with schedule of quantities and other particulars obtained on application to Ernest Worrall, surveyor, on deposit by cheque of £2 2s.

MISCELLANEOUS.

June 6. **MANCHESTER.**—Supplying and fixing tiled dados at the Brookdale Park Municipal School, Newton Heath, and the Moseley Road Municipal School, Fallowfield, Manchester, for the Education Committee, in accordance with the specification, which may be obtained at the offices in Deansgate, Manchester, on a deposit of £1 1s. Tenders and samples of dados must be delivered at the Education Offices. Cheques to be made payable to the Accountant, Education Offices, Deansgate, Manchester.

June 13. **BIRKENHEAD.**—Plastering three wards at the Union Infirmary, Church Road, Tranmere, for the Guardians of Birkenhead Union. The premises may be inspected any day between 9 a.m. and 12 noon. Forms of tender, with specification, may be obtained at the office of John Carter, clerk, Poor Law Offices, Birkenhead, and must be delivered to him. Rate of wages and hours of labour clause to be observed.

June 14. **SOUTHAMPTON.**—Supply of deals and matched boarding, for the Director General, Ordnance Survey. Application for forms of tender and specification should be made to the Officer in Charge of Stores, Ordnance Survey Office, Southampton.

(*Contracts continued on page xx.*)

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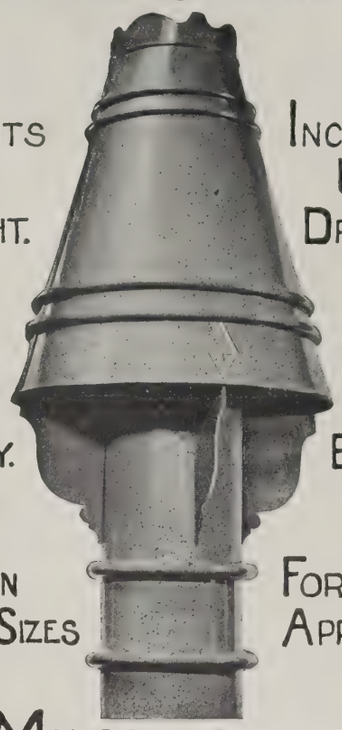
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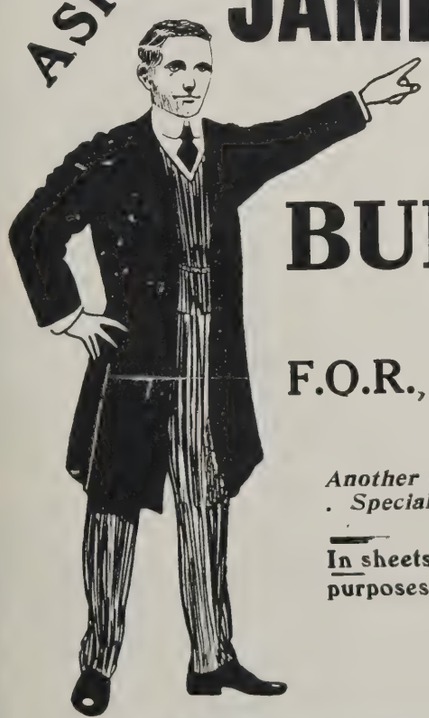
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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, ARCHITECTS' AND BUILDERS' JOURNAL, *Caxton House, Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Bootle (Lancs.).—For erection and completion of a public elementary Council school, in the south-east district of Bootle, for the Corporation. Medcalf and Medcalf, architects, 7, Moorfields, Liverpool.

Rimmer Bros., Edge Hill ...	...£13,750
G. L. Desser, Everton ...	... 13,696
J. Williams	... 13,600
A. Lloyd, Walton	... 13,300
Morrinson and Sons, Wavertree	... 13,200
G. Parker and Son, Edge Hill	... 13,120
H. Kelly and Bros., Walton ...	... 13,084
Duthie and Dobson	... 13,020
W. Hall and Son, Ltd. ...	... 12,986
P. Tyson	... 12,910
S. Webster, Bootle	... 12,750
J. Tomkinson and Co. ...	... 12,653
W. Misker, Bootle	... 12,630
S. Fowler, Bootle	... 12,603
J. Gerrard and Sons, Ltd., Swinton	12,600
R. Costain and Sons, Blundellsands...	12,598
R. Wearing and Sons, West Derby ...	12,550
J. Rothwell and Sons, St. Helens ...	12,500
T. Spencer, Aintree	12,500
Haugh and Pilling	12,339
Hughes and Stirling,* Bootle ...	12,250
W. Thornton and Sons (withdrawn)	11,839

*Accepted.

Bury St. Edmunds (Suffolk).—For erection of the new Rod Bridge, with road, for the West Suffolk C.C.

Higgs and Hill, South Lambeth	£1,974 0 0
Yorkshire Hennebique Co., Leeds	1,116 2 3
Holloway Bros.,* Lambeth	1,100 0 0

*Accepted.

Beaconsfield (Bucks).—For erection of two houses in Burkes Road and two in Furzefield Road. Johnson and Boddy, architects, Beaconsfield and Gerrard's Cross.

Crabb and Co.	...£4,087
J. Bailey	... 3,496
F. Froude	... 3,373
Carrick and Son	... 3,330
Falkner and Sons	... 3,319
Gibbings and Co.	... 3,260
J. W. Acock	... 3,173
T. W. Hanson	... 3,150
Lovell and Son,* Gerrard's Cross and Marlow	... 3,135

*Accepted.

Colyton (Devon).—For additions and repairs to "Westcotts," Colyton, Devon. Symes and Madge, architects, Somerset House, Chard.

Rider and Son, Seaton ...	...£358 0 0
Ellis and Son, North Tawton ...	348 0 0
Parsons Bros. and Dunster, Chard	335 0 0
Richards and Son,* Colyton ...	331 11 0

*Accepted.

East Kirby (Notts.).—For erection of four pairs of houses in Welbeck Street, East Kirby, for the Kirby-in-Ashfield Co-operative Society, Ltd. Walter H. Woods, M.R.S.I., architect, Central Chambers, High Street, Long Eaton, Nottingham. Quantities by the architect.

Mr. Coleman, East Kirby	...£1,706 5 0
Mr. Bains, Kirby-in-Ashfield ...	1,688 0 0
J. Tate and Son, Annesley, Woodhouse	1,679 10 0
Mr. A. W. Hoole,* Kirby-in-Ashfield	1,650 0 0

*Accepted.

Eastbourne.—Accepted for the enlargement of St. John's Church, Meads. A. R. G. Fenning, architect.
Dove Bros., Islington, £8,000.

Erith (Kent).—For erection of two additional wards and other extensions to the Erith Sanatorium, Little Heath, for the Erith U.D.C. H. Hind, surveyor.

F. and G. Foster ...	...£1,581 0 0
W. E. Blake	... 1,549 0 0
R. and J. Butler	... 1,546 0 0
Kirk and Randall	... 1,529 0 0
Thomas and Edge	... 1,510 0 0
J. W. Ellingham	... 1,467 0 0
H. S. Milton	... 1,450 0 0
Pasterfield and English	... 1,447 0 0
W. Shurmur and Sons, Ltd. ...	... 1,440 0 0
E. Pavitt and Sons	... 1,437 0 0
J. T. Jarvis and Son	... 1,415 0 0
R. Woollaston and Co.	... 1,350 0 0
Friday and Ling	... 1,335 0 0
G. H. Gunning and Son,* Erith	1,298 19 0

*Accepted.

(Tenders continued on page xvi.)

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(*Tenders continued from page xvi.*)

East Kirby (Notts.).—For the erection of three houses in Welbeck Street, East Kirby, for the Kirby-in-Ashfield Co-operative Society, Ltd. Walter H. Woods, M.R.S.I., architect, Central Chambers, High Street, Long Eaton, Nottingham. Quantities by the architect.

J. Tate and Son, Annesley, Woodhouse	£629 10 0
W. Baines, Kirby-in-Ashfield	618 0 0
Mr. Coleman,* East Kirby	604 0 0

*Accepted.

Goodmayes (Essex).—For alterations and additions, Little Heath House, Goodmayes Asylum, for the West Ham T.C. John G. Morley, borough engineer.

J. T. Luton	£4,670
A. Webb	4,555
J. Strong and Co., Marble Arch, W.	4,549
W. Houghton, Southend-on-Sea	4,533
E. J. Brown, Edmonton	4,345
Leslie and Co., Ltd., Kensington Square, W.	4,293
W. J. Madison, Canning Town	3,941
F. and G. Foster, Norwood Junction	3,887
B. E. Nightingale, Albert Embankment, S.E.	3,803
T. W. Moss, Southend-on-Sea	3,800
R. Woollaston and Co., Limehouse, E.	3,780
J. W. Jerram, East Ham	3,778
North Bros.	3,765
C. P. Roberts and Co., Highbury	3,721
Myal and Upson, Ilford	3,700
H. C. Horswill, Forest Gate	3,700
A. E. Symes*	3,444

Rest of Stratford.
*Accepted

Gillingham (Kent).—For the extension of the Technical Institute, for the T.C.

Gates and Son	£2,945
Seagers	2,897
H. E. Phillips	2,850
C. E. Skinner*	2,784

*Accepted.

Handsworth (Staffs.).—For erecting a mess room, cottage, etc., at the Cemetery, Camp Lane, Handsworth, for the U.D.C. H. Richardson, A.M.I.C.E., engineer and surveyor.

F. E. Wallis	£1,480 0 0
W. Jackson, Langley	1,220 0 0
W. Darby and Son	1,170 10 0
E. Garfield, Ltd., Aston	1,154 0 0
H. W. Banner	1,125 0 0
W. Bishop, King's Heath	1,077 0 0
A. Hassall, West Bromwich	1,075 0 0
H. Gregory, Olton	1,070 0 0
J. Dallow and Sons, Blackheath	1,070 0 0
Hulbert and Ladbury	1,052 16 10
W. Cooper, Langley Green	1,013 12 0
R. Harris and Son, Halesowen	1,000 0 0
G. Waterman, jun.	963 0 0
P. W. Cox*	957 0 0

Rest of Handsworth.
*Accepted.

Hanley (Staffs.).—For erection of biscuit placing houses, dipping houses, warehouses, etc., one storey building, north light roofs, for Johnson Bros., Hanley, Ltd., Trent Sanitary Factory, Hanley. E. L. Maddock and Sons, Hanley, architects.

H. Wardle, Longport	£4,077 0 0
Newton and Johnson, Staleybridge	3,749 4 5
Ball and Robinson, Stoke-upon-Trent	3,690 0 0
J. Coke, Burslem	3,600 0 0
W. Bell	3,550 10 0
A. E. Chatfield	3,550 0 0
J. Grant, Burslem	3,500 0 0
W. Grant and Son, Burslem	3,493 0 0
Colley and Lindop	3,493 0 0
J. Broadhurst, Burslem	3,489 0 0
Cornes and Son	3,475 0 0
J. Walters, jun., Longton	3,460 0 0
W. Ball, Stoke-upon-Trent	3,450 0 0
Thomas	3,425 0 0
S. Heath,* Basford, Stoke-on-Trent	3,187 0 0

Rest of Hanley.
*** Accepted.**

Killarney (Ireland).—Accepted for the erection of two lodges at Killarney, for the Earl of Kenmare. J. Wornell, architect, 19, Ludgate Hill, E.C., and Slough, Bucks.

J. Hearne and Son, Waterford, £405.

Leeds.—Accepted for (1) alteration of premises, St. Peter's Street, Leeds, Smith and Bland, Leeds, all trades, £393; and (2) new stabling for A. W. Scarr and Sons, Ltd., Smith and Bland, Leeds, all trades, £212 10s. Mr. S. McFarland, Leeds, reinforced concrete floor, Kahn system, £843 18s. 9d. Fredk. W. Rhodes, M.S.A., architect, Wortley, Leeds. Quantities by the architect.

London, W.—For erection of a police section house at Paddenswick Road, Hammersmith. J. Dixon Butler, F.R.I.B.A., New Scotland Yard, S.W., surveyor. Quantities by Thurgood, Son, and Chidgey, 8, Adelphi Terrace, Strand, W.C.

Spencer, Santo and Co., Ltd.	£13,964 0 0
Foster and Dicksee	13,555 0 0
Holloway Bros.	13,480 0 0
Ashby and Horne	13,470 0 0
Appleby and Sons	13,280 0 0
Pattinson and Sons	13,183 0 0
King and Son	13,100 0 0
F. and H. F. Higgs	13,030 0 0
Jarvis and Sons	12,988 0 0
Higgs and Hill, Ltd.	12,984 0 0
Mowlem and Co., Ltd.	12,971 0 0
Galbraith Bros.	12,882 0 0
Lole and Co.	12,828 0 0
Prestige and Co.	12,787 0 0
Sabey and Son, Ltd.	12,723 0 0
Holliday and Greenwood	12,720 0 0
Killby and Gayford	12,700 0 0
Fairhead and Sons	12,662 0 0
Godson and Sons	12,555 0 0
Fryer and Co.	12,540 0 0
F. G. Minter	12,449 0 0
Lovatt, Ltd.	12,432 7 1
Grover and Son	12,419 0 0
Patman and Fotheringham, Ltd.	12,383 0 0

Luton.—Recommended for acceptance, for the erection of the Beech Hill infants' school, for the Education Committee.

J. Saunders and Son, Luton, £4,488.

Merthyr Tydfil.—For building a masonic temple, for the Loyal Cambrian Lodge of Freemasons (No. 110), at Merthyr Tydfil. C. M. Davies, architect, 112, High Street, Merthyr.

Davies and Howell, Cardiff	£2,900
E. L. Sullivan, Mardy House, Merthyr Tydfil	2,840
J. Jenkins,* Canal Wharf, Merthyr Tydfil	£2,800

*Accepted.

North Shields.—For new Borough Theatre, for Exors. of G. Black. H. Gibson and P. J. Stienlet, architects, 56, Camden Street, North Shields.

Robertson	£4,488 8 8
S. Sheriff	4,000 0 0
Middlemiss Bros.	3,930 12 7
G. Park	3,879 13 6
E. T. George	3,877 0 0
J. Craven	3,815 15 2
W. Townson and Son	3,920 0 0
R. F. Construction Co.	3,766 3 8
W. S. Shepherd	3,889 19 5
J. Newbold	3,743 7 6
W. T. Weir,* Howdon	3,700 0 0
S. Fenwick and Co.	3,630 0 0

*Accepted.

Newcastle-on-Tyne.—For erection of St. Mark's new parochial buildings. A. B. Plummer, Diocesan Architect.

W. T. Weir, Newcastle	£3,603 0 0
Elliott Bros., Newcastle	3,591 10 10
J. and W. Lowry, Newcastle	3,481 14 11
S. Easten, Newcastle	3,480 0 0
E. T. George and Son, Newcastle	3,394 16 10
Middlemiss Bros.,* Newcastle-on-Tyne	3,393 16 0

*Accepted.

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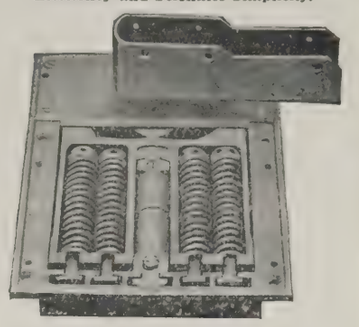
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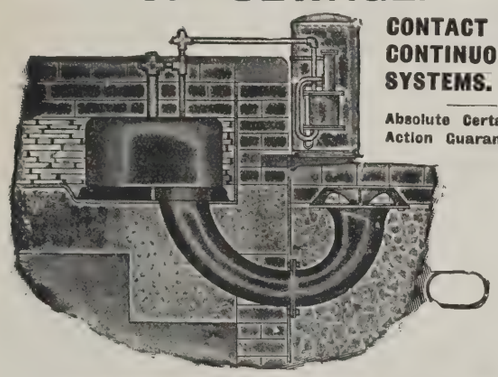
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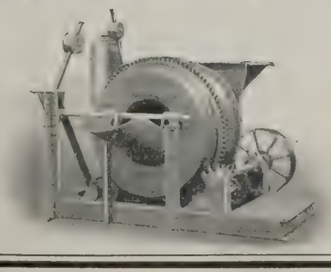
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ENGINEERING.

June 6. **DERBY.**—Carting, laying, and jointing cast-iron mains along the Nottingham road, from Alice Street to the Cemetery, consisting of about three-quarters of a mile of 8in. diameter pipes, together with the necessary valves, hydrants, etc., for the Corporation. Plans, etc., may be seen, and printed specification, schedule of quantities, and form of tender obtained, at the office of John Ward, M.Inst.C.E., Borough Surveyor and Waterworks Engineer, Borough Surveyor's Office, Babington Lane, Derby, on deposit of £1 1s. Tenders to be sent to the Town Clerk, 15, Tenant Street, Derby.

June 10. **INGATESTONE (Chelmsford).**—Excavating the trenches, supplying, laying, and jointing about 711 yards of 3in. cast-iron water mains, and other incidental work at Ingatestone, for the Chelmsford R.D.C. A copy of the conditions, specifications, quantities, and drawings may be had on application to the Engineer. Tenders must be sent to James Dewhirst, A.M.I.M.E., Engineer, Bank Chambers, Chelmsford.

June 13. **HULL.**—Construction of a bridge over Stoneferry Road, in lieu of the existing level crossing, the diversion of the railway, and works in connection therewith for the Directors of the N.E.R. The work consists of about 90,000 cubic yards of earthwork, a new bridge, consisting of about 1,200 cubic yards of brick and concrete abutments on timber piles, and about 200 tons of steel girders and decking, the lowering of Stoneferry Road and connecting streets, the construction of retaining and boundary walls, fences, etc., a loading dock, and a passenger subway and timber platform at the new station. Plans may be seen and specification, detailed quantities, and form of tender obtained on personal application at the office of C. F. Bengough, the Company's Engineer, at York. Tenders to be sent to the Secretary, at York.

June 17. **HASLEMERE (Surrey).**—Laying about 1,250 yards of C.I. pipes, fixing valves, etc., for the Hambledon R.D.C. Copies of the specification and forms of tender can be obtained at the office of John H. Howard, The Cottage, Lower Street, Haslemere, on deposit of £2 2s. Tenders must be sent addressed to Ferdinand Smallpeice, Clerk, 138, High Street, Guildford.

SANITARY ENGINEERING.

June 6. **ASTON.**—Construction in brickwork, concrete tubes, and iron pipes, of a storm-water overflow, near Wharf Street, Aston, for the Joint Sewerage Committee. Plans and specification may be seen, and bill of quantities obtained, at the office of the Borough Surveyor, Council House, Aston Manor, on deposit of £1 1s. Tenders to be addressed to the Chairman of the Joint Sewerage Committee, and delivered at the office of the Clerk, Joseph Ansell, 27, Bennett's Hill, Birmingham. Fair wages clause

June 20. **CHELMSFORD.**—Extending the sewer in Trinity Road, for the T.C. Forms of tender, and full particulars may be obtained, and the plans and specification may be inspected, at the office of the Borough Surveyor, Cuthbert Brown, 16, London Road. Tenders must be delivered at the office of W. Smith, Town Clerk, Municipal Offices, Chelmsford.

IRON AND STEEL.

June 6. **DERBY.**—(See "Engineering.")

June 7. **HASLEMERE (Surrey).**—See "Engineering.")

PAINTING.

June 8. **CHELTENHAM.**—Cleaning and colouring at St. John's, St. Luke's, Leckhampton; St. Gregory's, St. Paul's Girls', St. Peter's, St. Mark's, Alstone; St. Mark's, Roman Road; and Hatherley Lane Schools, to be carried out during the summer holidays, for the Education Committee. Specifications may be obtained from Chatters and Smithson, architects. Tenders to be sent to the Secretary, Education Offices.

June 10. **GREAT BADDOW (Chelmsford).**—Repainting the iron and woodwork at the water tower and engine house at Great Baddow, for the Chelmsford R.D.C. A copy of the conditions and specification may be obtained on application to the Engineer. Tenders must be sent to James Dewhirst, A.M.I.M.E., Engineer, Bank Chambers, Chelmsford.

ROADS AND CARTAGE.

June 14. **LONDON, E.**—1, private street works, Falcon Street, and Third Avenue (part of); 2, wood paving Upper Road and Helena Road; 3, attendants' quarters, Convalescent Home, The Grange, Harold Wood, for the West Ham B.C. Plans may be seen, and specifications, forms of tender, and further particulars obtained, at the office of the Borough Engineer, Town Hall, West Ham, E., upon deposit of £1 in respect of each form of tender. Note.—No tender will be considered unless the same is delivered at the office of the Town Clerk, Town Hall, West Ham, E., in the envelope supplied, by registered post, not later than 4 o'clock on June 14. The contractor will be required to enter into a bond with two sureties for the due performance of the contract, and no work will be ordered under the contract until such bond has been duly executed. The contractor whose tender is accepted, and with whom a contract is entered into, will be required to pay to the whole of his workmen such rate of wages and observe such hours of labour as are recognised by the workmen's trade unions and in force at the time of signing the contract, and shall not assign, nor under-let or make a sub-contract with any person or persons for the execution of any part of such work. In the event of any breach of such agreement the Council will enforce the penalty clause in its entirety.

June 15. **LANCHESTER.**—Draining, levelling, forming, kerbing, paving, and flagging Pine Street, Back Bridge Street, Wood View, etc., etc., Langley Park, for the R.D.C. Drawings and specifications may be seen and bills of quantities obtained at the Surveyor's Office, The Grove, Lanchester. Tenders to be sent to W. H. Ritson, Clerk to the R.D. Council, Lanchester.

June 17. **MANCHESTER.**—Supply of special (permanent way) track work, for the Tramways Committee of the Corporation. Specifications and forms of tender may be obtained on application to J. M. M'Elroy, general manager, Corporation Tramways, 55, Piccadilly, Manchester, on deposit of £2 2s. Tenders to be addressed to the Chairman of the Tramways Committee, 55, Piccadilly, Manchester.

June 17. **TOTTENHAM.**—Repair of the tar and asphalte paving throughout their district, for the U.D.C. Specifications and forms of tender can be obtained on application to W. H. Prescott, A.M.I.C.E., Engineer to the Council, at the Council Buildings, The Green, Tottenham. Persons tendering will be required to deposit with the Treasurer, when handing in their tenders, in a Bank of England note or cash, the sum of £5 in respect of each tender, which will be forfeited by the person whose tender is accepted if the contract be not executed within seven days from the date he is informed it is ready for signature, otherwise it will be repaid. This deposit will be repaid to the parties tendering who are unsuccessful. The contractor will be required to pay all workmen on the Council's work the recognised trade union rate of wages. A schedule of such wages will be inserted in the contract, and a copy of the schedule must be exhibited on the pay office at the works. Tenders to be delivered to Edward Crowne, Clerk of the Council, Tottenham.

June 25. **LEWES.**—Supply of 600 tons of 2in. broken granite, 150 tons of coarse granite screenings, and 500 tons of broken surface picked flints, for the T.C. Forms of tender, etc., may be had, and further information obtained, at the Borough Surveyor's Office, Town Hall, Lewes.

MISCELLANEOUS.

June 9. **MANCHESTER.**—Faience work and tiling at the Crumpsall Library, for the Libraries Committee. Specification may be obtained at the office of the City Architect, Town Hall, upon deposit of 10s. 6d. All cheques or postal orders are to be made payable to the order of "The Corporation of Manchester." Tenders to be delivered at the City Architect's Office.

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THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JUNE 8th, 1910.

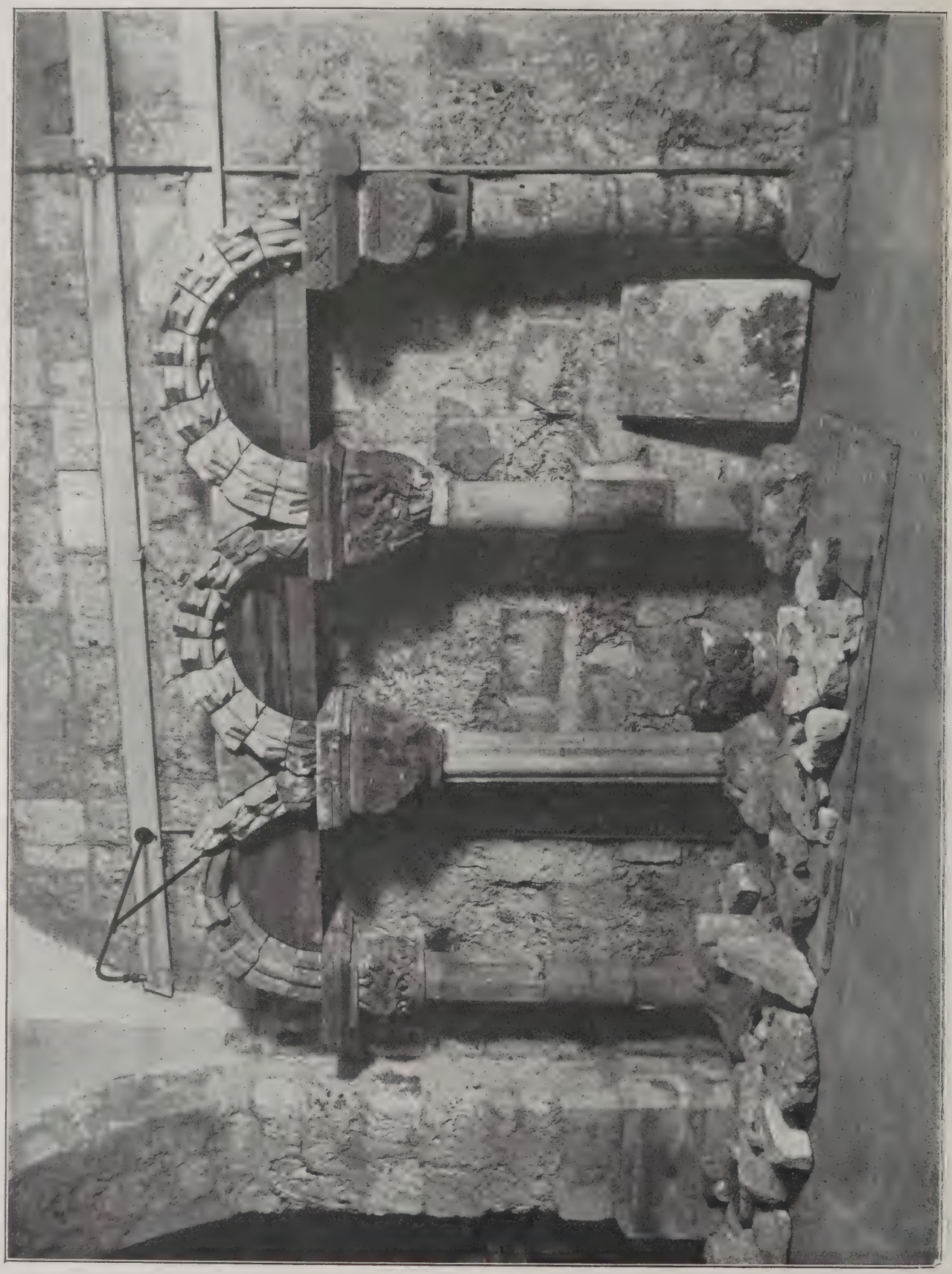
Volume XXXI. No. 801.



[*Photo: G. P. U.*

This, the only complete remaining portion of Edward the Confessor's building, forms the substructure of the old dormitory of the monks. By the removal of partitions it has been formed into one long chamber, and may now be inspected by the public on payment of a small fee. In it are housed some of the old wooden effigies of kings and queens—the earliest being that of Edward III.—and various architectural relics. Further details will be found on page 579.

THE NORMAN UNDERCROFT, WESTMINSTER.



RECONSTRUCTION OF PORTION OF OLD NORMAN ARCADE, IN THE UNDERCROFT, WESTMINSTER.

(*See article on page* 579.)

THE ARCHITECTS' & BUILDERS' JOURNAL.

JUNE 8th, 1910. *CAXTON HOUSE, WESTMINSTER.* VOLUME 31. No. 801.

Note: The List of Contents will be found on Page V of the front advertisements in this and subsequent issues.

The Architectural Treatment of Reinforced Concrete.

THE attempts which have been made at giving some architectural expression and decorative effect to buildings executed in reinforced concrete, have not hitherto been very successful, chiefly for the reason that they have been mostly founded on forms of treatment which originated in stone architecture. It is, of course, exceedingly difficult to shake off the effect of long habit and tradition in architectural design, but it is necessary to do so in order to evolve forms of design suitable to a new material which has no traditional architectural style connected with it.

Gothic Excluded.

Gothic tradition means the employment of arches, and of heavy sections of moulding, both of which are unsuitable to reinforced concrete. Arches, in masonry, are introduced to bridge over openings which are too wide to be covered by single stones used as lintels. In masonry, therefore, the arch is a form of strength peculiarly suited to the material. But the arched form adds nothing to the strength of reinforced concrete, and is even inconvenient as breaking the lines of the steel reinforcement, and the depth and forcible expression of Gothic mouldings arises from the practice of building with stones set in receding rings, a method entirely arising from the use of comparatively small stones, and therefore quite at variance with a material which is set up in the mass and not in small pieces. And mouldings of any great girt are only to be obtained at all in reinforced concrete by planting on to the surface a certain thickness of cement or of a very fine concrete, in which to run the mouldings; so that any such decoration is of a very artificial character, and not expressive of the material. Nor is anything like corbelling out, which is also a purely masonic device. Yet we have seen designs, mostly by engineers, for houses in reinforced concrete, in which corbelled out turrets formed prominent features, as if they were suggested by Scottish baronial castles

Gothic therefore evidently will not help us; there is no affinity between its structural methods and those proper to reinforced concrete.

Classic More Hopeful.

There is more to be said for the possibility of some suggestions from Classic styles. In these the traditional form of the openings (if we exclude the Roman rather unlawful marriage of the column and the arch) is suitable to reinforced concrete. The use of the pilaster with its carved capital as a means (some people think a rather senseless means) of giving architectural expression to an exterior could hardly be adopted in its Classic form; the carved capital could be inserted, no doubt, but it would look out of place, and stone in any case does not go well with concrete, as a matter of texture and colour. But projections of pilaster-like form, marking the interior arrangement or the points where extra strength is desirable, would come into the programme well enough, and might have some decorative finish of different shape and material from the carved stone capital. For this purpose terra-cotta is one material that might be suggested, and terra-cotta goes very well with the general surface and tone of concrete, giving a contrast in warmth of colour which stone wants. Any imitation of the built-up projecting cornice of the classic building would be out of place; any kind of cornice used as a finish to the wall should be developed vertically rather than horizontally; a decorative band with an enriched face treatment, and not much projection, to crown the edifice.

Circular Columns.

There seems no reason why columns of circular plan should not be introduced into internal reinforced concrete architecture; some forms of steel reinforcement, which are banded or tied horizontally at intervals, are rather suggestive of columnar form. One might fancy, for example, a church interior on the lines of the early Christian basilica, with concrete columns banded with (say) terra-cotta at intervals to symbolise the interior ties of the reinforcement, and with the same kind of flat panelled ceiling which was the usual covering of the ancient basilica. If any attempt were made at a church in reinforced concrete, the basilica form would be the one to adopt, and in many respects it is one of the best forms for a modern church, irrespective of exigencies of material. And, of course, when we come to speak or roofing, the dome is a form which can very well be carried out in reinforced concrete.

Oriental Suggested.

But for exterior architecture in reinforced concrete, it seems probable that the best inspiration might be drawn, not from either Gothic or Classic, but from some forms of Oriental architecture, where we find flat walls with little moulding, but susceptible of being treated in colour by applied or inlaid material. There is a large field for decoration of this kind, by marble, terra-cotta, or tiles, in the exterior surface of reinforced concrete buildings. And a good deal of effect might be produced also by the employment of that rather neglected process, sgraffito; a mode of decoration which seems almost as if made for reinforced concrete, and which admits of every kind of design and any degree of elaboration, combined with entire freedom of line. It must not be overlooked, either that a certain degree of colour treatment and contrast in the general mass of the wall surface is possible, not by applied colour, but by the use of different kinds of aggregate, or by the mixing of some colouring matter such as would not interfere with the action of the cement.

Possibilities of the Material.

These are some indications of the direction in which the architectural or decorative treatment of reinforced concrete may be attempted with most chance of success. That monuments erected in this material can ever rival the beauty of the Greek temple or the Gothic cathedral we cannot promise; but they may, rightly treated, acquire a beauty and expressiveness of their own, not copied from any traditional forms of architecture.

Drawings in the Institute Collection.

THE President's smoking "At Home" at the Institute Rooms last week was adorned by a large collection of drawings belonging to the Institute, the selection being confined to original works possessing either historic or pictorial interest. The exhibition proved to be a very interesting one, and was all the better appreciated because a printed catalogue had been provided, with which aid many of the visitors went conscientiously round the walls. The general arrangement was approximately chronological, and the early drawings, the first set bearing the name of Inigo Jones, served to show for how little finish of drawing counted with the early Renaissance architects. An elevation by Palladio showed his use of Roman Doric without bases. The name of E. C. Sayer was attached to a beautifully executed elevation and section drawn from the model of Wren's first design for St. Paul's; a finer drawing than Wren himself ever thought of. Repton's "Country House," with concave curved wing colonnades, was creditable to Repton's ideas of a classic country house among trees. A set of drawings (anonymous) of the triumphal arches erected for the entry of Charles II. into London at the Restoration were historically interesting, and not bad designs for temporary things of the kind; better perhaps than would be produced now. Among some drawings of Sir G. Scott's was a beautiful little pencil sketch for a classic pilaster capital—not what one would have expected from Scott; it was perhaps a capital for the Foreign Office, his classic building carried out *invitâ Minervâ*. In a very different way Burges's elaborate, though roughly executed, measured drawing of the wooden spire at Châlons-sur-Marne formed a characteristic memorial of that indefatigable student of Gothic construction. M. de Vogüé's fine drawing of the Basilica at Shakka-Houaran—the one reproduced in his "Syrie Centrale," is also among the Institute possessions; was it presented by the author? A fine coloured perspective view of Hyde Park Corner, with the Constitution Hill arch in its original position, and the quadriga on the top of it, bore the name of Decimus Burton, but we should doubt if it was a drawing by his own hand, though it showed his architectural work. Those who do not know how much better Hyde Park Corner looked before the arch was moved to its present ineffective position, could have an opportunity of judging from this drawing. With the arch flanking the roadway, parallel with Hyde Park Screen and Apsley, this point formed a kind of monumental entrance into London, the dignity of which is quite gone now. Some of Stuart's drawings for his "Athens" impressed one more as good watercolour drawings (in the school of the period) than as good architectural drawings. In relation to these one may ask: If Stuart made the drawings, what did Revett do? Some studies of Elmes's for St. George's Hall, Liverpool, showed how far superior his actually executed design was to his first ideas for the building. Waterhouse's large coloured perspective of his design for the Law Courts took back the memory of the older among the visitors to that historical competition, which made such a noise in its day, and reminded us of a time when the architect who wished to make an impression in such a competition relied greatly on towers, introducing in this case no less than four into his design. We have become a little more reticent as to towers in these days of assessors.

Cobwebless Beams.

A CURIOUS belief has been recalled with reference to the roof of Westminster Hall. A newspaper paragraph contradicts the common supposition that Westminster Hall roof, "one of the glories of timber architecture," is formed of the far-famed oak of Shillelagh, co. Wicklow, and asserts that the oak was procured from the site of St. Michan's Church, Dublin, whose records contain the following entry with reference to the site: "From thence, anno 1098, King William Rufus, by licence of Murchard, had that frame of timber which made up the roofes of Westminster Hall, where no English spider webbeth or breedeth to this day." The date of this entry is not stated. Any spider found in the roof at the present day may, however, be conveniently presumed to be of Irish descent; or, alternatively, perhaps the wood, by its long absence from Ireland, may be reasonably assumed to have lost its ancient virtue. But the vulgar belief that spiders could not live in it was shared by Thomas Fuller, who refers to the "cobwebless beams" of what is at all events the finest roof of its kind in the kingdom.

The Society for Promotion of Roman Studies.

THE meeting held in Burlington Gardens on Friday to inaugurate the promotion of this society was large and unanimous, and we may consider that to get the society into working order is now only a question of time. It is intended that the society should be regarded as in an analogous position to the Hellenic Society, and the British School at Rome in the same relation to it as the British school at Athens is to the Hellenic Society, a position which does away to some extent with the charge of multiplying societies for the pursuit of the same object. It was agreed that the new society should be constituted on the same lines as the Hellenic Society, and some suggestion was made as to the interchange of library facilities between the two societies. Roman studies are on a somewhat different line from Hellenic studies in this sense—that while Roman art and literature are not on the same level of excellence as Greek, the influence of Rome is much wider and more extended than that of Greece ever was, and comes nearer to us in its influence on comparatively modern history. It is true that the scope of work of the Roman Society is limited in point of time, by the prospectus, to the year 700 A.D., supposed to mark the commencement of the Middle Ages (we should prefer to put it at 800); but that does not alter the fact that the whole development of the plan and structure of the mediæval cathedral and church, the outward and visible symbol of all Western Christianity, is traceable, if not to the plan, at all events to the sectional construction, of the Roman basilica. We should be inclined to expect that the ultimate result would be the amalgamation of the Hellenic and the Roman societies into one society for the prosecution of classical study and archæology. In the meantime, it would be very desirable that some arrangement should be made for placing the libraries and the collections of photographs of the two societies in contiguity in one building, so that materials in the one library may throw light on those of the other.

The Cheap Cottage Craze.

ONE of the ill effects of "cheap cottage" exhibitions is their tendency to debauch the public mind with regard to the question of cost. They are apt to create a very general, if rather vague, impression that a commodious and artistic cottage ought to be built for about £150, and that any price beyond that implies excess of luxury, or extravagant superfluity. One suspects that this evil influence was at work when, as the local paper puts it, the members of the Cardiff Public Works Committee were "staggered" on being told by the City Engineer that the lowest tender for a workman's cottage at Lavernock, for the use of the valve attendant and sewerage inspector, was £600. One member remarked that such a house could be built for £250; another asked whether the plans included a billiard saloon. It was explained that the "abnormal cost" was due to the expenditure on haulage and the increased price of labour at Lavernock. Ultimately it was decided to accept the tender, only one member voting against it. The rest had evidently learnt, in the course of the discussion, what the housing reformers and the cheap cottage specialists so often fail to teach—that circumstances alter prices, and that local conditions often play havoc with nice calculations.

The Institute Prizes and Studentships List.

THE list of subjects for the prizes to be competed for by students of the Institute of Architects, in December next, has just been issued. The most important of these are the Soane Medallion and the Tite Prize, as these alone involve the original design of an important architectural scheme. It is not, of course, a very easy matter to find a sufficient variety of suitable subjects. The programme for the Soane goes rather out of the beaten track; it is "A Gateway and Gatehouse to a Capital City, approached by a bridge over a river flowing from left to right." We do not know whether many students would appreciate the reason, though it should be obvious enough, for giving the direction of flow of the river; it is that the design of a bridge in a stream, and not in a tidal river, should be influenced in some of its details by the fact that one side of it faces against the current, and the other with it. It must be admitted that it is a condition which has very seldom been recognised as a factor in bridge design, though occasionally we may meet with an old country bridge over a stream with cut-water piers on the upstream side only. But there is no question that such different conditions on opposite sides of a bridge as water impinging against it on one side, and escaping from it on the other side, ought to have some effect on the design. The subject is one capable of very effective treatment, and gives opportunity for the students to show what they can suggest in bridge design, a matter in which there is a good deal of special interest at present.

The scheme for the Tite Prize errs rather in being too extensive, and making too much demand on competitors—having regard, that is to say, to the usual style and extent of students' designs in England; at the Ecole des Beaux-Arts it would be considered a very suitable subject, and would not alarm anyone; but here we are not used to such grandiose competitions. The subject is "A Campo Santo," on a rocky island in an inland lake, rising sheer from the water for 30 feet, and then by a gradual rise of 150 feet to the apex. A landing stage and accommodation for boats is to be provided, and the Campo Santo must comprise a chapel, with choir, organ, sacristies, etc., in addition to the cloisters for monuments. A very fine thing might be made out of this, no doubt, but it makes a very large scheme, and we doubt if many competitors will face it. The time may come when it will be necessary to reconsider the provisions of Tite's bequest, and whether it can always be usefully applied in the manner directed. The prize was instituted to promote the study of "Italian Architecture," which Tite believed in as the best style for modern life; and it was really a kind of counterblast to revived Gothic. But revived Gothic has nearly died a natural death, and it may be a question presently whether we want any more to promote the study of "Italian Architecture"; and then the question may arise whether the trustees are justified in continuing to spend the money on what Tite wanted half a century ago, but no one wants now. The point may prove an interesting subject of consideration in regard to the law of Trusts and the conscience of trustees.

The programme for the Essay Medal betrays an inclination on the part of the Prizes Committee to alter the character of this competition, and make it a study of construction rather than a literary effort. It is an open secret that there are members, both within and without the circle of the Prizes Committee, who look upon literary composition as a waste of time, and as having nothing to do with architecture. In a sense it has not, but it has a great deal to do with the general standard of culture and education among architects, many of whom write very bad English, and are even weak in spelling. (We have seen "symmetry" with one *m* many a time in architects' letters and documents.) The faculty of treating the history or æsthetics of some important architectural subject in an adequate literary manner is by no means unimportant, and the capability of doing it well would argue a higher level of general education than the average architect, we are afraid, can at present be said to possess. But the programme advertised for the essay, "On the design and construction of belfry stages and spires in stone or brick," accompanied by illustrations, looks very much like making a second Grissell Medal of it; nor is it made in the least clear whether this means the illustration of existing constructions of the kind named, or an essay on the method of constructing them. We expect the wording will give rise to a good many questions. But the point is that there is an evident desire to turn this into a constructional essay instead of a literary and æsthetic one; and if so, it is a mistake. The Essay Prize is the only one which makes an appeal to general education and culture, and the power of literary expression; and as such it is of value, and ought to be kept in its right place as a means of literary training.

Town Planning Simplified.

AT length the long-expected twentieth-century house has been evolved—where but in America? Hitherto we have been building houses upon radically wrong principles. It is really absurd to construct isolated or self-contained buildings, each aggressively and wantonly asserting individuality and independence, and to scatter them over the earth with a careless hand. This practice greatly disfigures the country. Any building must do that; but it might be done with more delicacy, so that the sensitive traveller need not be exposed to a series of shocks received from encountering buildings whose hideousness of design and iniquity of situation he could never have anticipated. It is always the unexpected. There are even "houses that swear at you as you pass." Mr. Edgar S. Chambless, of New York, has shown that the country need no longer be defiled by houses that differ in design and in every other respect without the excuse of a corresponding difference in use and purpose. Why this waste of ingenuity? Why this inconsistency of diversity? The "endless house" conceived by Mr. Chambless will get rid of these vagaries, will put an end to this riot of individualism; for he has "found a way to use the many inventions that are now made unavailable by our fashion of individual house construction and the private monopoly of transit and conduit facilities." There are to be no more towns and villages. Town-planning and architectural training will be vastly simplified. How? By the simple expedient of building your "endless house" on the lines of the railway—literally. It is to be three or four storeys high. In its basement will run the railway. On its flat roof will be the common street, prophetically known, centuries ago, as the highway, although we are not quite clear whether it is to be confined to pedestrian traffic. It is roofed in. Between the railway and the highway dwell the citizens of "Roadtown." They need never take the train in order to get into the country. That undulates sweetly to right and left or front and rear of them. You have only to look out of window on either side to see a landscape that, stretching out as far as the eye can reach, is undisfigured by a single building. But how you are to get across country from town to town does not appear. Perhaps the various towns will be "linked up" like the tubes and the trams. The economy of the system is undeniable. So is its absolute impossibility; although the "New York Independent" is confident and enthusiastic about "the realisation of the New Utopia." "Until someone," it says, "is able to show a flaw in Mr. Chambless's reckoning of human nature or the figures submitted by the engineers who have estimated upon the cost of 'Roadtown,' we must accept the endless house as one of the probable innovations of the near future—and a weird and wonderful innovation it will be, revolutionising our entire commercial, social, and artistic life." On what compulsion must we? Flaw or no flaw, most of us would rather die.

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NOTES AND NEWS.

Further Discovery at Canterbury Cathedral.

Concerning the fabric of Canterbury Cathedral, Mr. W. D. Caröe has communicated a further discovery to the "Times." It will be remembered that Mr. Caröe, during the examination and the repairs to the north-west pier of the Angel Steeple, discovered that one of Lanfranc's original Norman piers was embedded in the present pier. The portion disclosed proved to be the central shaft of that part of the pier which carried the Norman Tower arch across the north transept. The Norman arch spring was some 15 feet below the present one. Mr. Caröe has now discovered *in situ* the capital of this early shaft, a simple cushion of Early Norman design, and of very considerable projection. Mr. Caröe draws attention to the value of the grouting machine in consolidating this pier and adding to its strength, no less than 1,140 gallons of cement grout having been introduced into the cavities of the pier—i.e., between the original shaft and the outer skin added by Prior Chillenden's men. The greatly increased strength resulting from this treatment has not only removed anxiety concerning the pier, but has enabled Mr. Caröe to leave a small recess exposing Lanfranc's capital to view. The south-west pier, which was also fractured, is now under similar treatment. Mr. Caröe also mentions that a curious and interesting painting of Canterbury Quire, painted by Thos. Johnson in 1657, has lately come into his possession. It is on record that a Mr. Johnson, of Canterbury, showed the Royal Society in 1685 a prospect of the Cathedral drawn by himself in oil colours. Whether the two are one and the same picture is not determined, but the painting shows the myrmidons of Richard Culmer (Blue Dick) in their fell work, breaking the windows and the thirteenth century stalls. The great value of this painting, which is a view from Chillenden's pulpitum or screen, is the laborious care in the details, which are exact, even to the number of stones in the pavement and the courses in the pillars.

Rossetti's Place with the Pre-Raphaelites.

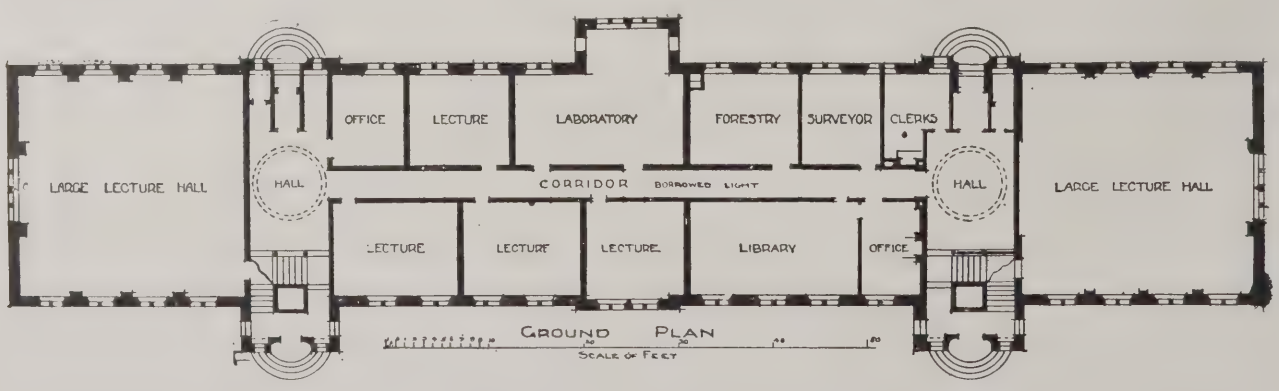
Mr. W. Holman Hunt, the only surviving artist member of the Pre-Raphaelite Brotherhood, under provocation of a "Times" leader on "Mutual Admiration Societies," sends to that paper some interesting particulars about the "Brotherhood." He points out that the phrase "Mutual Admiration Society" was coined and applied to a circle working under the influence of D. G. Rossetti, but if this band (composed of William Morris, Edward Burne-Jones, and other Mediævalists) were fittingly named Pre-Raphaelites (as a large section of artistic theorists often state) it is clear that there were two bodies of young artists known under one and the same name. Mr. Hunt claims that the first one was initiated by Millais and himself in 1848, and was formally extended into the "Brotherhood" later in the year. This "Brotherhood" adopted the initials P.-R.B., with which they signed their pictures, under bond of secrecy as to their meaning. It was Rossetti, later, who effectually led to the break-up of this original "Brotherhood" by revealing the meaning of the initials; a revelation which "increased to a hurricane the prejudice against us in the Press, and alienated art patronage." It was about this time that Rossetti persuaded Mr. Hunt to take him into his studio as a pupil, where Hunt communicated to him the experience acquired by him in his several years' study of the Old Masters. Mr. Hunt resents the suggestion that it was a "joint studio," or that he was in any way influenced by Rossetti. His first painting, the "Girlhood of the Virgin," was entirely apart from those done by Millais and Hunt at the same time—it was even antagonistic to their aims. Mr. Hunt points out that Millais repudiated the myth of Rossetti's "influence" upon him, a fact that can be established by dates, pictures, and documents given in Mr. Hunt's book. These "undoubtedly determine," concludes Mr. Hunt, "that had Dante Gabriel Rossetti never come among us Millais's works would have been, as he says, exactly 'what they were,' and it will follow that mine also would have been what they are."

Society of Architects' Travelling Studentship.

Sixteen sets of designs have been received in the competition for the travelling studentship of the Society of Architects, which is of the value of £25, and carries with it a silver medal. The problem set this year was to design a golf club to accommodate 175 members, at a cost not exceeding £4,000. The council has awarded the studentship to Mr. D. W. Coombs, 25, Portman Road, Boscombe, an assistant in the office of Mr. J. J. Shepherd, 115, Old Christchurch Road, Bournemouth. The work of Mr. Frank Brown, of Crumpsall; Mr. E. J. Williams, of Leicester; Mr. J. F. Dove, of Eastbourne; and Mr. A. J. Turner, of Tonbridge, was commended. The drawings will be on view at the society's premises, Staple Inn Buildings, Holborn, W.C., for one week, commencing June 6th, from 10 a.m. to 8 p.m., when admission will be free; and they will afterwards be exhibited in various provincial centres.

New Buildings for the School of Agriculture, Cambridge.

The block of new buildings which has just been erected for the School of Agriculture in Cambridge, and was formally inaugurated on Wednesday last by the Duke of Devonshire, lies behind the Geological Museum and the School of Botany; it has been built from the designs of Mr. Arnold Mitchell, F.R.I.B.A., of brick and stone. It consists of three floors, a basement, and an attic. On the ground floor is the large lecture hall, which is practically unfitted. When funds permit it will be provided with a gallery with museum cases underneath. This floor also contains the office and library. The first floor is devoted to the biological sciences; it contains a lecture room, elementary and advanced biological laboratories, and private rooms for the Professor of Agricultural



NEW BUILDINGS FOR THE SCHOOL OF AGRICULTURE, CAMBRIDGE: GROUND FLOOR PLAN.
ARNOLD MITCHELL, F.R.I.B.A., ARCHITECT.



NEW BUILDINGS FOR THE SCHOOL OF ACRICULTURE, CAMBRIDGE. ARNOLD MITCHELL, F.R.I.B.A., ARCHITECT

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

Botany, the lectures in Agricultural Physiology and Zoology, and the consulting Zoologist and Botanist of the Royal Agricultural Society of England, who are at present members of the staff. The second floor is designed for agricultural chemistry and physics, and contains a lecture room, a large elementary laboratory, an advanced laboratory, various other work-rooms, and the private room of the Drapers' Professor. The basement and attic provide store and preparation rooms, and the necessary greenhouse.

Tijou's Ironwork at Hampton Court.

A correspondent of the "Times" complains that the celebrated wrought iron screens made by Jean Tijou for William and Mary (and after being moved about to various parts of the grounds were re-erected in the Priory Garden facing the river in 1904) are suffering severely from the effects of the weather. The screens are twelve in number, two of each of the following designs:—The Rose, the Harp, the Thistle, Pomegranates, Monograms, and the Garter. It is stated that "portions of the ironwork are red with rust, and should be painted without a day's delay. Worse than this some of the eagles' heads are perforated by corrosion, the water does not drain off other parts, and the injury is going on. Indeed, nothing but immediate removal to a dry place can prevent the lighter parts of these screens from dropping to pieces with rust, and their becoming mere wrecks. The correspondent suggests that six of the screens should be housed in the Queen's Guard Chamber, and that the other six should find a home in the Victoria and Albert Museum. Mr. Ernest Law, however, writes from the Palace a reassuring letter, stating that the injury the screens show is due entirely to the neglect they suffered from during the 100 years that followed George III.'s accession and his abandonment of Hampton Court as a Royal residence. With the care they now receive they will last indefinitely. Mr. Law refers to Tijou's two great gates, of similar workmanship to the screens, which have stood in the open for 218 years, and having been cared for are practically unimpaired. Mr. Law states the moving of the screens at various times to different parts of the grounds was done in deference to the vagaries of taste of Early Georgian times, and not with the special idea of preserving them.

Ancient Verulamium.

There has been a move on the part of the Society of Antiquaries to promote extensive excavations on the site of the ancient Roman city of Verulamium, and that the undertaking is at present checked by a doubt as to the permission of the landowner, Lord Verulam, to excavate over his land. It appears that Lord Verulam presided at one of the meetings held to consider the subject, so it was assumed that he was favourable to it. Presumably the disturbance of ground would be very extensive, if the best is to be made of the opportunity, and one can understand that the owner of the soil might be disposed to think twice before allowing the commencement of an investigation which, once begun, might run farther than was expected; but we hope he will be able to see his way to permit the attempt. Arrangements might be entered into for excavating one portion only at a time, taking a plan of it, and filling it up again, to carry on with another section. Considering that Verulamium was one of the chief cities of Roman Britain, there is no knowing what may be below the surface of the ground. What a thing it would be to discover another Silchester.

The Late Sir Seymour Haden.

By the death of Sir Seymour Haden the artistic world loses one of its best etchers of the day; one who could not be classed as an amateur, though he practised the art only as a relaxation from his more serious avocation as a doctor. It was the merit of Sir Seymour Haden that he recognised exactly what etching can and cannot do; it was not with him a means of making large and highly worked plates, such as might more properly be called engravings, but an art for small studies showing the characteristic freedom of the etched line. Two or three of his etchings have become famous; all were executed in the true spirit of the art. He was also largely instrumental in founding the Society of Painter-Etchers, whose annual exhibitions have done much to develop a greater interest in this form of art.



DETAIL OF ENTRANCE, NEW BUILDINGS, SCHOOL OF AGRICULTURE, CAMBRIDGE. ARNOLD MITCHELL, F.R.I.B.A., ARCHITECT.

Wall Gardens.

In the June issue of "The Architectural Review," there is an article on wall gardens by a well-known writer, Mr. Wyndham Fitzherbert, illustrated by several examples of Mr. Thomas H. Mawson's work. The chaotic sterility which has been associated with the use of that most hideous material, clinker, demands a sharp distinction to be made between the right and the wrong way of forming wall gardens and rock gardens. Where possible it is always best to build walls specially for the reception of plants. If the ground is steep, terracing of some description is advisable, and this may be effected by building retaining walls, which are far more desirable in every way than the steep slopes or embankments of turf too often seen in gardens. These retaining walls, backed by earth many feet in depth, in which the roots of the plants delight to run and remain cool in the hottest weather, are better for their health than any rock garden. Those that would perish of drought if planted on the level, during long-continued summer heat, remain perfectly happy in the chinks of the wall, while in the winter, not being exposed to the cold and damp of surrounding earth, they endure with equanimity a temperature that would kill their relatives in the rock garden. For this reason all tender plants should be grown in walls, and it is surprising what severe frosts they will withstand in such sites.

Other features of the "Review" for June are an illustrated article on the work of Messrs. Smith and Brewer, including some admirable photographs of the Albemarle Club (formerly Ely House), Dover Street, W.; a further contribution by Mr. Lionel B. Budden, B.A., on recent

construction work on the Acropolis at Athens, the article this month being devoted to the Parthenon and the temple of Athena Nike, of both of which a number of fresh photographs are given; the "Exemplar," with drawings and photographs of the Guildhall at Rochester—a building which, if not by Wren, is at least by one of his pupils, embodying in its front one of the finest pieces of Renaissance brickwork in England; and an authoritative article on the planning of Bath, illustrated by photographs of portions of the city as existing to-day, and by some most interesting plans showing the growth of Bath from the days of the Woods and the Adams.

Woodwork Exhibition at Carpenters' Hall.

An exhibition of works in wood and wood carving which has been organised by the Worshipful Companies of Carpenters and Joiners, was opened on June 1st by the Lord Mayor, and will remain open until June 11th. The models in constructive carpentry, in which skill in obtaining the greatest amount of strength at the smallest expense of labour and material was the object, includes ordinary roofs, ornamental open-timbered roofs—one of them a model of the roof of Crosby Hall—and specimens of bridge centering, shoring, and staging. The first prize for an open-timbered roof truss, £7 and a silver medal, and the special gold medal presented by the Carpenters' Company, has been won by Mr. Charles J. Webb. A number of prizes were also offered for models with architectural and picturesque effects, and in this division are examples of lych-gate, including one from Ewelme Church In the third division are many specimens of staircases, doors, and circular-headed sash windows. The prize of £7 and a silver medal, and a special gold medal presented by the Joiners' Company, has been awarded for a semicircular staircase made by Mr. Herbert H. Durran. The exhibits in the carving section show considerable skill in design combined with power to carry the design into effect. They comprise friezes for the chimneypiece, folding screens, console brackets, mahogany panels, portrait frames, book-covers, writing desks, flower "drops," doors, and hanging cupboards. The promoters have also arranged a loan exhibition, which contains examples of Morris and Burne-Jones tapestries; the Master's Chair of the Joiners' Company, carved in 1754; a choice old Welsh cupboard; an oak "livery" cupboard, dated 1641, in which the rations for the servants were placed; and many carved chairs and coffers from the Victoria and Albert Museum.

Against Works Departments.

The Hull branch of the Yorkshire Federation of Building Trade Employers have sent to the "Hull Daily Mail" a strong protest against municipal works departments, for which, they allege, certain members of the Corporation have a manifest hankering. The President and Secretary of the Hull branch, who sign the protest, declare that this proposal amounts, in the first instance, to "a question of taking the living from a number of contractors who are heavy ratepayers, and are in the future to find rates to pay for competition against themselves." This is very forcibly put; and the objectors further proceed to show that the practice of eliminating the contractor is greatly against the interests of the ratepayers in general. After recalling that Manchester Corporation recently decided by 69 votes to 10 not to establish a works department, they cite as instances in which the contrary policy has been abandoned the case of Leeds, where the work was costing much more than it would have done if placed in the hands of contractors; of the London County Council, where the experiment was notoriously extravagant; and of Bradford, where a team labour department has cost the ratepayers dear. So far from the municipal works department "saving the contractor's profit," it has been found, in some instances, that work done by corporations has cost three times as much as when executed by private contractors. Corporation works departments are, in fact, unnecessary and undesirable, and, in face of the abundant proof that this is the case, their further extension will be a matter of considerable difficulty. We have but little doubt, therefore, that in this matter Hull Corporation will accept the timely advice of the associated master builders, whose promptitude in protesting is highly commendable; for, as a French writer has remarked, "There are few errors that can survive their clear exposition."

Japanese Gardens.

A writer in one of the London daily papers declares, in effect, that most of the "Japanese gardens" in England are sadly unorthodox—have, in fact, "no claim whatever to the description," and he naturally supposes that, as an effect of the Japan-British Exhibition, Japanese gardens will become fashionable in England. They seem but little likely, however, to become very much more authentic. There are, it appears, in Japan, seven distinct schools of gardening; and it is more than probable that in most instances we shall jumble them all together, producing a hybrid travesty that would gravely scandalise a Japanese horticulturist of purist proclivities. For Japanese gardening is a very difficult thing to understand, and perhaps (in its piety and purity) an equally difficult thing to admire; for "the thing to remember is that the Japanese artist sets, or may set, at least as much value by stones as by flowers." In these circumstances, we feel rather dubious as to whether "even a Western Philistine can feel that the garden [in the exhibition], as long ago in Eastern history, still remains a sort of church, a holy place, full of associations with worship"; and we feel rather concerned to think that our ignorant imitations may amount to profanation. But imitate them we doubtless shall, with structures to match; and, from our point of view, pedantic accuracy, either in the landscape or in the buildings, is quite beside the mark. For us, the inaccuracy of detail is comparatively unimportant, and the mystic symbolism is insignificant, so long as we succeed in creating a general Japanese impression. Even so might one speak of modern Gothic, which looks all right to the uninitiated, and so fulfils the simple object of the unambitious and unscholarly designer. The more periods and styles it combines, the more powerful its appeal to the average observer. But, supposing the cult of the Japanese garden to become really serious, the utmost scholarship and the most scrupulous care could hardly procure complete realisation. Our best Japanese gardens or buildings must always speak to us with an English accent, if only because of their environment, and it is therefore questionable whether free and courageous adaptation, rather than slavish adaptation, is not, after all, the most satisfactory course to pursue in submitting ourselves to the sweet influences of the gentle Japanese.

The Colour of London.

Those who believe, with Mr. Halsey Ricardo, that coloured architecture would add to the joys of life, will read with interest the observations of Mr. Yoshio Markino, in his very remarkable book, which he has both written and illustrated, "A Japanese Artist in London" (Chatto and Windus: 6s. net). Mr. Markino says: "Perhaps the real colours of some buildings in London might be rather crude. But this crude colour is so fascinating in the mists. For instance, that house in front of my window is painted in black and yellow. When I came here last summer I laughed at its ugly colour. But now the winter fogs cover it, and the harmony of its colour is most wonderful, and I am sure I need a great deal of study to paint this beautiful colour." But it appears that Mr. Markino, notwithstanding the many dire vicissitudes through which he has passed, remains a pronounced optimist, determinedly regarding everything in its best light; and it is doubtless that very estimable quality, plus a touch of true Oriental politeness, which leads Mr. Markino to attribute to us a subtlety of device which we fear is foreign to us. Our very polite critic is probably very well aware that we do not consciously arrange colour effects that shall become lovable in the fog. Is this genial Japanese gentleman a master of subtle sarcasm?



This panel, representing a sprite driving two dolphins, is cast in bronze. It is a pleasing though not well-known fancy of the sculptor, who also designed the architectural work. Water issues from the dolphins' mouths into a basin below. The panel is 2 feet wide and 2 feet 9 ins. high, The fountain, which cost £4.132, commemorates the founder of the College—Henry the Sixth.

DETAIL OF FOUNTAIN IN QUADRANGLE, KING'S COLLEGE, CAMBRIDGE. THE LATE H. H. ARMSTEAD, R.A., SCULPTOR.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

THE NORMAN UNDERCROFT AT WESTMINSTER.

(See Frontispiece and Illustration on half-title page.)

The illustration on our half title-page and our frontispiece are two excellent views of the Norman undercroft which forms the sub-structure of the old dormitory of the monks, adjoining the Chapel of the Pyx on the east cloister work. It has been fitted up as a museum for certain architectural and other relics, under the supervision of Professor Lethaby, and can be inspected by the public for the small fee of 2d. on days when the Royal Chapels are open. The undercroft, said to be the only complete remaining part of Edward the Confessor's building, is a chamber 110ft. long by 45ft. wide, roofed in by five vaulted bays. It was formerly divided into three parts by partitions which have been removed. The four pillars which divide the undercroft into five bays are situated in a line in the centre of the chamber. In two of them much of the original stonework of Edward the Confessor's buildings is visible. The second pillar from the north end presents a curious appearance. On one side it slopes inwards and downwards from the capital, forming a recess which might be used for a small altar or an image. The pillar has now been buttressed. One of the bays and part of another contain the original vaulting. Portions of the eleventh-century carving of the capitals of some of the pillars remain. The use which was made of the undercroft in mediæval times is not known. It is possible, perhaps, that it was used as a school for novices.

Relics which have been found in various parts of the Abbey have been collected in the undercroft. Among the worked stones which were brought to light while the floor of the undercroft was being relaid are fragments which seem to have formed part of the Norman arcading of the original cloisters. These fragments have been fitted together at the south end of the chamber as a tentative reconstruction of three arches of the old arcade. They are shown in our frontispiece. The three bosses are elaborately carved—one of them, which depicts a scene from the Judgment of Solomon, has for some years been on view in the vestibule from the cloister wall to the chapter house. Among the other architectural fragments is one which is supposed to have been one of the bosses of the old Chapel of St. Catherine. The carved oaken Jacobean pulpit of the Abbey is also preserved here.

Most interesting of all, however, are several of the old wooden effigies of Kings and Queens of England, which it was the custom at Royal burials to carry upon the coffin. These images are of older date than the wax effigies which are still preserved in the Islip Chapel. Those of Edward III., Elizabeth of York, Henry VII., Catherine of Valois, and Anne of Denmark are fairly complete; but the figure of James I. is without the head, and that of Henry Prince of Wales is simply a bare trunk without vestige of clothing.

SCOTTISH AND ENGLISH HOMES.

A writer in the "Daily News" contrasts the home of the Scottish artisan with that of his English confrère, rather to the disadvantage of the former. Scotland is a land of flats, and the absence of the small two-storeyed dwelling or villa, so common in the South of England, may account in some degree for the disgust of the Woolwich workers when they went up to inspect their future homes at Greenock. These Scottish flats (called by Scotsmen "houses") are solidly built of local stone, and have slate roofs. To the English eye their solidity may appear somewhat sombre and sunless. But the main idea is the conservation of warmth; the ideal home has, therefore, "thick stone walls, small bedrooms, a large kitchen, double doors, and is fortress-like beside the flimsier English dwelling. And the internal arrangements and features of the newer Scottish homes are far superior. A modern Scottish flat of, say, £28—£30 rental has a large hall (not the "passage" parody of it), out of which open four or five rooms. The dining-room will be large, lofty (about a foot higher than in England). The kitchen will contain a large range and probably a recessed bed-cupboard. It was this latter feature, by the way, to which the Woolwich workers took so much exception. Hot and cold water and fixed shower baths are common, and so are the capacious porcelain wash-tubs (about eighteen inches deep) and sinks (15 or so inches). Usually there is hot water to the copper and a waste pipe from it. The latent backaches thereby averted only an English housewife plagued with shallow sinks, heavy, laboriously emptied by hand basin coppers, can properly calculate.

Another labour-saving item in the new houses is the nickel tap. Cupboards are fixed in every room (no Scots wife would put up with the bare walls of some of the English houses), and are usually spacious and well placed. Where flatted-villas have been built in the outer suburbs, there is generally a fair-sized "front plot" and a "back-green," to use the local expressions.

ARCHITECTS AND ARCHITECTS.

The delinquencies of architects forms the subject of an indictment, under this heading, in the "Field," of May 28th. It is not altogether pleasant reading, for it reiterates all the commonly accepted complaints about the profession, and our contemporary feels that a landowner who may come across a stray copy of an architectural journal may learn what the able members of the profession think "of men who, while imposing themselves on the public as architects, have few claims to the status they have obtained."

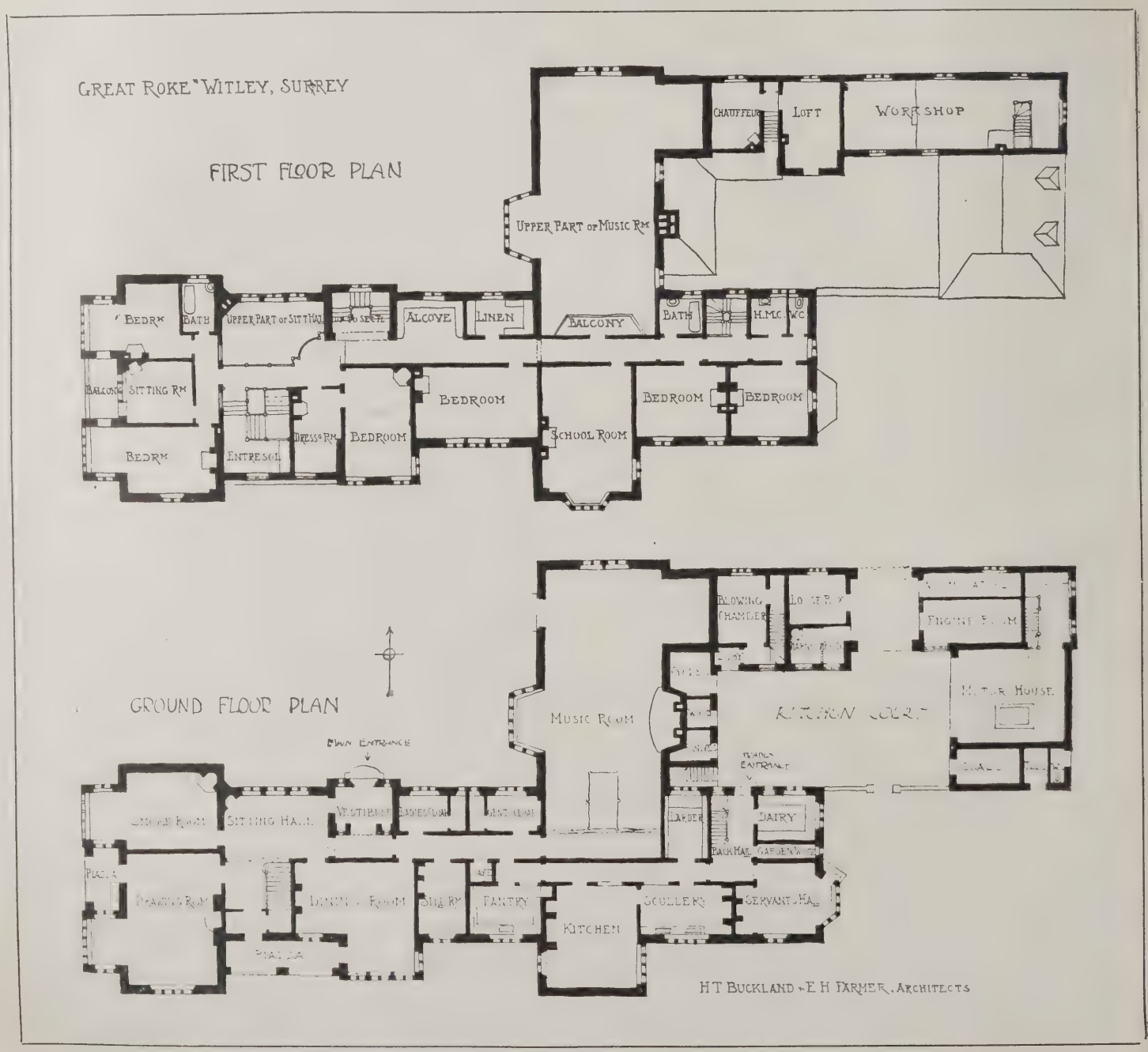
That there are such architects we are bound to admit; that they are a very serious drawback to the body politic is undeniable; but the complaints catalogued are rather too sweeping. We would not go so far as to say that of these what are new are not true; but undoubtedly what are true are not new. The gravamen underlying most of the complaints is that the architect is not a business man. Our contemporary quotes one to the effect that with an architect "a client never knows what his house is going to cost, and it is an admitted axiom among the public that the cost will be exceeded by one-third to three times the figure estimated." One can only say that the client who does not know what his house is going to cost ought not to be allowed to build at all. Curiously enough our contemporary does not attempt to draw a comparison between the success of the "business" architect in erecting large warehouses and business premises for stipulated sums, and the difficulty of the "Art" architect in getting his houses put up at the estimated cost. We have seen this comparison drawn more than once by the "business" man as a sly dig against his artistic confrère. In reality the comparison is not merely odious but unjust. The "business" man deals with business men, who know what they want; and who, having once decided on the plans, are only concerned in getting their building up as quickly as possible, so that they may begin to reap the advantages of their investment. The average client who starts house building is, usually, more vague in his requirements, and (though we have no wish to be ungallant) his wife has a reputation among architects for changing her ideas from day to day. She suffers from the well-meaning but unpractical advice of friends, and the cartoon which we republished from the "Daily Mirror" in our issue of April 6th hardly exaggerates this aspect of the case. To the client and his wife it may seem a small matter to shift the position of an internal wall, though such an alteration may involve the preparation of a new plan and a fresh specification. We know some eminent architects who work these commissions upon a schedule of prices agreed with the builder, and this allows for considerable alterations in the original scheme as

the work proceeds. But the client who fixes a contract on the basis of the lowest tender, and who subsequently desires all kinds of alterations or amendments to the scheme on which the contract was based, must expect an increased cost. He can hardly expect the builder to undo his work for nothing, or to stand the loss on material specially ordered for a contract, and subsequently discarded because by some whim of the client it is no longer required.

In the matter of decoration it is only too easy to run up the bill. The architect who is asked to design a house with certain accommodation for a given sum first sees to it that his structure is sound and substantial; to ensure this he may have to eliminate much of the decorative effect that he would like to employ. Probably this fact was most forcibly put by a well-known architect, who, asked by a client's wife what the decoration of her house would cost, said: "Madam, I can decorate your house for £20, or for £20,000. It is not what the decoration will cost but what you are prepared to spend on it. Tell me that, and I will get out a scheme accordingly." The client who wants to add modelled plaster work, wood panelling, special metal work, and other expensive items, must be prepared for a large additional cost. One can only suggest that the architect might more often protect himself by informing his client in writing what additions will mean in the way of increased cost before they are put in hand. If he keeps copies of such communications the blame for running up the bill will not fall, as it so frequently and undeservedly does, upon his shoulders.

Clients expect too much of architects at the present day. They are too keen on competition tendering, which, as our contemporary says, "is a system which gives work not to the best builder but to the man who, for one reason or another, is willing to do it for the lowest sum." It is a system that the architects dislike, and one that we believe the builders would be glad to abolish. In the old days each architect of standing had a number of builders round him whom he knew, had proved, and could trust. They competed for his various works, and carried them out to mutual satisfaction. It is the client, and client alone, who benefits or hopes to benefit by open tendering; and it is the client, moreover, who at the present day expects much more for his money than can reasonably be expected, despite the greatly increased cost of building.

Still, it is satisfactory to find that our contemporary believes the evils would be cured "if the public were to take a more intelligent interest in the immediate problems of architecture." It is what architects have been saying for a decade. If the public could be brought to study architecture intelligently they would select the right architects for their work.





This house occupies the crown of a hilly site on the borders of the village of Witley, Surrey. The walling externally s faced with local stone quarried within two hundred yards of the site, built in random rubble with thin coursed rubble quoins and strings. The dressings for doors and windows are of Doulting stone. The chimneys are of local bricks of excellent colour, and the roofs are covered with hand-made tiles, sand-faced. Messrs. Henry Lovatt, of Darlington Street, Wolverhampton, are the general contractors for the work. The casements and leaded lights and heating arrangements are being supplied by Messrs. Henry Hope and Sons, of Birmingham. Messrs. Buckland and Haywood-Farmer, of Birmingham, are the architects.

"GREAT ROKE," WITLEY, SURREY. BUCKLAND AND HAYWOOD-FARMER, ARCHITECTS.

CORRESPONDENCE.

[The Editor declines responsibility for the statements made or opinions expressed by correspondents.]

Builders' Grievances.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Permit me to thank you for the article contained in your last issue on builders' grievances. That such an article should appear in an architectural journal is in itself very remarkable and may probably be epoch-making.

I would disagree with you in your defence of the individual who regards the bringing in of an outside arbitrator as "an undeserved insult." It should be no more insulting than was the introduction of Magna Charta into the British Constitution, nor of trial by jury into the institutions of free men. To the wise and beneficent architect autocratic power may be very convenient, but in hands not so qualified it has been wantonly used and has been most cruel in its incidence, and for this reason ought to be abolished.

Although, generally speaking, architects have long since resigned the title to arbitrate upon all matters in dispute arising out of their contracts with builders, there is still the large field of "method of execution" and the "finish of work," besides that of "quality of materials" over which they hold undisputed sway, where the builder, however unjustly treated, has no right of appeal. Protests are certain to be raised against the suggestion that upon these matters also arbitration should be possible, but it is surely due to the most elementary principles of justice that it should be conceded. Frivolous references to arbitrators by offending builders and by unfair architects need not be feared. These would soon cease to be made if the arbitrators were empowered to penalise those who were responsible for them.

Your article refers to many other burning questions that cannot be adequately ventilated by correspondence. I would therefore respectfully suggest that the R.I.B.A. and the Builders' Federation arrange for an early conference where the grievances might be set forth and subjected to expert criticism and where the changes demanded by experience and equity may be incorporated into a new form of contract.

J. M. M.

R.I.B.A. PRIZES AND STUDENTSHIPS, 1911.

The list of R.I.B.A. prizes and studentships, 1911, gives particulars which may be here usefully abridged:—

Essay medal and 25 guineas. Age limit, under forty. For the best essay on "The Design and Construction of Belfry Stages and Spires in Stone or Brick."

MEASURED DRAWINGS. Medal and ten guineas. Age limit, under 30. Subject: Any important building—classical or mediæval—in the United Kingdom or abroad. The following subjects are suggested as worthy of illustration: One of the colleges of Oxford or Cambridge; *(Scotland)* Holyrood Palace, Edinburgh; the Register House, Edinburgh; Jedburgh Abbey; *(Wales)* Chirk Castle, Denbighshire; *(Ireland)* Cashel Cathedral, or any monastic building; Holy Cross, Cashel; the Custom House and any other eighteenth century domestic work in Dublin; *(London)* St Alphege, Greenwich; St. George's, Hanover Square; the Confessor's shrine and the tomb of Edward III., Westminster Abbey; All Hallows, Barking; the west portico of St. Paul's Cathedral; St. Mary-le-Strand; *(Bedfordshire)* Houghton House; *(Cambridgeshire)* the Lady Chapel, Ely; *(Derbyshire)* Ashbourne Church; *(Dorsetshire)* barn at Abbotsbury; Manor House, Athelhampton; *(Essex)* Waltham Abbey; *(Gloucestershire)* Retland Chapel, Clifton, Bristol; *(Hampshire)* Church and Hospital of St. Cross; Netley Abbey Church; Ramsey Abbey; *(Hereford)* Abbey Dore; *(Lancashire)* Bramhall Hall; *(Monmouthshire)* Chepstow Castle; *(Norfolk)* St. Peter's Mancroft, Norwich; St. Nicholas, King's Lynn; the Custom House, King's Lynn; *(Northamptonshire)* Higham Ferrers Church; *(Northumberland)* ruined buildings at Lindisfarne; *(Nottinghamshire)* steeple at Newark; *(Oxfordshire)* Abingdon Town Hall; *(Somersetshire)* the Chapter-house and the Lady Chapel, Wells; St. Cuthbert's Parish Church, Wells; *(Staffordshire)* the Lady Chapel, Lichfield; *(Suffolk)* Blythborough Church; *(Surrey)* Mereworth Castle; *(Sussex)* Boxgrove Priory Church; Cowdray House, Midhurst; *(Wiltshire)* Lacock Abbey; *(Worcestershire)* Pershore Abbey, near Worcester.

SOANE MEDALLION and £100 Age, under 30. Subject: Gateway and gate-house to a capital city approached by a bridge over a river flowing from left to right. Successful competitor to study abroad for not less than six months, and afterwards submit evidence of studies.

PUGIN STUDENTSHIP, silver medal and £40. Age, between 18 and 25. For the best selection of drawings and testimonials. Special value attached to perspective sketches done on the spot, explanatory rather than pictorial, and to measured drawings. Attention should be directed to mediæval subjects, and preference is given to measured drawings. Successful candidate to make tour of not less than eight weeks in the United Kingdom for study of mediæval architecture.

GODWIN BURSARY and WIMPERIS BEQUEST. Silver medal and £65. For best practical working drawings or other evidence of special practical knowledge, and testimonials. No age limit, but knowledge of a foreign language necessary. Successful candidate undertakes to spend at least five weeks abroad, and to present a memoir of his observations on modern planning and modes of construction, drainage, water-supply, ventilation, and other sanitary arrangements.

OWEN JONES STUDENTSHIP. Certificate and £100. For the encouragement of the study of architecture, more particularly in respect to ornament and coloured decoration. Testimonials, with drawings, some of which must be from existing buildings and from other examples, exhibiting acquaintance with colour decoration and with the leading subjects treated of in Owen Jones's "Grammar of Ornament." Age not more than 35. Successful candidate must tour for not less than six months, and must, by December 23rd, 1912, deliver an original design in coloured decoration.

TITE PRIZE. Certificate and £30. For best design, according to the methods of Palladio, Vignola, Wren, or Chambers, for a Campo Santo on a rocky island rising out of an inland lake, and comprising a chapel having a floor area of about 3,000ft., with choir, organ, sacristies, etc., in addition. Age under 30. Successful candidate must tour in Italy for four weeks.

GRISSELL PRIZE. Gold medal and 10 guineas. Subject, design for a skating rink of wood construction, actual rink 200ft. by 60ft. between the posts which carry the roof. Outside the posts will be shallow aisles strips or promenades. Galleries at a higher level may be constructed over aisles, and may project over the centre space. Provide vestibule, dressing-rooms, lavatories, etc.

ARTHUR CATES PRIZE. For the promotion of the study of architecture, more especially in relation to the application of geometry to vaulting, stability of edifice, and design. Candidate submits selection from the original testimonials of study which procured him admission to the Final Examination, and not less than two sheets comprising studies of Classical or Renaissance and of Mediæval architecture, and also detached studies of a groined vault of any period between A.D. 1100 and 1500. Candidates must have passed the Final in 1909 or 1910.

HENRY SAXON SNELL PRIZE. £60. For encouragement of study of improved design and construction of hospitals, convalescent homes, and of asylums for the aged and infirm poor. Subject, best design for a convalescent home to provide accommodation for 100 men of the working class. Open to any member of the architectural profession, who may associate with him any member of the medical profession. Successful candidate undertakes five weeks' tour at home or abroad to study and report upon type of building for which he has won the prize, delivering memoir by December 21st, 1911.

ASHPITEL PRIZE. Books, medal, money, or otherwise, to amount of income of shares and securities bequeathed by late Mr. Arthur Ashpitel. Open to students who pass the Final in 1910.

OBITER DICTA.

Modern Art. How characteristic of the liberality distinguishing the New English Art Club from its inception that it should hang pictures informed by a spirit entirely different from what inspires its orthodox members! In so far as they practice any common attitude, it can be claimed that all of them accept modern life and the visible world in which our life is set. They do not fret about the Middle Ages, lament the Renaissance, or hanker for the faith and chivalry of a bygone age. History they leave to historians, the Roman Empire to the stage managers and the ingenious reconstructors of such things at the Crystal Palace.—"*Morning Post.*"

"Middling" Art. The critic finds the best scope for his talent in writing about work that is superlatively good or promising, or wholly bad. In the first case he has an opportunity for displaying his wealth of adjectives, in the second he can exercise a sort of parental authority and give advice with a great show of learning and judgment, and in the third case he may show his wisdom by making silence a golden virtue. But it is difficult to deal with art that is "middling," that has ceased to grow and to create the unexpected. Many very capable artists fall into this condition, and continue producing clever and pleasant things that look nice when seen singly or in pairs in a drawing-room, but which, when brought together in large numbers, are apt to weary by monotony of handling and colour.—"*Morning Post.*"

NEWS IN BRIEF.

A Roman leaden coffin, found recently at Bratton, near Westbury, Wiltshire, has been presented by Lord Ludlow to the museum of the Wilts Archæological Society at Devizes.

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The residents of Southfields, which has a population of 72,000, are petitioning the London County Council to extend their tramways from Wandsworth to the County Boundary at Southfields. The district is said to be badly served with transit facilities.

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The monument to Liberty, commemorating the annexation of the two Sicilies to the kingdom of Italy in 1860, has been unveiled at Palermo in the presence of the King and Queen of Italy.

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An attempt is to be made to obtain an open space for Kilburn, and the movement is receiving strong support from the Metropolitan Public Gardens Association. An old house, The Grange, with 9½ acres of land, part of which abuts on the Kilburn High Road, is in the market, and it is hoped by acquiring this to secure a park in the poorest and most crowded part of the district.

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Sir W. P. Treloar is appealing for subscriptions to make up the balance of £5,000 requiring to complete the sum of £24,000 required to purchase the Ironmongers' Almhouses in Kingsland Road. The London County Council are finding £16,000, and the Shoreditch Borough Council £3,000.

* * *

"Small Gardens," by T. U. Sanders, F.L.S., is a useful addition to the very cheap series of "One and All" garden books issued by the London Agricultural and Horticultural Association, Ltd., 92, Long Acre. Many of the illustrations show, alas! the advantages of covering up as completely as possible, with screens and creepers, the ugly brickwork of suburban dwellings.

* * *

With reference to the article in our issue of May 25th, descriptive of a visit to the New County Hall foundation works, we hear that the boat has now been almost entirely exposed, revealing some further timbering, indicating the probability of its having been a sea-going craft, which had fallen to pieces. The question of the date is under consideration of the L.C.C. and other authorities, who are considering what course shall be adopted for the preservation of such an interesting relic. The contractors engaged upon the work are Messrs. F. and H. F. Higgs, of Loughborough Junction. The river wall, now nearing completion, has been for the last two years in the hands of Messrs. Price and Reeves.

* * *

After nearly a year's careful work, the first step towards the building of London's County Hall has been completed. On the erection of the Embankment wall, which is a necessary prelude to the setting of the foundations, the best of modern engineering ingenuity has been brought to bear, and now along the Lambeth shore, where formerly the waters of the Thames lapped a line of dilapidated wharves and warehouses, there stands a solid rampart of stone. The next stage in the work will be to lay down the great "raft" foundation of concrete in the excavated space behind the wall. This work will take comparatively little time, but it would be inadvisable to start the building operations for the superstructure before eighteen months have passed, for it will take over a year for the concrete raft foundation to firmly settle upon the hard soil of the river bank. It is to be given fully a year and a half, in order to be on the safe side. Work on the County Hall proper will probably be begun in the beginning of 1912, and will be finished in 1915.

* * *

The building trade strike in South Australia has been declared off. The members of the Builders' and Contractors' Association having agreed to pay the 1s. 6d. an hour demanded by the men in lieu of 1s. 3d., work is again in full swing. Since the trouble which the Adelaide builders and contractors had with the bricklayers, masons, and stone-cutters some time ago, the former have offered, and are still offering, 12s. per day of 8 hours for competent artisans. This was the amount asked for by the men. A number of warehouses, offices, and factories are in course of erection.

* * *

The London Building Acts Tribunal has been temporarily reconstituted for the purpose of hearing an appeal in respect of the "Protection against fire in certain new buildings," the building in question being an hotel in Berners Street. The reconstitution has been necessitated owing to Mr. John Slater, F.R.I.B.A., a member of the Tribunal, having to lodge an appeal on behalf of a client. The temporary tribunal is as follows: Mr. Felix Cassel, K.C., (president), appointed by the Secretary of State; Mr. J. W. Simpson, appointed by the Council of the Royal Institute of British Architects; and Mr. A. R. Stenning (president of the Surveyors' Institution), appointed by the Council of that institution.

* * *

At the recent annual meeting of the Incorporated Church Building Society, Sir Charles Nicholson, as a member of the committee of architects, referred to the criticism that they were rather hard taskmasters. They only rejected quite hopeless schemes, sparing no pains to bring others up to the society's standard. Church builders exercised an almost uncanny ingenuity to secure the society's approval. The committee might therefore be empowered to reject schemes complying with the letter but not the spirit of the society's rules, as well as to accept good schemes not quite complying with the letter. The committee approved of cheap, but not of cheap and showy, churches. If people could not afford to build handsomely, let them build simply and well. In cases of restoration, the committee tried to prevent the waste of money on unnecessary or even Grimthorpian work.

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It is stated in an Edinburgh paper that there is a considerable depression in the decorative trades there. This is attributed to the increased taxation under the recent Finance Act, which has increased the imposts on well-to-do people, and forced them to economise, more particularly in luxuries. Houses are being "touched up" instead of being overhauled; and in many cases no orders are being given at all. The slackness is equally apparent both in Edinburgh houses and country houses.

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A proposal is on foot to erect a crown on the Dundee old tower. The work, estimated to cost from £2,000 to 3,000, would follow the lines of a design prepared by the late Sir Gilbert Scott, R.A., and the money has been found by a Dundee citizen

Three special lectures on "The Illumination of Interiors" will be delivered at the East London College (University of London), two by Professor J. T. Morris, M.I.E.E., and the third by Prof. C. A. M. Smith, B.Sc. Lecture I, on "Principles and Daylight Illumination," will be delivered on June 8th; II., on "Artificial Illumination by Gas and Electricity," on June 15th; and III., on "Illumination by Petrol Air-Gas," on June 22nd. The lectures take place on Wednesday evenings, at 8 p.m. The college is situated in the Mile End Road, E., and applications for tickets should be sent to the registrar.

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The contractors for the construction of the Rosyth naval base have entered upon the most difficult part of the undertaking, viz., the sinking of the steel shoes preparatory to the building of the great sea wall. These shoes weigh nearly 60 tons, and about 100 will be required for the wall of the dry dock. They are being sunk in the open sea, about a mile from the shore. After the shoe has been sunk a heavy shuttering is placed on the top of it and filled with concrete, this process being repeated until the shoe has been driven by sheer weight deep into the sea bottom. The concrete monoliths when completed will have a length of from 120ft. to 130ft. and a weight of between 10,000 and 12,000 tons.

* * *

Two local authorities near Birmingham not having adopted a fair wages clause for insertion in contracts, the Council of the Birmingham Association of Master Builders have written to urge that such a clause should be adopted, as being in the interests of employers and employees alike. They contend that as all the best builders and contractors, especially members of the Federation, pay the recognised standard rate of wages, it is therefore only reasonable they should be in this way protected against the employer who does not observe the standard conditions.

ART NOTES.

Sir Edward Tennant's Exhibition. Sir Edward Tennant's collection of pictures generously thrown open to the public on Wednesday and Saturday afternoons, between two and six, in his house at 34, Queen Anne's Gate, comprises choice examples of Gainsborough, Reynolds, Hoppner, Raeburn, Zoffany, Morland, Lancret, Fragonard, Watteau. Hoppner's famous "Sisters," and the equally famous "Leslie Boy," by Raeburn, are included, as well as Turner's small picture representing the burning of the Houses of Parliament.

Waller Collection. Yesterday (June 7th), at Christie's, was begun the dispersal of the collection of the late Mr. Tom Waller, of Bradford, comprising old magolica and faience ware, busts, statuettes, old Worcester, old Chelsea, old decorative furniture, etc.

The Wax Bust. Mr. Albert Dürer Lucas, of Southampton, only son of the late Richard Cockle Lucas, sculptor, has sworn an affidavit that seems to settle the wax bust controversy. Mr. A. D. Lucas states that he was born in 1828, and that in the year 1846 he was living with his father at 40, Nottingham Place. The gist of his affidavit is as follows: Mr. Buchanan, a London art dealer, sent to Mr. R. C. Lucas

an oil-painting from which he desired to have a wax bust made. Of this picture Mr. A. D. Lucas made a small copy in oils, which is still in his possession. Mr. Buchanan's picture was at first attributed to Leonardo da Vinci, but afterwards to some artist of his school. This picture was traced to the possession of the late Miss Morrison, of Basildon Park, and by her was exhibited at the Grafton Gallery in November, December, and January last. Mr. A. D. Lucas not only saw his father at work from day to day on the clay model of the Flora bust, but assisted him in the preparation of the clay, in taking the plaster mould, and in rocking the mould in order to secure a proper distribution of the wax, which consisted of melted candle-ends. He also assisted by colouring the hair and the flowers on it, and in modelling and colouring the flowers for the right hand which rested near the left breast of the figure. The bust was thrown upon Mr. A. D. Lucas's hands, and was removed to the house which he built at Chilworth, where it remained for many years. On his father's death the younger Lucas removed to the house adjoining, which was purchased in 1888 by Mr. Simpson, a number of the elder Lucas's works, including the Flora bust, being included in the purchase. A further affidavit, by Mr. Thomas Whitburn, of Guildford, who was a constant visitor at the home of the elder Lucas, confirms these particulars. The full text of these affidavits is printed in the "Burlington Magazine" for June. Mr. Lucas's recollection of the matter is very vivid, notwithstanding his advanced age; and his affidavit, although it may not convince the firm believers in the Leonardo legend, and although it cannot be judicially regarded as being absolutely conclusive, will, for most minds, set the question at rest.

FIRE PREVENTION NOTES.

A Dangerous Area. The inquest on a fire in Australian Avenue, E.C., revealed once again the great need for reform in matters of fire prevention. The fire occurred in a six-storey building, which was very much hemmed in, and was very awkward for the brigade to get at. The narrow street in which the fire broke out was filled with big buildings, and was not far from the scene of the great fire in Barbican in 1902, and of the earlier (1897) and bigger fire in Cripplegate. The area, as one of the witnesses remarked, is an exceedingly dangerous one, and consequently the rate of insurance for the district is very high. Nevertheless, it did not appear that special precautions had been taken to prevent an outbreak which, but for the skill and energy of the firemen, might have been comparable in extent to the disastrous fires in Barbican and Cripplegate. The lessons of those fires do not seem to have been duly impressive.

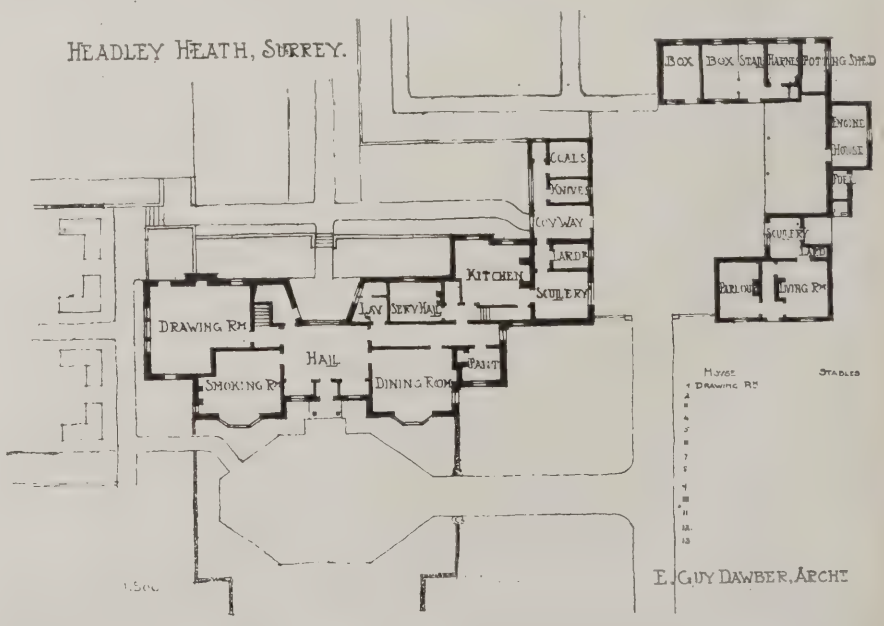
Futility of the Building Acts. In the building that took fire there was a wooden staircase, and, according to the evidence of one of the firemen, there were "no exits built for the express purpose of escape by fire." There was, he said, a parapet at the top of the building, access to which was through the windows; "but it was very difficult to induce women and girls to get through windows." It ought to be possible to escape from a burning building without accomplishing an acrobatic feat. As one of the firemen-witnesses said, there ought to be an exit on to the roof. The coroner, Dr. F. J. Waldo, asked how it was that the building seemed to have escaped the operations of the London Building Acts, and the reply made by the District Surveyor for the City of London West was that it was because the London County Council had never had the building reported to them. "Have the London County Council no inspectors to look up these places and report about them?" the coroner asked. "Only if a complaint is made."—"It comes to this, then," said the coroner, "that if a fire happens and lives are sacrificed or property is lost, then you can act?"—"Yes."—"Would it not be more satisfactory if these buildings were reported to the London County Council before a fire came?"—"It will be for the London County Council to give orders to that effect. It will be a very great job to report on all these buildings."

Wise After the Event. It would be undoubtedly a very heavy task, but it might not be found to be wholly impracticable. It would be laborious and costly, and might occasionally operate somewhat oppressively, but it might result in saving a large portion of the vast amounts lost by or through disastrous fires, and would almost certainly prevent the loss of many precious lives. It would also afford relief from the absurd as well as disastrous practice of ignoring the principle that prevention is better than cure, and of being "wise after the event." Evidently there is a vast amount of work to be done in the fire-proofing of buildings of the warehouse class, and it should not be left undone until some sort of catastrophe renders it imperative. The jury recommended that means of escape should be provided.

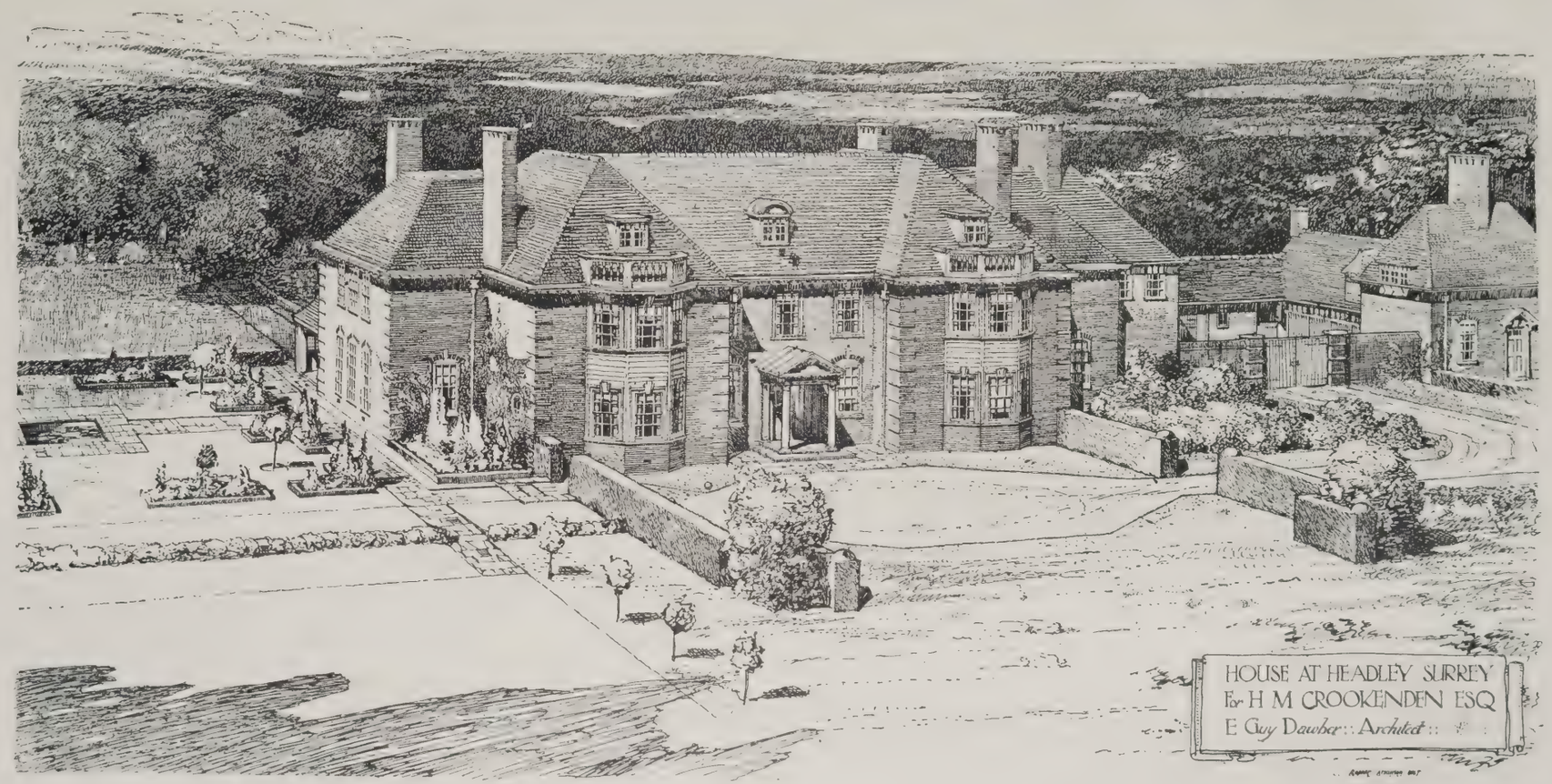
Sprinklers. The sprinkler system, as a whole, is well adapted for the protection of every class of manufacturing and warehouse property, for installations are to be found in classes of risks, such as textile, woodworking, boot and shoe factories, corn mills, flock mills, oil mills, retail shops and stores, warehouses, sugar refineries, tanneries, floor cloth and linoleum works, biscuit and confectionery works, india-rubber works, paint and varnish works, theatres, paper mills, printing works, chemical works, maltings, jam factories, match factories, celluloid works, soap and candle works, wharves, tobacco factories, etc., etc. We are informed that the record of the Grinnell sprinkler at the present time is over 3,000 fires extinguished in all classes of risks, with an average damage, including both fire and water, of only about £60 per fire.

Geology and Fire Resistance. Since Government inquiries in our own country are apt to report on somewhat unexpected subjects—as when, for instance, the work of the Commission on coast erosion largely turned on the question of reafforestation and the timber supply—one is the less surprised to find that Bulletin 418 of the United States Geological Survey indicates the necessity of using cheaper fireproof materials in order that property owners may be encouraged to construct buildings that will better resist fire. The observations in the bulletin also show the necessity of better building codes in cities, and especially of a better enforcement of the codes already enacted if the present enormous fire losses are to be diminished. The investigations indicate that fireproof buildings will be constructed at less expense in the future than in the past, and that the difference in cost between fireproof and inflammable buildings will soon cease to be an encouragement to flimsy construction.

A Strong Contrast. There is recorded an extraordinary contrast between the small losses by fire to Government buildings, due to the great care taken to make them fireproof, and the immense losses reported from the country as a whole, and this difference led the Geological Survey to conduct an inquiry into fire losses in the United States, and their exact cost to the people. This inquiry covered not only the value of the property destroyed by fire, but also the cost of maintaining fire departments, the amount of insurance premiums paid less the amounts returned, the cost of protective agencies, the additional cost of water supplies, etc. The investigation disclosed the fact that the total cost of fires in the United States in 1907 amounted to almost one-half the cost of new buildings



HOUSE, HEADLEY HEATH, SURREY: GROUND PLAN. E. GUY DAWBER, F.R.I.B.A., ARCHITECT.



This house is now nearing completion. It is situated on a site overlooking Headley Heath, with some miles of open country. It is built of red bricks, with dark headers, with a wooden moulded cornice, and red tile roof. It will be seen that the house, cottage, and stables have been designed together as a whole. The garden has also been laid out by the architect. The interior is treated in a very simple manner, with white panelled walls in the parlour, and mahogany doors to the best rooms. The builders are Messrs. Oldridge and Sons, of Kingston. Theillustration has been reproduced from the drawing which is now at the Royal Academy Exhibition.

HOUSE AT HEADLEY, SURREY. E. GUY DAWBER, F.R.I.B.A., ARCHITECT.

constructed in the country for the year. The total cost of the fires, excluding that of forest fires and marine losses, but including excess cost of fire protection due to bad construction, and excess premiums over insurance paid, amounted to more than $456,485,000, a tax on the people exceeding the total value of the gold, silver, copper, and petroleum produced in the United States in that year. The cost of building construction in forty-nine leading cities of the United States reporting a total population of less than 18,000,000, amounted, in 1907, to $661,076,286, and the cost of building construction for the entire country in the same year is estimated at $1,000,000,000.

Amazing Fire-loss Figures.

Thus it will be seen that nearly one-half the value of all the new buildings constructed within one year is destroyed by fire. This may give a great deal of employment to the building trade, but is sadly wasteful to the community as a whole. The total fire cost in the United States is five times as much per capita as in any country of Europe. The actual fire losses due to the destruction of buildings and their contents amounted to $215,084,709, a per capita loss for the United States of $2.51. The per capita losses in the cities of the six leading European countries amounted to but 33 cents, or about one-eighth of the per capita loss sustained in the United States. In addition to this waste of wealth and natural resources, 1,449 persons were killed and 5,654 were injured in fires. In these circumstances it is not surprising that such strenuous efforts are being made in the United States to propagate fire-preventing methods.

ARCHITECTURE AT THE ROYAL ACADEMY.—II.

Church Architecture.

The drawings of church architecture at the Academy are nearly all grouped in one part of the room, so that they can be easily compared. There is not very much that is at once novel and important. Two or three of the smallest drawings are among those which contain new ideas. There are, as usual, a sprinkling of what may be called the regulation church designs—specimens of revival Gothic, with proper buttresses and traceried windows complete, which have nothing to distinguish them from fifty other designs of the same type, and which hardly call for notice. Though the idea that Gothic is the proper style for church architecture still largely prevails, we are now getting beyond the point when mere copyism of mediæval forms will be accepted as satisfactory.

The first church on the list is Mr. Dixon Spain's small elevation of the "Swedenborgian Church, Willesden Green" (1501: no plan); an elevation mostly in red brick with a round-arched entrance doorway in stone, with heavy arch mouldings in recessed orders. There is a good deal of character in this elevation chiefly derived from the treatment of the brickwork; and the rather low-pitched gable is broken in its lines so as to give it a certain special expression. We should have liked to have the opportunity of seeing what form of plan is demanded by the ritual of a Swedenborgian church. Mr. Hoole's "Church of St. Alban, Romford" (1503) has a small plan showing a short wide nave of three bays, with a choir and organ gallery at the west end. The perspective view is that of a brick church with octagon turrets at the west end of the nave, finished with an arcaded storey in stone; a large wall-arch between these encloses a central wall space decorated by a statue, and a long lancet window on each side of it. The gable is decorated with alternating squares of brick and stone. All this looks very well, but is rather spoiled by the row of three flat arches over the western door and adjoining windows, the lines of which do not harmonise with the remainder of the west front.

Mr. Edgar Wood's "Design for church" (1506) is one of the original suggestions—rather too original, perhaps. The plan is square, with a low tower at each angle, the centre mass rising higher, with a rather odd sky line, the whole looking rather more like a castle than a church. By the arrangement of the plan the axis of the plan seems to run north and south on the ground level, and east and west on the upper plan, with colonnaded galleries at the sides. Is is an odd affair altogether, but not without interest. The west end shows a large, semicircular, richly traceried window of somewhat Byzantine type. "Church of St. John, Herne Hill" (1508: no plan), by Messrs. Treadwell and Martin, is a pretty little perspective drawing of a plain brick church. The "Harrison Memorial Church, Wallasey" (1509), by Mr. J. Francis Doyle, resembles Wallasey Parish Church, a modern Gothic church with a square centre tower. Mr. Ambler's "Proposed church at Holbeck Woodhouse" (1511) is hung too high to be well seen. It appears to be a good example of modern Gothic. Messrs. Hall and Dods send a small pen sketch and plan of a rather interesting little "Proposed Anglican country church, Laidley, Queensland" (1512), a timber church with the roof brought out to form a veranda round three sides of the building (no doubt as a screen from heat), carried on timber framing. A small country church for Charlton, Hants (1516), by Mr. H. C. Benson, is pleasing as such. There is a narthex at the west end, expanding at the centre into a little circular baptistery which forms a semi-octagon bay externally. The square louvred bell-cot is rather commonplace, however. Messrs. Greenaway and Newberry's "Church of St. Andrew, Coulsdon" (1518: no plan) is a Gothic church with the south-east tower rather effectively treated. The window-grouping generally is good.

Mr. Caröe's "School Chapel, North-Eastern County School" (1522), is an interior perspective of the orthodox school chapel plan, with built arches over it in place of principals, and a timber wagon vault between. Mr Temple Moore's "St. Wilfrid's Church, Harrogate" (1523: no plan), is a slightly executed but effective perspective sketch of what seems to be a large church, with a square centre tower and small square towers at the angles of the transept; a kind of design that wants a plan to explain it. The general effect is very picturesque, but there are too many unnecessary buttresses and set-offs, very like what would be found in many mediæval churches, but with no other justification. "Proposed All Saints' Church, Pokesdown, Bournemouth" (1524), by Messrs. Oldrid Scott and Son, is a four-aisled church on plan. The exterior is of the regulation church Gothic, shown in a large pen-line drawing, with some very bad trees in the foreground. Mr. Temple Moore's "St. Anne's Church, Royton" (1527: no plan) is, like his other exhibit, a sketch of a picturesque church, of which no explanation is furnished by a plan, so that what the low building at the east end means, and why it is placed there, cannot be understood. This is no way of illustrating architectural design.

Mr. Bateman's "Hill Church, Sutton Coldfield" (1528) is an interior with a barrel vault decorated with flat bands of carved work (or plaster modelling). Mr. Clare Greene's "St. Gabriel's, Bishopwearmouth" (1530: no plan) is an effective church shown in a carefully executed water-colour. There is an octagon centre lantern with a spirelet growing out of it. The whole looks so well that it is doubly to be regretted that there is no plan to make the illustration complete. Mr. T. Roger Kitsell's "Alterations to Chancel, St. James-the-Less, Plymouth" (1536) is a good piece of pencil drawing, but there is no indication in what exactly the new work consists. Mr. Schultz exhibits a perspective view of his "Khartoum Cathedral," the elevation and plan of which have been previously exhibited. It is not a beautiful building, but in a sense it is no doubt characteristic of the place, the materials, and the class of labour available. The west window, composed of a colligation of circles, is cleverly treated. The decoration under the gable coping looks odd and unintelligible in the drawing. Mr. Houchin's "Baptist Church, St. John's Wood" (1542: no plan) shows a bold treatment of the west end with a deep arch. Mr. W. A. Pite is the only exhibitor of church architecture who shows, in his "Church of the Good Shepherd, Ealing" (1547), a proper and complete plan to a large scale, accompanied by elevations. It is a small church with a mission-hall attached, planned with narrow aisles for passage only, and a narthex and a square baptistery with a domed roof. The architecture is of the Georgian type, with a graceful small lantern or bell-cot on the roof. This is the only one among all the church drawings which is an example of architectural design properly illustrated with a complete plan and elevations, and should in this respect be held up as an example to others.

Some of the designs for church furniture and stained glass may be noticed here, in connection with the subject of church architecture. Of these, the most important is Mr. Joseph Phillips's "Design for a Processional Cross," in silver and oak (1497), the top of the cross showing the details to a pretty large scale—a good piece of work. Mr. Durrant exhibits a design for a cover for an old font in a church near Cromer (1514), a spire-shaped design of painted wood and gilt metal: not unsuitable, though it does not appeal to us very much. Mr. Jewitt's "Reredos in carved oak" (1520) seems a good piece of work, but is hung too high to be well seen.

Stained glass is never satisfactorily shown by small coloured drawings. One can only form a general judgment of the design. Among the designs that are worth comment is a small sketch by Miss Dorothy Courtney for a crucifixion subject and symbolical adjuncts, done almost entirely by lead lines. Mr. Walter Camm's "Easter Morn" window (1444) shows an unusual treatment, the figure of Christ being shown in the midst of a field of floral diaper. The window is divided by rectangular barring. The same artist's "Nursery Rhymes" window (1489), designed for execution in scrap glass for a nursery, is good; and Miss Florence Camm's small panel window, "St. Etheldreda" (1603), with a picture centre and a navy blue border round it.

In a final article we will deal with miscellaneous designs for domestic and other buildings.

PICTURE EXHIBITIONS.

The New English Art Club.

The exhibition of the New English Art Club at the Suffolk Street Galleries contains some brilliant things, and some which are striking and suggestive without being brilliant, amid a mass of crudities and vulgarities.

Mr. Orpen's "On the Irish Shore," purchased for the Johannesburg Gallery, and his large picture entitled "A Woman," a life-sized painting of a nude female, with no beauty of either face or form, we do not admire, but his half-length portrait of Mr. A. W. Rich, sketching in a wind with his hat off, is clever and characteristic. Mr. Wilson Steer, in "The Muslin Dress," seems anxious to paint the clothed woman in as ungainly an attitude as that in which Mr. Orpen painted the nude woman. The woman in the muslin dress is doubled up on a sofa in an attitude which reduces her to a kind of shapeless heap.

Among the brilliant things in the exhibition is Mr. Sargent's powerful sketch—it is hardly more than a sketch on a large scale—of the lower portion of the Church of the Salute, and in another room is one of his wonderful foreground sketches, "A Moraine," in which every touch has its meaning. He also contributes "A Florentine Nocturne," a painting of the Cellini Perseus and part of one of the piers of the Loggia, seen against a dark star-sprinkled sky. It is an interesting effort, but we do not quite understand the tone given to the statue as part of a night effect. Miss Alice Fanner's landscapes are admirable for bright and aërial effect, especially "The Riverside," certainly one of the best things in the gallery. Among other landscapes, Mr. Sydney Lee, who has established a style of his own in painting both mountain scenery and buildings, has made a grandly built landscape out of "Morning, the Valley of the Rhone." Among other landscapes to be noted are M. Thornton's "Rose Hill Farm," Mr. Spencer Gore's "Applehayes," Mr. Mark Fisher's "Overlooking the Bay" (a more extended scene than is usual with him), and Mr. Montague Smyth's "The Road to the Sea." We do not know what Mr. Nelson Dawson is aiming at in his large work supposed to be sea-painting, in the centre gallery; his small sketch, "The Schooner," in the first room, shows that he can draw the sea and a ship very well, when he does not aim at thunderous effects in oil. Mr. Henry Tonks shows good colour in the interior called "Rustic Pageantry," though the figures are not attractive (for a figure to be pretty or attractive seems to be cardinal sin at the New English Art Club); and Mr. Orpen, in "The Rest," a group of a male and female tramp and their show bear, has made what is a really pleasing composition, a picture in the true sense of the word. In the first two rooms there are a good many clever and interesting small sketches of landscape and buildings.

The Leicester Galleries.

At the Leicester Galleries there is a collection of some sixty of Mr. Herbert Marshall's water-colour drawings of London scenery—"The Streets and River of London," a class of subject which he has made his own, and which no one else treats so well in the way of getting out of London scenes all the picturesque effect which is inherent in them, but which many who are not painters do not seem to realise. There is, perhaps, however, one criticism to be made about them—that very well-known London sites do not always seem very recognisable in his translation of them into painting. The buildings may be all accurate in representation, yet somehow we find ourselves looking at the catalogue for the name of a square or a street which we are perfectly familiar with, but do not at once recognise in the picture. Perhaps the artist's reply would be that it is the business of his art to transfigure them out of their everyday aspect, and that if the spectator does not see that effect in the real scene he might be met by Turner's reply to a critic who could not see Turner's colouring in Nature: "Don't you wish you could?" However, of the artistic beauty of the drawings there can be no question, nor is it necessary to cite particular examples; all are good in an artistic sense; we only complain that in two of them the architecture of the War Office and of St. Martin-in-the-Fields is rather carelessly treated. In another room at the Leicester Galleries is a collection of water-colour drawings of "Egypt and the Italian Lakes" (a rather curious juxtaposition) by Mr. Talbot Kelly, who has been hitherto best known as an illustrator of Egypt. Mr. Kelly draws architecture exceedingly well, both in his Italian and his Egyptian studies, in which buildings or ruins of them are the dominant subject. His landscape effects give a little too much impression of "picture-making," except in those which show the sandy solitudes of the Arabian desert, which have a great look of reality about them. Some of the Italian lake scenes, however, if they seem a little conventional, are very charming in their way, notably "Cold Wind at Bellagio" and "A Quiet Afternoon on Lago Maggiore."

NOTES FROM PARIS.

It may be remembered that in commemoration of the visit of Queen Victoria to Paris in 1855, the name of "Avenue Victoria" was given to the large street opposite to and axial with the Hôtel de Ville. To carry on the same idea, the Paris Municipality now propose to give the name "Rue Edouard VII." to the part of the Rue St. Martin comprised between the Quai des Gesvres and the Rue de Rivoli. This joins the Avenue Victoria at right angles.

The Service des Promenades of the Paris Municipality have transformed into a garden the portion of the Champs Elysées formerly occupied by the Franconi Circus. In the centre of the new garden will be erected the bronze equestrian statue by Pradier, which formerly decorated the façade of Hittorf's building called the Cirque de l'Imperatrice.

An exhibition of drawings of architects now or formerly pupils of the Ecole des Beaux-Arts, has been opened at the Ecole.

The Académie des Beaux-Arts has elected, as a corresponding member in the section of architecture, Herr Von Ihne, of Berlin.

Two interesting exhibitions have been opened in Paris; one of the works of modern medallists, at the Petit Palais; the other of works in glass and crystal, at the Musée Galliera.

The Municipal Council is to be occupied shortly with a scheme for the prolongation and enlargement of the canal de l'Ourcq. This will include the formation of two large basins at la Villette, near the Porte d'Allemagne and the Porte de Flandre. The cost of the whole scheme is estimated at 140 million francs.

The Government have commissioned M. Dernaz as architect for the transformation into a museum of the old Seminary of the Place Saint Sulpice, which is eventually to take the place of the Luxembourg Museum. The work, which will be commenced at the close of the present year, will occupy two years, and is estimated to cost upwards of £50,000.

A society, under the name of "Société d'Etudes," has been formed with the object of erecting a large exhibition building on part of the ancient fortifications site near the Porte Maillot, Bois de Boulogne.

M. Besnard, the eminent French painter, has been commissioned by the Dutch Government to decorate the large hall of the Palace of Peace at the Hague.

A committee has been formed with the object of raising a colossal monument, in the form of a pyramid or obelisk, on the heights above Algiers, in memory of French soldiers who fell in the campaigns in Algeria.

FIRE PROTECTION IN A LONDON HOTEL.

An appeal, under section 22 (1) (*a*) of the London Building Acts (Amendment) Act, 1905, by Mrs. Mary Clark, against the refusal by the London County Council to issue a certificate pursuant to the section of the said Act relating to "protection against fire in certain new buildings," in respect of the building known as the Berners Hotel, Berners Street, W., came before the Tribunal of Appeal at the Surveyors' Institution. As the appellant was a client of Mr. John Slater, a member of the Tribunal, it had been temporarily reconstituted as follows: Mr. Felix Cassel, K.C. (president), appointed by the Secretary of State; Mr. J. W. Simpson, appointed by the Council of the Royal Institute of British Architects; and Mr. Alexander R. Stenning, past president of the Surveyors' Institution, appointed by the Council of that body.—Mr. Bodkin (instructed by Messrs. Bennett and Ferris) appeared for the appellant; and Mr. Cecil Walsh (instructed by Mr. Chilvers, of the Solicitors' Department of the London County Council) for the respondents.—Mr. Bodkin submitted that the building had been constructed with the most scrupulous care to provide proper means of exit, and that, having regard to the size and character of the building, to put up screens in the corridors, as required by the County Council, would not only defeat the object of that body, but would be a serious inconvenience in the management of the hotel. The guests and servants would have to go through swing doors every time in getting to the lifts and staircases. Moreover, the presence of such doors might facilitate robberies, as the doors could easily be wedged by criminals. The appellant therefore asked that the stipulations as to screens should be reviewed.—Mr. Frederick Izant, chief surveyor to the Phœnix Assurance Company, Ltd., said that he had specialised in the study of buildings with a view to fire and smoke prevention. The Berners Hotel was constructed of incombustible materials, and the corridors and staircases were entirely free from draperies of every kind. The passages were exceptionally roomy and well ventilated. In the unlikely event of a fire occurring there was no fear of smoke entering the staircases, as any outbreak would be practically stamped out at once.—Mr. John Slater, the architect of the hotel, said that in his opinion there was no reasonable risk of smoke or fire, and he did not think there was a safer building in London.—The hearing of the appeal was adjourned until June 9th.—"*Times.*"

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BOOKS.

The Styles of Ornament.

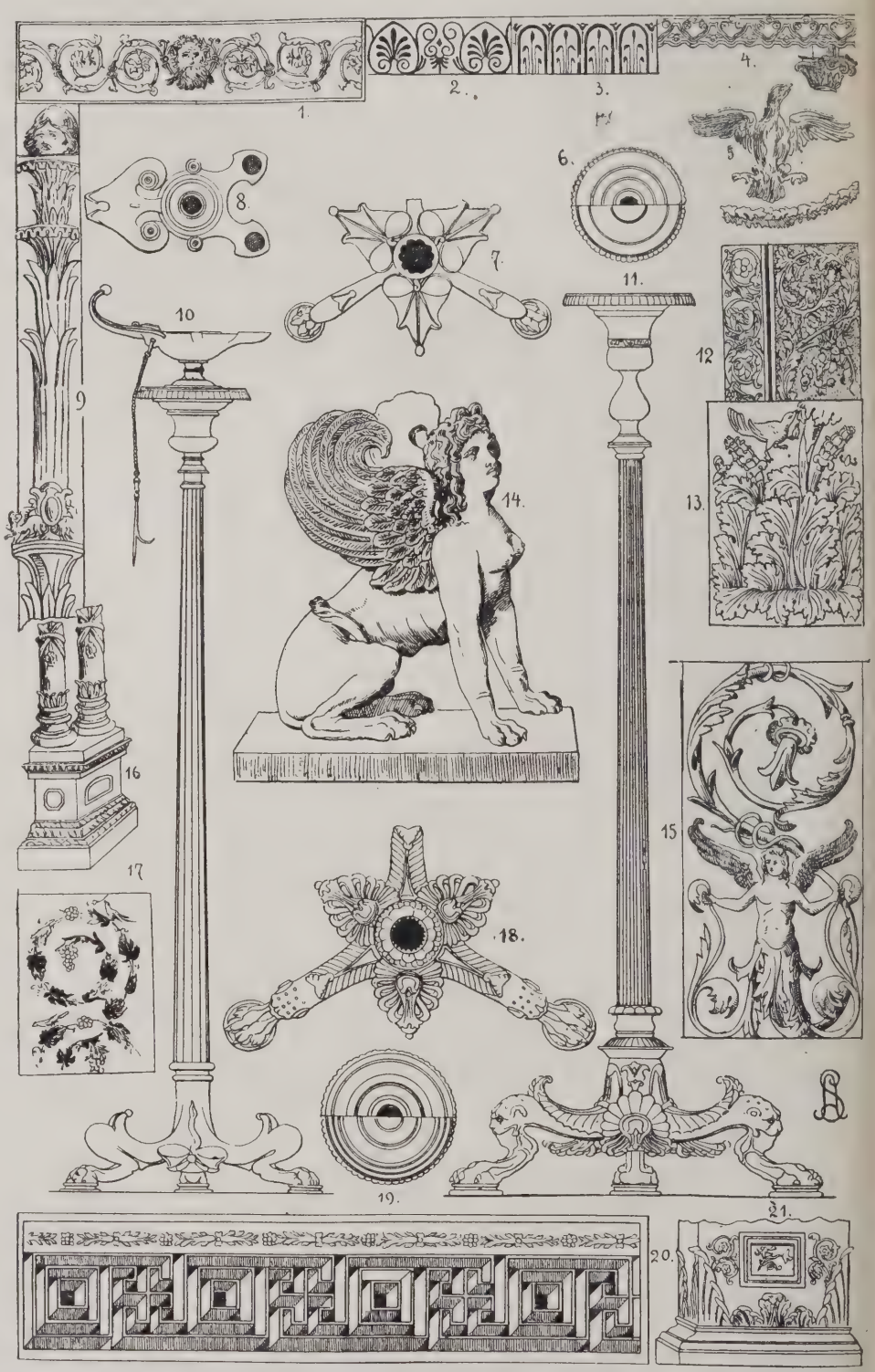
Of the two most obvious methods of dealing with the styles of ornament, the chronological method has much to recommend it in preference to the comparative method. It is not only more simple but is more logical, and perhaps on the whole more useful than any more purely arbitrary method, because it enables one to trace the successive stages of development. It is also necessarily more prolific of examples than would have been required by the other method, and the 400 plates, many of them comprising more than a score of separate figures, bear testimony not only to the author's patience and industry but also to his skill as a draughtsman. These, of course, constitute the value of the book, the letterpress being naturally subsidiary. It is written in simple and straightforward, not to say absolutely bald, style, but on the whole one is rather grateful for the absence of disquisition. Enough is said to elucidate the illustrations, and in such a work anything further would be rather a hindrance to its utility as a reference book; in which capacity it is likely to prove of signal service, since it deserves, we think, the description applied to it by Mr. R. Phené Spiers in his "Editor's Preface," that "indeed the volume forms a veritable encyclopædia of the evolution, development, and application of ornament in architecture and the decorative arts throughout the ages."

Beginning with prehistoric and primitive ornament, the author couples these terms in consideration that the ornament of the prehistoric races is still current among the uncivilised tribes of to-day. The author remarks of this class of ornament that it is "purely geometric," consisting mainly of zigzags, curves, and circles, the artist seldom venturing to depict the figures of men and animals, and succeeding very indifferently when he is bold enough to make the attempt.

Egyptian ornament, with its wearisome insistence on the flowers of the lotus and the papyrus, and its many peculiar conventions, is on the whole rather lacking in life and spirit, though not in skill of draughtsmanship. Persian ornament was more elaborate in detail, but less dignified in the general result. The Phœnicians, who were a nation of traders, strongly imbued with the commercial rather than with the artistic spirit, were more imitative and eclectic than creative, and in their work Egyptian-Assyrian influence is chiefly observable.

Indian work reveals much more spirited conception and luxuriousness of detail, and shows, at various periods, traces of Persian and Greek influence. With Greek ornament we reach almost the perfection of grace in decorative design. The author adopts its classification into four epochs: (1) The Mythical or Heroic, from the earliest times to 1104 B.C.; (2) the Doric or Archaic, from 1104 to 470 B.C.; (3) the Attic-Doric and Attic-Ionic, the period of the Erechtheion; and (4) the Alexandrian, from 338 to 146 B.C., which included the development of the Corinthian style. Etruscan art owed much to the influence of Phœnicia and Carthage, and even more to Ionic influence, but nevertheless the Etruscans had strong characteristics of their own, which in turn had considerable effect on Roman art. Twelve plates, each containing about a dozen figures, illustrate Roman ornament, the examples shown being mainly architectural. Pompeian art reached a high degree of excellence, and is with difficulty differentiated from Roman art, but shows more of luxuriant fancy, more freedom, and less severity.

Sections on Celtic ornament (1) in France and Germany and (2) in Great Britain and Ireland complete the relics of antiquity. Under the heading "The Middle Ages" we get synopses of early Christian onament, including Lombardo-Byzantine in Italy; Visigothic in Spain; Italo-Byzantine in Italy, and Frankish; Byzantine, Romanesque, Russian, Mahometan, including Arabian, Moorish, Saracenic, Ottoman, Persian, and Indo-Saracenic; Gothic, comprising France, the Netherlands, England, Germany, and Austria, Italy, and Spain; Chinese; and Japanese. Concerning Japanese work, it is remarked that the Japanese ornamentation is not so conventional as the Chinese, the former being more inclined to take their models from Nature. "The Japanese have adhered to the original models introduced from China through Korea, whereas the Chinese in some cases have entirely departed from them. Thus the Japanese pagoda represents "the same type of design as that which was first built by Korean carpenters at Horiuji in 607 A.D., and is still carried out at the present day, whereas the Chinese gave up the timber structure a few centuries later, and introduced one built in brick, which, in their country at all events, was not liable to be overthrown by earthquakes, as it might have



Reference.—Figs. 1-5, 9, 16, 20, 21: From Pompeian mural frescoes (Roux ainé). Figs. 6, 7, 8, 10, 11, 18, 19: Bronze candelabra (Mauch). Figs. 12, 13, 15, 17: From Pompeian mural frescoes (Reichholt). Fig. 14: Later Sphinx of bronze (Baumeister).

POMPEIAN ORNAMENT.

(From Speltz and Spiers' "The Styles of Ornament." By permission of Mr. B. T. Batsford.)



Reference.—Figs. 1 and 4: Capitals and pedestals of columns in the Temple of Minerva Polias at Athens (Mauch). Fig. 2: Pilaster-capital from the hexastyle or eastern portico of the Erechtheion, Athens (Mauch). Figs. 3, 6, and 7: Details from the door of the Erechtheion in Athens (Mauch). Fig. 5: Capital from the interior of the Temple of Apollo at Bassæ, near Phigaleia (Mauch). Fig. 8: Capital from the Temple of Neandria (Lübke). Figs. 9, 11, and 12: Grecian antefix of the time of Pericles (Libonis). Fig. 10: Caryatid of the Erechtheion at Athens (Mauch). Figs. 13 and 14: Capital and anta from the temple of Minerva Polias at Athens (Mauch). Figs. 15 and 16; Greek coins (Lübke).

IONIC ORNAMENT.

(*From Speltz and Spiers' "The Styles of Ornament." By permission of Mr. B. T. Batsford.*)

been in Japan." The tonical interest of this extract is obvious, and it is further remarkable as showing how the more go-ahead people have been in this instance compelled to conservatism by climatic conditions. The examples of Japanese ornament are not altogether happy.

The examples of the ornament of Renaissance and modern times are naturally very copious, occupying about one-half of the book. We have not had time to examine them in detail, but a rapid glance through the 200 plates of figures shows that they are a representative collection, culled from very varied objects, and from all the periods and countries affected by the great revival. A very full index of illustrations, according to subject and material, greatly enhances the value of the volume as a work of reference; in which character it makes a very powerful appeal, not only to architects and designers, but to all who are interested in art—to all, in fact, who, in old-fashioned phrase, may be classed as "persons of taste."

*The Styles of Ornament, from Prehistoric Times to the Middle of the XIXth century. A series of 3,500 examples, arranged in historical order, with descriptive text, for the use of architects, designers, craftsmen, and amateurs. By Alexander Speltz, Architect. Translated from the second German edition. Revised and edited by R. Phené Spiers, F.S.A., F.R.I.B.A. London: B. T. Batsford, 94, High Holborn. 690 pages, large 8vo., cloth, gilt, 15s. net.

LEGAL.

Covenants Relating to Building.

What Buildings May be Erected.

Where the lease of a farm for a term of years reserves to the landlord a right to sell part of the farm for "building sites," allowing £2 off the annual rent for every acre so sold, it was held that "land for building sites" was a well-understood expression, referring to something in the nature of shops or dwelling-houses, and that the landlord was not entitled against the tenant's will to sell part of the farm as a site for a small-pox hospital. It has been held, however, that a covenant not to build more than one house on a plot of land is not contravened by building a block of flats upon that plot. Nevertheless, a building structurally divided into two tenements on different floors, with no internal communication, common staircase, or common front door, constitutes two houses within the meaning of a covenant "not to erect more than one house."

As to the Amount to be Expended.

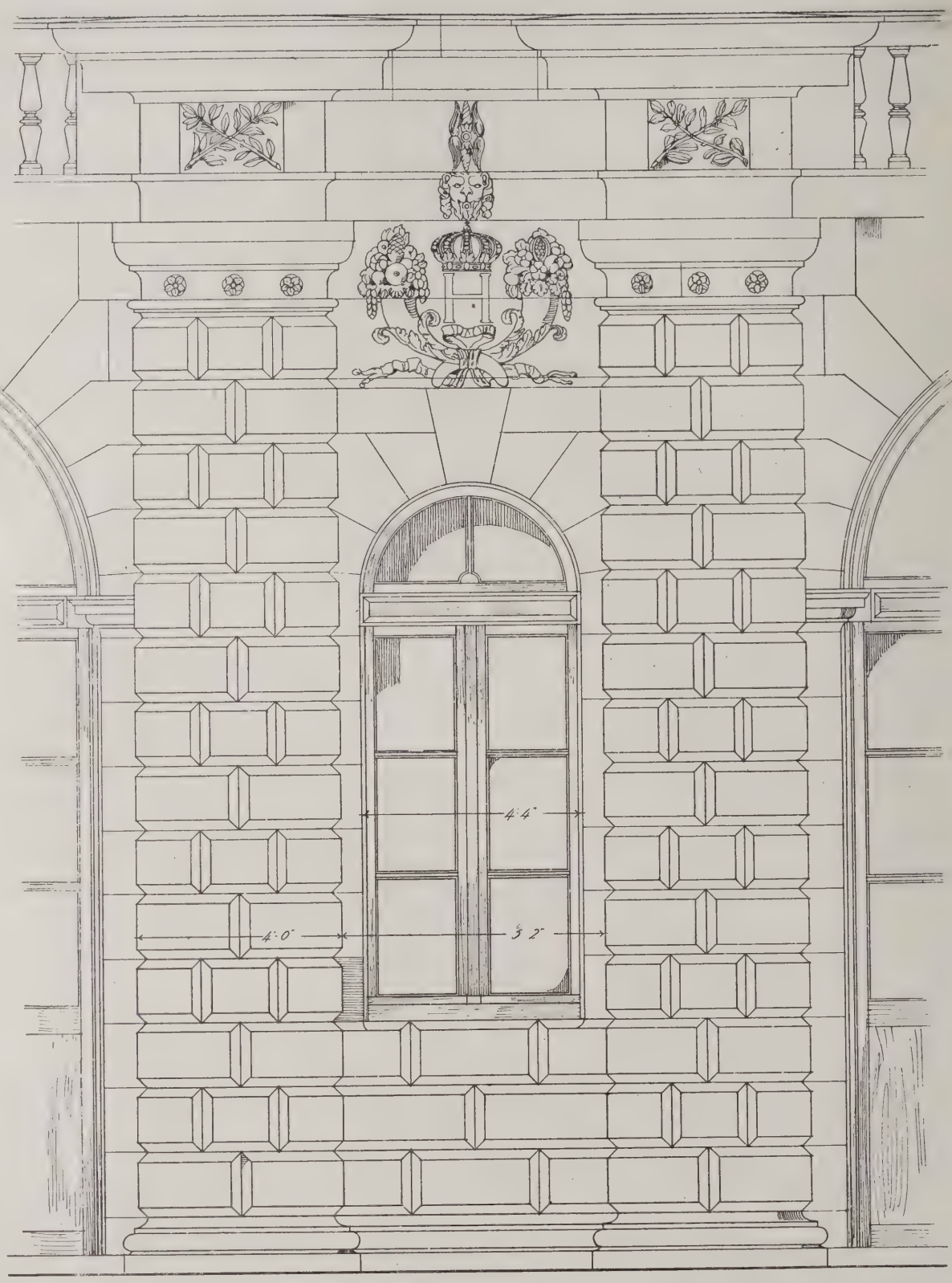
Where it was provided that a house of not less value than £400 shall be erected on certain land, the covenant was held to be broken by building two houses with certain common conveniences, each of less value than £400, but together of greater value. The meaning of the term "private house" in such a case has also been considered, but in no narrow sense, for it was held that a covenant to the effect that private houses only of a certain minimum value were to be built on several plots of land was not broken by the erection on one of them of a stable with a bedroom over it of such dimensions and in such a position that it would still be possible to build a house of the stipulated value upon the plot.

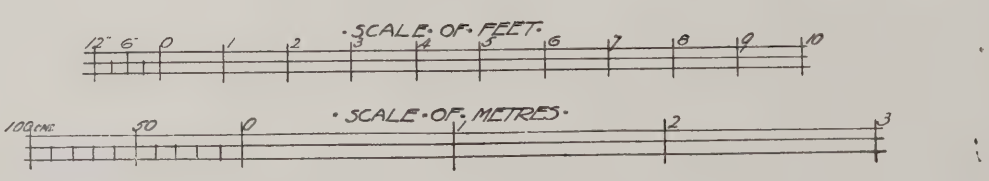
Covenant to Build to the Satisfaction of the Landlord's Surveyor.

A building lease frequently provides that the tenant will erect a house or houses "in all respects in conformity with the specifications, and to the satisfaction of the architect or surveyor for the time being of the landlord, and under his direction and inspection." This is a formidable covenant from which there is no way of escape, inasmuch as by signing the deed which contains it, the tenant voluntarily submits himself to the judgment of the landlord's surveyor. Nevertheless, the appointment of a surveyor by the landlord is a condition precedent to the tenant's liability. In one case, however, where a man covenanted to erect certain buildings within a fixed time, "the whole of which were to be left to the superintendence of the plaintiff and the defendant's son," it was held that the covenant to erect buildings was absolute, and that the clause respecting the superintendence merely granted the liberty for the parties to superintend, but did not impose any duty so as to make the superintendence a condition precedent or concurrent.

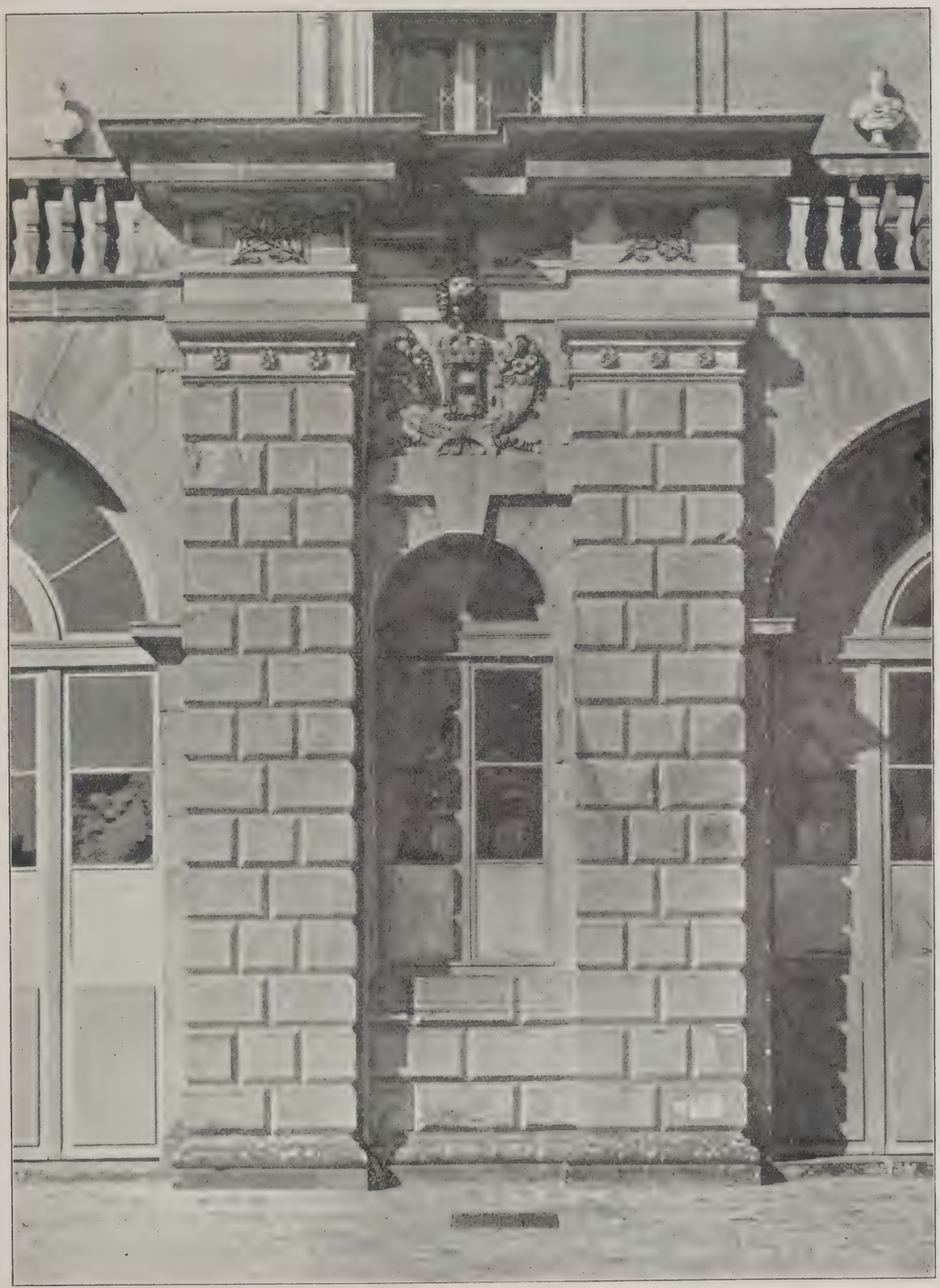
What Amounts to a "Building."

It has been held that the erection of a hoarding for the purposes of advertisement is a breach of a covenant not to erect or make any building on any part of the demised premises. Again, the construction of a railway embankment was held to be a breach of a covenant not to erect any buildings on the land conveyed other than private dwelling houses. Again, where building was not to exceed a certain building line, it was held that bay windows carried from the foundation up to the roof, and projecting 3ft. beyond the building line, were an infringement of covenant.





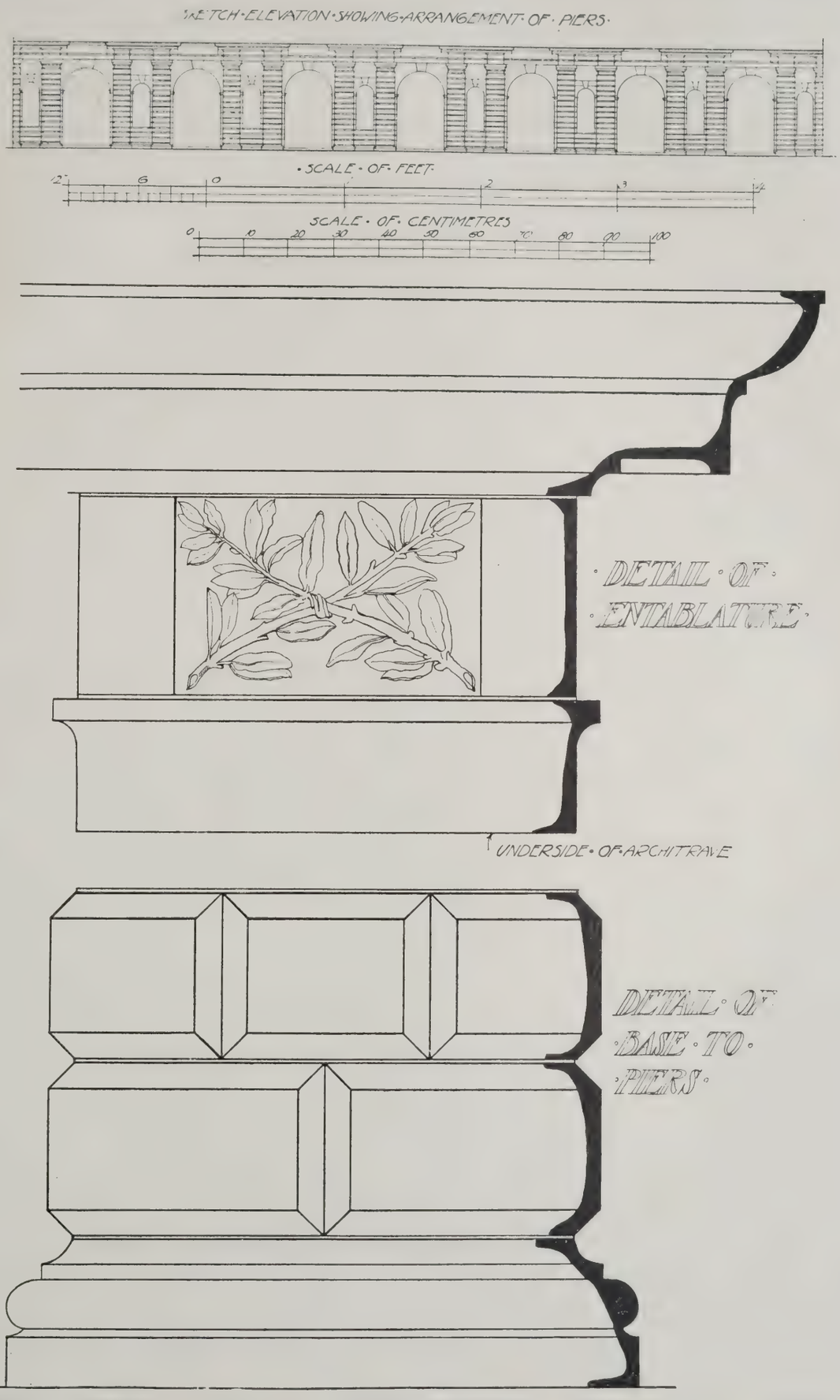
ELEVATION OF PIERS IN THE COUR DE LA FONTAINE, FONTAINEBLEAU, FRANCE.
DRAWN BY E. A. R. RAHBULA.



There is a range of these piers across the entire width of the façade, fronting the long apartment known as the Galerie de Henri IV., and they are among the few strong pieces of design that remain at the second Palace of the French monarchs. Piers and walling are in stone. Philibert de l'Orme did a considerable amount of work at Fontainebleau; but this example of French Renaissance is of later date, being by one of the several architects employed by Henri IV. to carry out the extensive alterations and additions he made.

PIERS IN THE COUR DE LA FONTAINE, FONTAINEBLEAU, FRANCE.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS



DETAILS OF PIERS IN THE COUR DE LA FONTAINE, FONTAINEBLEAU. DRAWN BY E. A. R. RAHBULA.

NEW BUILDINGS.

PROPOSED.

Ashington.—It has been decided by the Urban Council to undertake the erection of a new Council chamber and municipal offices on a site leased from the Duke of Portland, near the railway station, and tenders for the work will be invited at an early date. The new building will have a frontage of 48ft. to the Station Road, and one of 72ft. to a proposed new side street 30ft. wide. A central entrance on the ground floor will give access to the whole suite of offices, which will include two large offices for the surveyor, and a spacious rate-collector's office on the ground floor, also two large rooms for the purposes of the lighting department, and one for the accommodation of cycles. On the first floor will be the Council chamber, measuring 46ft. by 22ft., with a large ante-room and two committee rooms, while the upper storey will be devoted to storage purposes. The front is to be of stone in the Georgian style, and a tower will figure at the head of the south-west corner. The estimated cost of the buildings is about £3,000, and the designs are by a local architect, Mr. Osborne Blyth.

Belfast.—Mr. P. C. Cowan, M.Inst.C.E., Chief Engineering Inspector of the Local Government Board, has generally approved a scheme concerning which an enquiry has been held in the City Hall, with regard to a petition of the Belfast Corporation praying for an order confirming a scheme made by them within the meaning of the Housing of the Working Classes Act, 1890. This concerns the improvement of certain unhealthy areas, known as the Hemsworth Street, Boundary Street, Gardiner Street, Hamill Street, Stanley Street, Little York Street, Matilda Street, and Christian Place areas. The application for sanction to a loan of £116,342 5s. for the purpose of carrying out the above scheme was also approved.

Bispham.—The following plans have been approved by the Urban Council:—Villa residence, Queen's Drive; estate plan, Queen's Drive; alterations to outbuildings, Nos. 3 and 5, Warbeck Drive; villa residence, Queen's Drive.

Chorley.—The Town Council has approved the following plans:—Five houses in Geoffrey Street; shop fronts to Nos. 122 and 124, Pall Mall; workshop in Yarrow Road; detached cottage in Queen's Road; house in Bolton Road; addition to Central Bakery in George Street; three cottages in Hollinshead Street; conversion of Chorcliffe House into two houses.

Clydebank.—The Dean of Guild Court has approved the plans of a new higher grade school in the burgh, which is to be erected close to Clydebank Public School, with accommodation for 390 pupils, at a cost of about £14,000. A workshop is provided for manual instruction, together with a laundry, cooking-room, laboratories, drill hall, gymnasium, art-room, etc.

Coventry.—The Borough Council has approved the following plans:—Two houses, Broomfield Road; extensions to erecting shop, Radford Fields; warehouse and carpenter's shop, Upper York Street; eleven houses, Milton Street; additions to factory, Foleshill Road; workshop, etc., Hill Top; eight houses, Berkeley Road; two houses, Stoke Park; one house, Mickleton Road; six houses, Huntingdon Road; additions to the Constitutional Club, Priory Row; two houses, Huntingdon Road; two houses, Stoke Park; house and shop, stores, etc., Stoney Stantion Road; twenty-four cottages and four lock-up premises, Highfield Street and Cross Road; three new streets (to be named "Coniston Road," "Highland Road," and "Aston Road") off Earlsdon Lane; covered yard, Bramble Street; three houses, Caldecote Road; two poultry houses, Nos. 79 and 81, Northfield Road; four houses, Swan Lane; extensions, Jordan Well; polishing shop, Edgwick Works, Canal Road; additions to factory, Far Gosford Street; experimental pulp room, Foleshill Road; packing shed, White Friars' Street; eleven houses, Mayfield Road; institute, with accommodation for caretaker, Stoney Stanton Road; sixteen houses, Mickleton Road; twenty-three houses, Silverton Road; two houses, St. Michael's Road; lock-up shop, St. George's Road; coach-house and stable, Stoney Stanton Road; two houses, Shakespeare Street; two houses, Lythall's Lane; thirty-one houses, Stepney Road; extension to iron shed, Foleshill Road; store shed, Kingston Road; mess room, cycle shed, etc., Station Street West; offices, Harnall Lane East; two houses, Raleigh Road; seven houses, Hamilton Road; house and shop, Caludon Road; four houses, Kingston Road; shedding, Much Park Street; three houses, Centaur Road; two houses, Raleigh Road.

Dundee.—The new college for the training of teachers is to be built on ground immediately behind University College. It is understood that the purchase price for this site amounts to £17,000. Some time will elapse before a start is made with the erection of the buildings, but it is believed that in all about £50,000 will be expended on the scheme, and, if the present negotiations are carried through, there will be ample space available for the erection of a model school, which may eventually be built on the ground.

Hoddesdon.—The Urban Council has approved the plans:—Two cottages in Essex Road for Lord Salisbury, and four houses in the same road for Mr. Maurice Smith.

Stockton.—The following plans have been approved by the Urban Council:—Eight houses in Marlborough Road; two houses in Raby Road; 10 houses in Gladstone Street; 18 houses in Vicarage Avenue, Newtown; three houses in Sydenham Street; and two houses in Dundas Street.

Sunderland.—The Corporation Building Committee has approved the following plans: House and shop, Brandling Street; two houses, Sea View Gardens; grain drying house, 93ft. by 33½ft., Castle Street Brewery; two houses, Belle Vue Drive.

Swansea.—The report of the Swansea Hospital Building Committee recommends the adoption of the entire scheme for additions and alterations to the institution, at a cost of £25,000. The principal items are the raising of the whole of the north and south wings one storey, and enlarging the western block of the north wing (casualty department and Patti Ward).

Walthamstow.—It is proposed to erect a central Church Hall for the parish of St. Mary, Walthamstow, at a cost of £4,000.

Wakefield.—The Corporation has approved the following plans: House in Horne Street; addition to Grammar School, junior department; two houses in Manygates Lane; alterations and additions to house and shop in Kimberley Street; house in Hanover Street; two houses in Dewsbury Road; house in Barnsley Road; six houses in Marsland Avenue and Marsland Terrace; three houses in Welbeck Street; w.c. to house in Welbeck Street; urinal to Trades and Labour Club, Queen Victoria Street; and additions to house at Peterson Road; wash-house to house in Richmond Road; four houses in Berlin Street and Lonsdale Road; four houses in Welbeck Street; latrines and urinal to Sandal Endowed School, Barnsley Road.

IN PROGRESS AND COMPLETED.

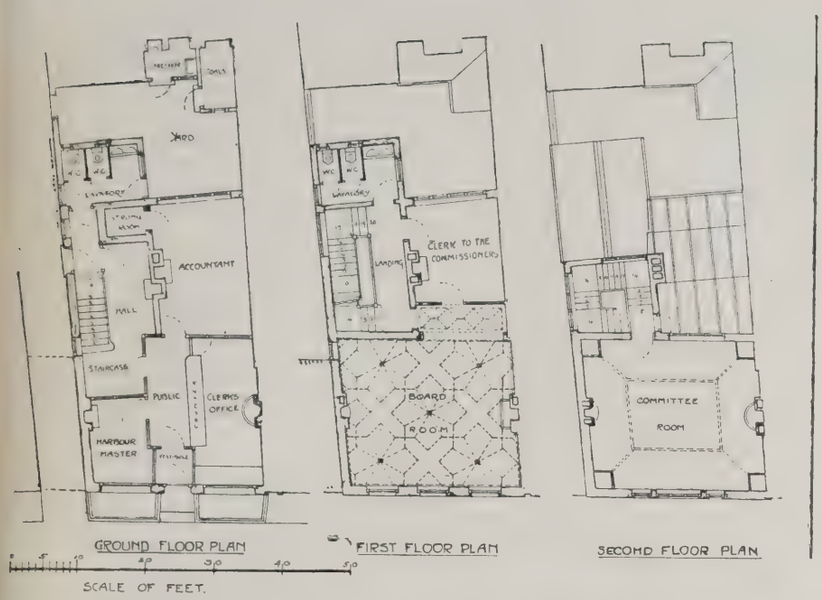
Bishop Auckland.—The foundation stones of the new Baptist Church, at Cockton Hill have been laid, and the total cost of the building, inclusive of site and contingent expenses, will be about £3,500. The architects are Messrs. Clark and Moscrop, of Darlington, and the contractor is Mr. T. Hilton.

Derby.—The foundation-stone of the new chancel, crypt, and vestries, in connection with St. Augustine's Church, has been laid,



This building is erected on the South Quay. The elevation is in Cornish granite and squared Norfolk flints.

GREAT YARMOUTH PORT AND HAVEN COMMISSIONERS' OFFICE.
OLLEY AND HAWARD, ARCHITECTS.



GREAT YARMOUTH PORT AND HAVEN COMMISSIONERS' OFFICE.
PLANS: OLLEY AND HAWARD, ARCHITECTS.

and by the addition of the former the seating accommodation of the church will be increased from 700 to 900. The estimated cost of the additions is £3,250, the contractor being Mr. Henry Chattle, of Empress Road, Derby, and Messrs. Naylor and Sale, Market Place, Derby, the architects.

SOCIETIES' REPORTS.

Gloucestershire Architectural Association.

A business meeting was held in Gloucester, the president (Mr. H. W. Chatters) being in the chair, and others present included Messrs. E. A. Pryer, A. H. Smithson, G. P. Milnes, W. F. Jones, J. F. Trew, H. S. Davis, A. L. Iredale, H. O. W. Grosvenor, D. R. Lyne, and T. Overbury (hon. secretary). Several gentlemen were elected honorary fellows, following which a general discussion of matters closely affecting the welfare of the architectural profession took place.

London Master Builders' Association.

A Council meeting was held on May 26th, when the President (Mr. Leonard Horner) took the chair.

Reports of meetings held on May 3rd and May 24th by the Emergency Committee were submitted, together with report of a Conference held on the latter date.

The Council approved the recommendations made with reference to affiliation fees, and appointed a committee to consider and report upon the question of measurement of slating and roof tiling.

The Organisation Committee's report was submitted by Mr. F. Higgs (chairman), and was approved. Several new ordinary and associate members were recommended to and elected by the Council.

Cases were reported where sub-contractors were specified to do work usually done by builders, and action was determined upon in order to check this growing and objectionable practice.

Amendments of the agreed form of building contract, proposed by a branch of the National Federation, were considered, and referred to the Institute of Builders for consideration.

A Parliamentary Bill to amend the law relating to trade unions was referred to the Parliamentary Committee.

Correspondence relating to various trade and other matters were considered, and instructions given regarding the subjects mentioned.—THOS. COSTIGAN, Secretary.

GREAT YARMOUTH PORT AND HAVEN COMMISSIONERS' OFFICE.

This building is erected on the South Quay, Yarmouth, overlooking the River Yare, and is next to the Custom House and the Old Subscription Library. The building comprises the public, the accountant's, and the harbour master's offices on the ground floor, the board-room and clerks' room on the first floor, and the committee room on the upper floor. On the South Quay there are several very interesting old buildings, which have original early oak panelling and ornamental moulded panel ceilings. The exteriors of many of these buildings had squared flint facings, but have been faced with brickwork. These facts have not been lost sight of in designing this building. The elevation is in Cornish granite and squared Norfolk flints, the entrance doors, the windows, etc., being in oak, and plate glass in heavy leads to the windows. The four coats of arms of Great Yarmouth, Norwich, Norfolk, and Suffolk are in cast bronze. The roofs are covered with the darkest tinted Rosemary tiles. The interior is fitted in oak, the staircases being in keeping with the bulk of the work. The board-room is pannelled in oak and has a moulded plaster ceiling. The contractors for the building were Messrs. Carter and Wright, of Gt. Yarmouth, the sub-contractors being: Messrs. Howard and Son, carvers; Messrs. Manuelle and Sons, London, Cornish granite work; Mr. A. R. Pank, the electric work. The oak furniture was specially designed, and has been carried out by Messrs. Gill and Reigate, of London. The architects are Messrs. Olley and Haward, 5, Queen Street, Great Yarmouth.

COMPETITIONS.

Otley Grammar School.

The plans sent in by Mr. Walter H. Brierley, of York, have been selected in the above competition; the second place (premium £15) was secured by Messrs. Oliver and Dodgshem, of Leeds; and the third place (premium £10) by Messrs. Holliday and Patterson, Manchester.

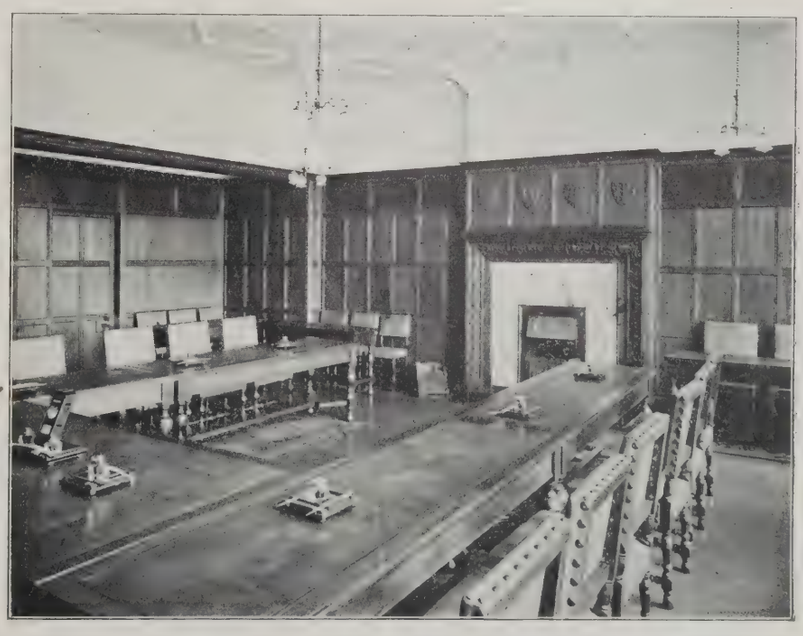
LIST OF COMPETITIONS OPEN.

JUNE 20 YSTRADGYNLAIS SEWERAGE SCHEME. The Rural District Council will pay £20 for the most suitable scheme for sewering Ystradgynlais Lower. Particulars from Mr. T. Watkins, surveyor to the Council, Ystradgynlais.

JULY 9. PROPOSED USHER HALL, EDINBURGH. Particulars given in our issue of April 20th. Inquiries to be addressed to Thomas Hunter, Town Clerk, City Chambers, Edinburgh.

AUGUST 31. COVENTRY. NEW ELEMENTARY SCHOOL in Centaur Road. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

SEPT. 9. THE QUEEN'S UNIVERSITY OF BELFAST. Enlargement of the present buildings at a cost of about £52,000. Particulars in our issue of June 1st.



GREAT YARMOUTH PORT AND HAVEN COMMISSIONERS' OFFICE
THE BOARD ROOM. OLLEY AND HAWARD, ARCHITECTS.

ENQUIRIES ANSWERED.

N.B.—Owing to the very great increase in the number of enquiries received the Editor desires to give notice that answers to the following enquiries can no longer be undertaken :—

(1) Enquiries about buildings to measure in particular towns and districts.

(2) Enquiries which have been questions set in examination papers.

(3) Enquiries which ask for or require the preparation of special designs as part of the answer.

Correspondents are particularly requested to be as brief as possible. The querist's name and address must always be given not necessarily for publication.

The Editor is willing to answer enquiries from readers who require information on architectural, constructional, or legal matters. Such information must be regarded as the gratuitous advice or information of a friend, and not as the professional opinion of one who holds himself out as possessing expert knowledge on the subject in question. The Editor will, however, avail himself of the assistance of a large staff of experts in the matters above mentioned. but the enquiries sent must be on the express understanding that he is not to be held responsible for any delays, mistakes, inaccuracies, or negligences which may occur.

Enquirers whose questions involve possible legal proceedings are strongly urged to consult their solicitors before taking definite steps in regard thereto.

Answers by post will be sent if the enquiry is accompanied by a postal order for 1s. made payable to Technical Journals, Ltd. and crossed, and stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

This fee of 1s. required for answers by post is in no case to be regarded as payment for the answer given, but merely as a registration fee to meet the extra clerical and other expenses incurred in dealing with these special replies.

The Editor also reserves the right of refusing to reply to any question that he may deem to be unreasonable or unsuitable, and it must be understood that both question and reply will, as a rule, be published in these columns.

Compensation after Expiration of "Maintenance."

A. J. B. (LONDON) writes: "Have I any way of obtaining compensation under the following circumstances? A house was in course of erection when the owner wanted an alteration in one of the rooms which necessitated placing the fireplace further into the room than shown on the original drawing. The architect furnished the builder with an amended drawing, but the workmen, instead of cutting out the floor joists, put a thin slab of concrete on the top (this being the only protection between a 'well fire' and the joists), with the result that a fire broke out some time afterwards when the 'maintenance' period in connection with the builder's contract had expired."

—It is clear that a building owner is entitled to rely on the skill and judgment of the builder whom he employs. He may ask for an alteration: it is the business of those who carry it out to see that it is properly done. If, in the case which is mentioned, the architect supplied proper dawings, and directed that the work should be properly done, then he is exonerated, unless, indeed, it can be said that he should have supervised the builder. If a remedy is sought it should be pursued against the builder by action for negligence. He cannot escape responsibility for for such a defect by saying that the maintenance clause has expired. The case of *Bahman v Thompson* (1875), H.B.C. 166, may seem to conflict with this view; but there the certificate of completion and satisfaction given by the employer's architect was made conclusive between the parties with regard to any such disputes. B.

Lattice Girders for Shed Roofs.

X.Y.Z. (DUBLIN) writes: "Please supply information about wooden lattice girders for shed roofs, to be covered with boards and Ruberoid, which I have to specify in detail for roofs of different spans, one being sixty feet. Kindly state the class of timber which is generally used for the purpose, and say what would be the best paint or solution to coat these with for the purpose of preservation. Kindly say also if you know of any book in which the particulars are to be had for the different parts, the same as for the king post roof principles of different spans in building construction books. I should also be glad to know the scantlings of wooden posts for supporting each end of girders, which I consider should be composed of planks bolted together."

—These lattice trusses are generally supplied by a few makers who will give prices but do not publish details of the scantlings for different spans. The usual makers are McTear and Co., Ltd., Kirkliston Drive, Bloomfield, Belfast; The Rex Roofing Company, Greenville Street, Connswater, Belfast; and D. Anderson and Son, Ltd., Lagan Felt Works, Belfast. If the rise be made one-tenth of the span the radius of curvature will be thirteen-tenths of span. The bracing may be placed with the junctions radial, as Fig. 1, or sloping each way to two points equal to span apart and half span below tie-beam as Fig. 2. The scantlings and depth for various spans are somewhere about as follows:—

Span.	Rise.	Tie and Bow.	Braces.
20ft.	3ft. 4ins.	1—5×2	3×¾
40ft.	5ft. 0ins.	2—7×1¼	4×¾
60ft.	6ft. 0ins.	2—9×1½	4½×1

Part elevation of the truss proposed is shown in Fig. 2, and detail at support in Fig. 3. The posts for supporting the trusses will need to be braced to ensure the stability of the structure, and this question of bracing is of more importance than the actual scantlings. Red or yellow fir or deal, which is all one variety, but known in different districts by different names, is commonly used for these trusses; a good preservative, if it be desired to do anything to them, is "Solignum," which is a stain as well as preservative, and made by Major and Co., Ltd., Hull; another is "Carbolineum Avenarius," made by C. A. Peters, Ltd., 8, Castle Street, Arcade, Liverpool.

HENRY ADAMS.

Tunnelling for Sewer.

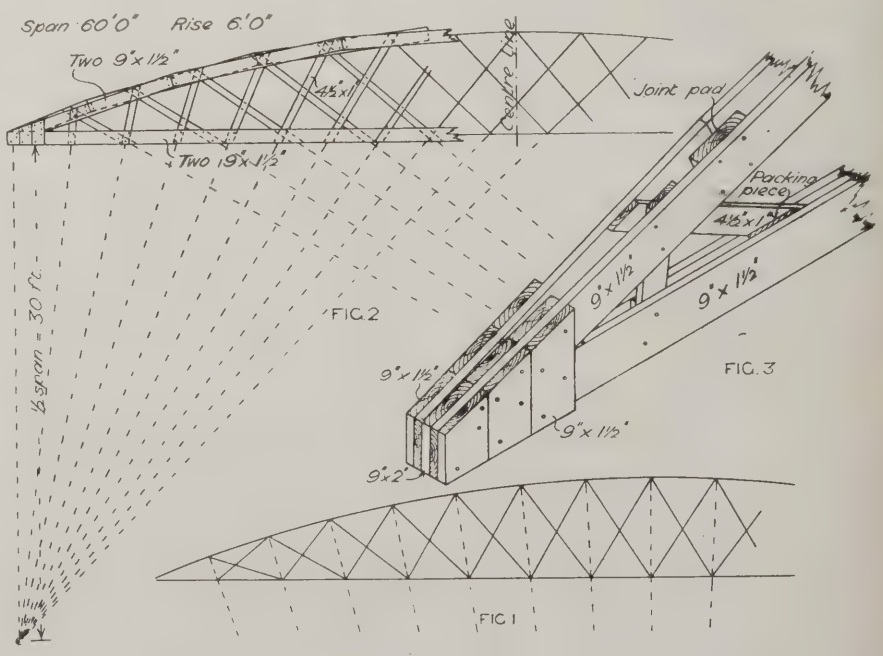
F. T. (NETLEY ABBEY) writes: "A tunnel is to be made between two manholes for a 24in. sewer. The work is to be commenced simultaneously from each manhole. Please give a simple method of procedure to ensure a true meeting?"

—The length of the tunnel from manhole to manhole being only about 250ft., no intermediate shaft will be required, but the tunnel should be driven from each end. At each manhole excavate a shaft 14ft. long and of the width required for the construction of the manhole. Set out the line of the sewer on the surface of the ground and drive in four pegs, one at each end of the two shafts to mark the centre line; then stretch a cord across each shaft between the two pegs, drop a plumb line down at each end from the cord and mark the position of each plumb line by driving a nail into the walling of the shaft next above the head tree of the tunnel. Small plumb bobs on short cords are hung from these nails, and a line sighted through the cords gives the direction of the tunnel. As the depth to which the tunnel is driven increases, further centre nails should be lined in and fixed in the head trees for the use of the miners. Although it would give a more accurate result, it is not necessary to use a theodolite to give the direction; sufficient accuracy being easily attained by the naked eye. Assuming that reasonable care is taken to drive the tunnel according to the direction lines laid down, the accuracy of the meeting will depend primarily upon the care with which the centre lines are fixed and maintained. The engineer or clerk of works should watch carefully for any movement of the timber which would affect the centre nails, and see that the nails do not get accidentally broken off and refixed by the workmen in a different position. He should also have the plumb bobs hung up and check the line of the tunnel each day.

HENRY C. ADAMS.

Percolation of Rain Through Reinforced Concrete Roof.

"CONFERRO" (KINGSTON-ON-THAMES) writes: "I have recently executed a roof in reinforced concrete to cover a room 20ft. ×10ft. on plan, in accordance with accompanying details (not reproduced), but now find that rain percolates through one or two cracks. (1) Could you suggest the cause of these cracks? (2) Under the circumstances, if I tar and pitch over the roof, would this make a good job, or will the cracks open wider? (3) Since designing this roof it is proposed to use the same as a floor. Do you consider it is strong enough as it stands, or how should it be strengthened for this purpose? The flat is largely exposed to the sun, but I presume the amount of sunshine we have had just recently



ILLUSTRATING ANSWER ON "LATTICE GIRDERS TO SHED ROOF."

(March-April) has not been sufficient to cause these defects."

—As our correspondent does not give the size of the reinforcement employed, nor the proportions of the concrete, we are unable to calculate the strength; but we should think the cracks are due to the use of coke breeze as an aggregate. Also, it would have been better to have built the roof level on top, and let the haunching round the joists be below, thus securing better continuity. Probably the reinforcement, owing to the way the roof is constructed does not provide sufficient resistance to reverse bending moment over supports. We do not think the sun has been the sole cause of cracks. If the coke breeze is not of good quality the roof may eventually completely fail. Such concrete should not be expected to be weatherproof without a protection, and we suggest covering it with several layers of tarred paper or felt and sand, or the use of one of the sheet roofings like "Ruberoid" or "Congo." If our correspondent will let us have full details we shall be prepared to consider the strength of the flat for use as a floor. D.

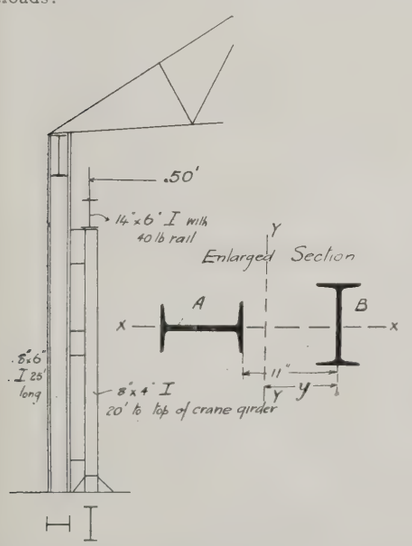
Columns and Crane Girders.

P. E. (BRADFORD) writes:—

I. How is the strength of any stanchion (designed on the principle shown) calculated —viz.—its B.M. Section modulus, and (1) its neutral axis, and least radius of gyration, when standard sections R.S. twist are used?

II. Would it be sufficiently strong if the roof stanchions were calculated separately (one end fixed), the top portions above rail level being found strong enough to resist B.M. from roof truss; and the crane stanchion taken out as least radius of gyration between ties to main stanchion, and $\frac{1}{2}$ value found for same; then for greatest radius the whole length of stanchion taken from rail girder to base, this seems a ready and quick way of arriving at the sections required, if it should be practically correct?

III. Are crane girders sufficiently strong, when the dead load of crane and live load is taken, and x 2, then calculated as concentrated at the wheels on girder, equal distances from centre of girder span, as dead loads?



ILLUSTRATING ANSWER ON "COLUMNS AND CRANE GIRDERS."

(1). The Fig. shows the proposed arrangement redrawn.

Taking the sections given in the sketch, viz., 8″×6″ for section A, and 8″×4″ for section B, we obtain the following data from the tables of standard sections:—

	Area.	Moment of Inertia Parallel XX.	About Centroid Parallel YY.
Section A -	10·29	17·95	110·5
Section B -	5·29	55·66	3·58

∴ Total area of combined section = 15·58 in.². Position of neutral axis YY obtained by moments

$15{\cdot}58 \times y = 10{\cdot}29 \times 15$, $y = \frac{10{\cdot}29 \times 15}{15{\cdot}58} = 9{\cdot}91$ in.

The moment of Inertia of the whole section about YY = $110{\cdot}5 + 10{\cdot}29\,(15{\cdot}921)^2 + 3{\cdot}58 + 5{\cdot}29 \times 9{\cdot}91^2 = 910$ inch units nearly.

Section moduli will be $\frac{910}{11{\cdot}91}$ and $\frac{910}{12{\cdot}09}$ i.e., 76·3 and 75·4 nearly.

Radius of gyration about YY = $\sqrt{\frac{910}{15{\cdot}58}} = 7{\cdot}65$ in.

$I_{xx} = 55{\cdot}69 + 17{\cdot}95 = 73{\cdot}64$.

Radius of gyration about XX = $\sqrt{\frac{73{\cdot}64}{15{\cdot}58}} = 2{\cdot}18$ in.

(2.) The suggested method of procedure would apparently give safe results except that the Bending Moment from the roof truss should be taken for the whole section at the base. An example of the calculations for a case like this will be found in "The Builders' Journal" of April 14th, 1909; in the present case we have first to proceed as above to get the modulus and radii of gyration of the section.

(3.) The writer has dealt somewhat fully with the question of rolling loads on Crane Girders in "The Builders' Journal" of August 11th, 1909. If L is the span of the girder and $\frac{1}{1}$ the distance between the wheel centres, the maximum B.M. if $\frac{L}{1}$ is greater than 1·707 occurs when one wheel is $\frac{1}{4}$ from the centre, and the other wheel $\frac{3l}{4}$ from the centre. The max. B. M. is $\frac{W}{4L}\left(L - \frac{1}{2}\right)^2$ where W is the total load. This will be more accurate than the method suggested by the querist which amounts to B. M. $= \frac{W}{2}\left(\frac{L}{2} - \frac{1}{2}\right)$

The error is $W\left(\frac{L^2}{4L} - \frac{1L}{4L} - \frac{l^2}{16L}\right) - \frac{W}{2}\left(\frac{L}{2} - \frac{l}{2}\right) = \frac{Wl^2}{16L}$. W may very safely be taken as a dead load equal to twice dead load of crane reaction + live load on crane, but many designers would use 1½ times.

Assistants' Qualifications, etc.

C. G. (WATFORD) writes: "Please inform me where I can inspect "Deutsche Bauzeitung." Kindly state also the qualifications essential to an architect's assistant."

—"Deutsche Bauzeitung" can be seen at the Patent Office Library. Generally speaking, it may be said that good draughtsmanship is very essential to success as an architect's assistant. If you feel that you are weak in this branch of the work you should concentrate all your efforts on improving yourself, and more particularly we should advise you to study regularly all forms of freehand drawing, sketching from nature (i.e., from actual buildings), and from the casts of architectural ornament in schools of art and museums. As you have passed the R.I.B.A. intermediate examination you must presumably have arrived at a certain standard of efficiency, and might well study the designing of small buildings, and more particularly of detail, as we should say it is only in exceptional cases that you will need any advanced knowledge of statics, etc., in an architect's office, and presumably you do not want to become an engineer. Such knowledge as it is necessary to obtain in order to pass the R.I.B.A. final examination is about all that an architect usually requires, and judging from what you say you can probably get this from such books as Middleton's "Stresses and Thrusts," Adam's "Designing Ironwork," Hardy's "Graphic Statics." The chief value of a tutor in such cases is that if he knows his business he can save you much time that is otherwise spent in a somewhat tedious groping after first principles.

Right of Drainage.

R. M. G. (ST. ALBANS) writes: "My client recently purchased the two corner houses as etched on plan [not reproduced], and after completing the purchase found that the drains of 11 other houses belonging to one owner ran through his back gardens. There is no mention in the deeds of either owners of any easement or right of drainage, and the property has not been built more than 14 years. The property was originally built by one owner, who was compelled by the local authorities to sign an agreement to the effect that neither he nor his heirs, etc., or assigns would ever call upon the corporation to maintain or repair the drains. This agreement is not mentioned in either sets of deeds. There was a sewer at the time of erection in both roads, and you will notice that houses 3, 4, 5, 6, 7, 8, 9, could have been run through right of way between houses 6 and 7, and that houses numbers 10 to 13 could have been drained into the sewer in the other road. Could you inform me (1) whether the owner of 1 and 2 has the right to disconnect the drains of the other 11 houses, also (2) if the houses have been built long enough to have acquired a right of drainage over my client's property, (3) as the main drains are really sewers, owing to more than one house draining into them, has the corporation the power to prevent my client from cutting the others off? (4) would you consider that the owner of the 11 houses could claim an easement of necessity as contended in *Pyre v. Carter* (about 1876, I believe)? (5) there might have been some difficulty with regard to falls (which I doubt), would this in your opinion go against my client in the event of a law suit? (6) in the event of a blockage occurring on my client's property, has the adjoining owner or the corporation the right to repair same without my client's permission?"

—This is one of those cases where it is difficult to give an answer without seeing all the deeds and documents. R. M. G., the owner of houses 1 and 2, having taken these houses with implied knowledge that the drainage of 11 houses passed beneath the garden, it appears that on the authority of the case cited R. M. G. is bound to permit the sewage to flow through the drain. As to prescription, it is clear that a right to allow sewage to flow through a neighbour's drain can be acquired in 20 years; but nothing less than that is sufficient. The question whether the local authority is or is not liable to repair the drain in the place mentioned depends on whether it was originally a "sewer made for profit" within the Public Health Act, 1875, S. 20. If it was, then the local authority cannot be held liable. But if it was not a sewer made for profit, R. M. G. could call upon the local authority to look after it as a public sewer. He would not be impliedly controlled by the covenant, though it will probably appear that he is expressly affected by it in some clause in his conveyance. X.

Small Churches to Measure near York and Beverley.

"STUDENT" (GLASGOW) writes: "Kindly give the names of some small churches in the vicinity of York or Beverley (suitable for the R.I.B.A. final examination), where permission to measure would be easily obtained."

—A better subject than Skelton Church, four miles N.W. of York, would be hard to find. It has, of course, been frequently measured so that permission is apparently not difficult to obtain. The church throughout is of Early English date, and exceedingly complete. The south doorway is a highly ornate example of the period; in fact, rather unusually so for a parish church, and it is probable that it was executed by the cathedral masons. If a less hackneyed subject is desired, the little church of Kirk Ella, five miles south of Beverley, has a fine Early English chancel, with a good east window, and would be worth measuring on that account. There are also several small parish churches in the City of York suitable for study. G.

Acoustics of a Small Court.

"ACOUSTICS" (BRADFORD) writes: "The enclosed pencil tracing (not reproduced) shows a room with the acoustics of which I have experienced considerable difficulty. The trouble, in addition to street noises, is that, although the magistrate, prisoner, witness, and solicitors are so near to each other, they all have difficulty in hearing the others. About 100 yards of fine wire and half-a-dozen flags have been suspended across the room about half the height, without any appreciable effect. I understand that stronger wire and hollow tubes might be experimented with to advantage, but am at a loss to know on what principles to distribute them or any other gear. If you can put me on the track I shall be greatly obliged, and will notify you as to results."

—We have made calculations so far as the information afforded allows in order to determine the absorption of sound by the bounding surfaces of the room, according to the different materials of which they are composed. From a consideration of the cubical contents and the absorption by the surfaces, we conclude that if the public benches, witnesses, and solicitors' seats are only half filled, there is a probable duration of residual sound about 3 seconds, though if completely filled, about 2.2 seconds. Now, although 2.3 seconds is desirable in a hall intended for orchestral music or singing, it is desirable that there should be none in a hall used for speaking. The residual sound, though in this case it is not in the nature of an echo, gives a distressing reverberation which is often met with in small rooms, and we advise that every endeavour should be made to reduce the duration of the residual sound. This may be done by several means, all consisting in bringing in sufficient absorptive material. Having regard to architectural effect, however, we advise that the plastered walls be covered with a thick canvas, the floor, wherever possible, covered with very thick felt carpet, the witnesses and solicitors' benches furnished with substantial stuffed cushions, thick curtains hung at the sides of the windows and over the doors at side of bench. These measures ought to reduce the duration down to about 1-13 seconds when half filled, and 1 second when filled with people. If there is still some slight annoyance, try lining the inside of the fence to bench with felt, and then finally cover the ceiling with canvas. We shall be interested to hear the result of these remedies from our correspondent in due course.

Corbelling Out on Party Wall.

J. H. H. (MANCHESTER) writes: "I should be obliged if you would enlighten me on the following points. I have on hand an extension to a Wesleyan church, and I find that the owner on one of the adjoining sides has built a cart shed on the whole of the party wall. This was allowed to take place, but he has built brick corbels out to carry a wooden gutter. The height to the eaves is only 5ft. 9ins. above. Can he acquire a right of corbelling out on our ground in this manner? If so, how long will it take? If I want to build against such a wall, can I force him to remove this spout and make a lead gutter, or shall I be forced to do this for him? Shall I have to connect this portion to a drain, as I am removing the present one, which is ours?"

—A right to use the gutter and to corbel out might be acquired by 12 years' continuous user without objection. As it appears that the neighbour in this case is only a bare licensee, the licence can be withdrawn at any time. It would be well to make him give an acknowledgment and pay 1s. or some other nominal sum each year. As he has been allowed to erect the works which he has erected, it seems that if our correspondent desires to build against the wall he must remove the obstruction himself. In drawing up an agreement it would be wise to stipulate that he shall remove the gutter at his own expense when called upon. X.

Hooton Hall, Cheshire.

G. H. (NEWCASTLE, STAFFS), writes: "I shall be glad if you can give me some information respecting Hooton Hall, Cheshire."

—I am unable to find any information relative to Hooton Hall, Cheshire, beyond the guide-book statement that it is modern and now occupied by the Hooton Club.

G.

FEDERATION NEWS.

(*For London Master Builders' Association Report see page 595.*)

Northern Centre.

The quarterly meeting of the Northern Centre of the National Federation of Building Trades Employers was held at the County Hotel, Newcastle-on-Tyne, on Wednesday, May 11th, the President, Mr. A. J. Forsdike, Sheffield, in the chair.

The minutes of the annual meeting held in London on January 4th, which had been circulated, were taken as read, confirmed, and reported upon.

The secretary was instructed to write Mr. G. Macfarlane, expressing the regret with which the members learnt of his illness, and congratulating him on his appointment to the Commission of Peace for Manchester.

The further proposals of the Lancashire and Cheshire Federation for amending clause 30 of the National form of contract were then considered, and representatives of that Federation explained the same. Ultimately it was resolved that the amended proposals now submitted be recommended to the National Federation in substitution for those sent from the annual meeting in June last.

The proposal to amend Rule 4 of the National Federation rules to provide that the ex-president shall become a member ex-officio of the National committees was considered, when the following resolution was adopted:—"That it be a recommendation from this Council to the National that the rule be amended so as to allow ex-presidents to hold office on the various committees of the National for at least two years after giving up office."

The subscription sub-committee reported that they had not yet been able to come to any agreement on the re-allocation of the centre subscription to the National, and stated that they had that day instructed the secretary to again communicate with the Lancashire Federation thereon

The same sub-committee reported that they had deferred the question of "uniformity of Federation rules in the centre" until they had decided something definite regarding the subscription allocation.

The secretary reported that, in accordance with the resolution passed at the annual meeting, the account of the representative on the N.A.O.P. Joint Committee had been before the National Federation, and it was agreed that the same be sent on to the L.C. and N.W. Federation.

It was agreed that the half-yearly meeting of the Centre be held at Chester in the evening prior to the National Council meeting in July.

Attention was called by the Northern Counties representatives to a case which had recently been before Mr. Justice Ridley, of one of their members who had contracted to do certain plumbing work according to plans and specifications, the quantities for which had been found insufficient, requiring the member to have to supply extra materials and labour for which he had lodged his claim. The decision of Mr. Justice Ridley, however, was given against the employer, on the finding—"That the quantities being the basis of the contract, he was held by those quantities for the completion of the work, though they may not be fully sufficient." It was also reported that the Northern Counties Federation had lodged an appeal against the decision, and, after some considerable discussion thereon, it was felt that the same was a National question, and one which should be taken up by the National Federation, and it was agreed:—"That the case be drawn up, and that the same be sent on from this Executive to the National Federation, with the request that they will take the matter up in the interests of the National Organisation." — JAMES DENVER, Secretary.

Northern Centre Board of Conciliation.

The annual general meeting of the above Board was held at the County Hotel, Newcastle-on-Tyne, on Wednesday, May 11th, Mr. Thomas Wilkinson, Middlesbrough, presiding over a full attendance of representatives of the employers and operatives.

The minutes of meetings held during the year, which had been printed and circulated, were taken as read, and were duly confirmed.

The accounts for the year ending April 30th, 1910, were passed for payment in accordance with statement presented by the secretaries.

Mr. Thomas Wilkinson, Middlesbrough, was re-elected chairman for the ensuing year, and Mr. D. Richards, J.P., Southport, was re-elected vice-chairman.

Messrs. James Denver, Manchester, and Coun. Alfred Gould, Hull, were re-elected the joint secretaries of the Board by the respective parties.

The proposals to amend the Conciliation Board rules as sent up by the various operative societies were then considered seriatim, and after some considerable discussion thereon, and votes having been taken on the various proposals, it was decided to make no recommendation to the National Board.

The secretaries reported that they had received an appeal from the Sunderland Local Board, in the case of an employer who was importing ready-worked masonry into the Sunderland district against the local working rules, and although the local Conciliation Board had given a decision against the employer, he had not carried the same into effect.

The representatives from both sides then attended and explained the case, and, after hearing the explanation of the employer complained of, it was felt that he had unwittingly entered into a contract arranged by the architect, and ultimately a resolution was passed requesting the employer to conform to the working rules, and affirming the right of the men to decline to work on the job in question.

It was decided to hold the next annual meeting of the Board in May, 1911, at Southport.

JAMES DENVER, Employers' Sec.

Lancashire, Cheshire and North Wales Federation.

The monthly meeting of the Administrative Committee of the Lancashire, Cheshire, and North Wales Federation was held at the Boardroom, Manchester, on Thursday, May 12th, Mr. W. Cooke, jun. (president) in the chair.

A deputation from the Manchester master masons attended with respect to the difficulty they were experiencing through the introduction of ready-worked masonry into the Manchester district from lower-paid towns, and after explaining their positions they suggested that the worked stone rule should be amended. It was ultimately agreed to refer the subject to the Masons' Trade Committee of the Federation to consider and report.

A letter was read from Mr. R. Williams, the Divisional Officer for Labour Exchanges, complaining of the lack of support accorded the Exchange by building trade employers. After some consideration, it was resolved that the secretary reply as follows:—"That no doubt the scarcity of work is the reason for the Exchanges not being more frequently called upon for men, and that when more workmen are required employers will probably avail themselves of this means of obtaining them."

A recommendation from the Bricklayers' Trade Committee on the question of terra-cotta manufacturers supplying materials direct to architects and proprietors without allowing any margin of profit to the builder was considered and adopted.

The question of appointing a consulting solicitor for the Federation was then further considered, and a recommendation was adopted thereon to send to the annual general meeting in June.

Replies from the local associations were read respecting the suggested appointment of a building surveyor or surveyors to the Federation, but as most of them were adverse to the proposal, it was agreed "that no further action be taken in the matter at present."

Correspondence was read with the Crewe Works Department of the L. and N.W. Railway Co., respecting the charge of 5s. for copies of the specification for new stables at Liverpool, and it was agreed to take no further action in the matter until other complaints are received.

A recommendation from the Offices Sub-committee "that notice be given on June 24th next to vacate the present offices, and that the secretary be authorised to look out or advertise for more convenient premises," was duly confirmed.

A letter was read from the Leigh secretary reporting that one of the Bolton members was employing four operative painters who were strike-hands from Leigh, whom he could not conveniently discharge. The secretary was instructed to communicate with the Bolton Association accordingly.

The secretary reported a complaint from Birkenhead against a Chester employer for importing ready-worked stone into the Birkenhead district, where wages were higher, but, pending a reply from Chester, it was considered that no action could be taken at present.

A letter was read from the Liverpool Association on the subject of the Federation generally, and it was agreed that a deputation be invited to attend the next meeting of this committee on June 10th.

—JOHN TOMLISON, Secretary.

Manchester, Salford and District Association.

A meeting of the Committee of the Plasterers' and Painters' branch of the Manchester, Salford, and District Association was held at the Boardroom, Manchester, on Wednesday, May 4th, Mr. James Cadman presiding.

A complaint which had been received from the Operative Plasterers' Society against a firm of fireproof construction specialists (members of the association) to the effect that they were employing other than plasterers to do plastering work was considered, and a representative of the firm attended and explained their position. After considerable discussion it was felt that the question was one of demarcation of what is plasterers' work, and it was ultimately agreed to refer the matter to the Joint Standing Committee, under the N.A.O.P. agreement, to be held on May 10th.

A special meeting of the joiners' and builders' branch of the association was also held on May 5th, when the question of the depositing of open schedules to architects and public bodies was considered, and several members gave their experiences thereon. It was ultimately resolved that the following be recommended to the annual general meeting of the association for adoption as a rule of the association on the subject.—"That no member of this association shall deposit open schedules with architects or public authorities for any work within the Manchester area, unless with the consent of the general committee of the association."

An application for membership from Messrs. John Hibbert and Co. was approved and recommended to the general committee.

The annual meeting of the Manchester Board of Conciliation was held at the Employers' Boardroom on Thursday, May 5th, when Mr. Macfarlane occupied the chair.

The minutes of the annual meeting held in May, 1909, were read and confirmed. The accounts of the Board for the year were passed for payment.

Mr. Henry Matthews, J.P., was elected chairman of the Board for the ensuing year, and Mr. T. R. Jones was re-elected the vice-chairman.

Messrs. James Denver and J. M. Hughes were elected the Joint Secretaries of the Board.

A vote of thanks was passed to the officers and members of the Board for their services during the past year, which concluded the formal business, and the meeting terminated.

The annual meeting of the Plasterers' and Painters' Branch of the association was held on Tuesday, May 10th, when Mr. James Cadman presided.

Mr. Chas. E. Harwood was elected chairman of the branch for the ensuing year, and Mr. James Cadman was elected the vice-chairman.

Messrs. T. A. Locan, John Cadman, James Higson, J.P., O. Corrigan, W. J. Roberts, J. W. Hindshaw, together with the chairman and vice-chairman ex-officio, were elected on the branch committee, and also the joint standing committee under the N.A.O.P. agreement for the ensuing year. Messrs. Locan, Jackson, and Gibbons, were elected on the joint working committee with the Manchester Master Painters' Association.

A meeting of the Joint Committee under the N.A.O.P. agreement was held at the close of the above meeting to consider a complaint received from the Operatives' Society against one of the members for employing other than plasterers to do plasterers' work. After hearing the evidence of both sides, it was felt that the question was one which could only be dealt with by the "Demarcation Committee," to whom it was agreed to refer the same. The operative secretary also called attention to the complaint he had lodged against one of the Bolton members who was working in the Manchester district and not paying walking time expenses, and it was explained that the matter had been taken up with the Bolton Association.

Some discussion arose regarding the interpretation of clause 3 of the agreement contained in the working rules, and correspondence which had taken place between the secretary and the operative society was read. It was ultimately agreed that, prior to any action being taken in future by the employers, the same be reported through the association secretary to the operative society, who will take the matter up with their member with a view to having any defective work made good immediately.—JOHN TOMLISON, Secretary.

Sheffield.

The monthly meeting of this association was held on May 12th, the president (Mr. Wm. Longden) in the chair.

Building Trades Exhibition.—A report was given as to the Building Trades Exhibition to be held at the Sheffield Drill Hall from the 14th to 22nd October next, under the auspices of the Sheffield Association, the Yorkshire Federation of Building Trades, and the Sheffield Architects' Society.

Proposed Excursion to France and Belgium.—As will be remembered, the Sheffield builders, accompanied by their friends from several other Yorkshire associations, paid a visit to Belgium two years ago, and last year the Belgian builders who received them so enthusiastically in Antwerp and Brussels paid a return visit, and, in addition to spending a couple of days at Sheffield, they were entertained by the Liverpool and London Associations. On their visit last year, the Belgian builders practically extracted a promise from their Yorkshire friends that they would visit the Brussels International Exhibition this year. The matter has been considered, but, in view of the congestion in Brussels during the period the Exhibition is open, and also of the fact that many of the members who have recently visited Brussels have not had an opportunity of comparing it with Paris, it has been thought that the excursion would be more interesting if made by way of Paris. A circular has been issued fixing the excursion to start from Sheffield at 8.50 a.m. on Saturday, July 2nd, friends coming from towns north of Sheffield catching this train, so that the whole party will go forward together. The party will go by way of London, Folkestone, and Boulogne, reaching Paris the same evening. As at present arranged, Sunday, Monday, Tuesday, and Wednesday are to be spent in Paris, and the party are to leave on Thursday morning for Brussels, where they will meet their Belgian friends once again, and visit the exhibition. The homeward journey is to be made by way of Ghent, Bruges, Ostend, and Dover, on the following Saturday, but as the tickets will be available for fourteen days, members of the party may stay longer at any of the main points in England, France, or Belgium.

Plumbers and Heating Engineers.—A report was given of the circumstances which led to the strike of the operative plumbers at the Grand Hotel, in consequence of a dispute as to the precise line of demarcation to be drawn between the respective work of plumbers and heating engineers and fitters. The question is constantly cropping up, not only at Sheffield, but in various parts of the country. A deputation from both the master and operative plumbers met a committee of the association and discussed the matter. Subsequently the association were approached by the National Society of Heating and Domestic Engineers, and a communication was also received from the operative heating engineers, with the former of whom they had a consultation. The heating engineers drew attention to the Leicester award, which made all lead work plumbers' work, and, in general, work in other metals either plumbers' work or heating engineers' work, as might be specified. The representatives of the association said they were from time to time being drawn contingently into these disputes, and while they had no direct interest in them, their works were laid down when the plumbers struck, and they suffered considerable loss, more especially in the case of a contract with a time limit. They were anxious that an agreement should be come to between the parties, but it appeared to them that so long as the present arbitrary method of strike by way of protest continued, the breach would be widened and the issue embittered. After hearing both sides, they had come to the conclusion that the only method of adjusting the issue was to bring all parties together in a joint conference, composed of master builders, architects, master and operative heating engineers, and master and operative plumbers. After obtaining the consent of all parties, it was decided to hold a joint conference in June, when it is hoped that at least the question may be settled locally, with some prospect of settlement on a national basis.

Bricklayers' and Joiners' Working Rules.—A report was given of the meeting with the operative bricklayers and joiners for the fixing up of the new working rules in accordance with the recent decisions of the Northern Centre Conciliation Board. The only hitch in the proceedings was caused by a claim on behalf of the bricklayers to have return fares in certain cases paid once a week to men working out of town, whereas the joiners had already agreed that such fares should be paid once a fortnight. An attempt was made to prove that the old rule in regard to payment once a week had not come under the notice of the Northern Centre Board, although the rule was distinctly submitted to the Board in the printed draft. The bricklayers eventually agreed to the rule being inserted in the same way as for the joiners.

Annual Meeting of Conciliation Board.—A report was given of the annual meeting of the Conciliation Board, when Mr. A. J. Forsdike, who had occupied the position of President since the inception of the Board, was re-elected. Mr. F. Limage was re-elected as vice-chairman, and Mr. Thos. Smith and Mr. J. T. Welburn, joint secretaries. The business was of a formal character, and the meeting afterwards discussed an extract from "The Builders' Journal" in reference to the scheme of a Joint Committee for the settlement of workmen's compensation claims in the same way as has been inaugurated by the Durham miners. The operatives' representatives said that they had not had an opportunity of considering the scheme in detail, but, on the broad issues, it seemed that the scheme should work to the undoubted advantage of both employer and operative.

Rights of Trade Union Officials.—A complaint was made by a member, of a trade union official coming on a job without permission. The matter was very strongly commented upon, and the secretary was instructed to write the Bricklayers' Society that such proceedings would not be permitted by members of the association.

The New By-laws.—The new by-laws of the City Council were again discussed on the report of the committee. It was still contended that the by-laws should specifically state the material and mode of construction of a new road, so that it might subsequently be taken over by the Corporation without further cost. The Corporation had agreed to allow the flue of a set-pot to be connected with kitchen chimney. The objection to the by-law making it imperative that every attic should have a vertical window was still very strongly pressed, and the special committee of the Corporation were advised that the members of the association, as practical builders, knew that a dormer window was more difficult to render weather-proof than a skylight, and was equally efficient for purposes of ventilation. If the objection was persisted in, the result would be that a large number of small houses would be built without an attic, and so tend to necessary overcrowding and insanitary conditions in the reduced number of rooms. The association could not see the point of the Corporation committee that they should waive this objection, because they were making a concession so as to allow a three-storey cottage to be carried to a height of 33ft. instead of 30ft., with a 9in. brick wall, and considered that such an unnecessary addition to the cost was in diametrical opposition to the avowed object of the Council, which was to provide an efficient artisan's dwelling at the lowest possible cost. With respect to the provision of a tray to cut off the entire waste from a domestic building to the sewer in addition to the ordinary traps, it was considered that where inside closets do not exist, such outside traps should only be put in where there was sufficient fall. In theory the insertion of such traps seemed all right, but in practice there was excessive trouble with them, and, in consequence, a large number had been removed. A special committee of the association had considered the timber sizes in the new by-laws, which in many cases were widely different from those in use. One of the greatest objections was that the sizes which had been incorporated would in several cases not cut out of the imported sizes without waste, while a further objection was that while a distinction was rightly made in the strength of floor joists between buildings of the domestic class and those of the warehouse class, no such distinction was made between the strengths of the roof timbers. The consequence was that the roof timbers of domestic buildings were very greatly and unnecessarily increased, and the Committee saw no reason why a cottage should contain timbers as strong as those which in warehouses had machinery attached to them. The unnecessary strengthening of roof timbers was a mystery, and they asked the Corporation if they had any case or generality of cases in mind where accidents had been attributable to roof timbers being of the size now in use. On the other hand, the association were unable to understand why the floor timbers were in some cases stipulated to be of less strength than those in general use. At the request of the Corporation committee, a list of suggested sizes for various roof timbers was given by the association. A further meeting with the Corporation committee has been arranged.

Trade Committees.—As at present constituted, there is only an Emergency Committee in addition to the General Committee, separate committees being temporarily formed for the purpose of dealing with matters as occasion requires. It is now thought that the time has come when there ought to be departmental committees, each dealing with its own particular branch of the trade, and it was also suggested that, in addition to the ordinary trade committees, the advisability ought to be considered of forming a Speculative Builders' Committee, and even a Contractors' Committee. It is felt to be unfair that the same members should be called upon to deal with practically all questions, whether or not such questions may affect any branch of their own particular business. Moreover, if a question is dealt with in the first instance by those only who are intimately connected with it, it is much more likely to be presented to the general body in more succinct form. It was decided that the matter be referred to the committee for a detailed scheme to be presented at a subsequent meeting.

Labour Exchanges.—There has been at Sheffield, as in other centres, some little misapprehension in regard to the working of the Labour Exchanges, and for the purpose of removing this, Mr. Hilliard Stevens, the manager of the Sheffield Exchange, attended and addressed the meeting.

In reply to questions, Mr. Stevens said that although they had only been established three months, they had reason to congratulate themselves on their success. The trades unions were handing the names of their unemployed to the Exchange, but the Exchange, in filling vacancies, made no distinction whatever between union and non-union men, nor was the question asked except at the express wish of the prospective employer. Men in employment were allowed to register, but they must state to what date they were continuing with their present employer, and a man was not entitled to use the Exchange until such period expired. In other words, the Exchange would not be allowed to act as a medium for the advancement of men already in employment, or to enable them to leave the service of one employer to enter that of another.

Mr. Forsdike, in moving a vote of thanks to Mr. Stevens, recognised the initial difficulties with which exchanges had to contend, and said that as a result of Mr. Stevens's visit, the members of the association would probably be prepared to assist in the way indicated. If men could be induced to register at the Exchange, and employers would always apply to the Exchange, they would in the long run do away with the misery incident to the search for work. One or two members mentioned that they had been satisfied with the men sent them by the Exchange, while others mentioned that after the explanations they had received they would be pleased to give the Exchange a trial.—THOS. SMITH, Secretary.

Barnsley.

The monthly meeting of Barnsley Federation was held at the King's Head Hotel on May 11th, Mr. E. Broley (president) in the chair, supported by fourteen members. In respect to the matter of a Halifax member and Barnsley contract, the local secretary (Mr. J. Denton) was, by general consent, exonerated from blame.

Present conditions of work under Local Education Committee received further attention, and the matter was left to the committee to deal with and report upon to next monthly meeting.

With respect to building tenders and contracts, a circular from the National, being reprints from "The Builders' Journal" of June 26th and February 23rd ult., was submitted by the secretary, and met with unanimous approval as steps in the right direction.

The secretary submitted a statement from the Leicester Federation, taken from "The Builders' Journal" of May 4th, and after discussion, sympathy was expressed with the Leicester Federation, and sincere hopes that they would be successful in their protest.

It was unanimously resolved that all members and operators abstain from all work on the day fixed for his late Majesty's funeral.—J. DENTON, Secretary.

FORTHCOMING MEETINGS.

20th June.—5 p.m., at 31 and 32, Bedford Street, Strand, W.C., Annual Meeting of the Standing Joint Committee of Appeal under the Agreement with the N.A.O.P.

21st June.—Noon, at above address, Meeting of Journal Committee, 2.30 p.m.; Meeting of Administrative Committee.

26th July.—2.30 p.m., at Chester, meeting of Executive Council of the National Federation.

27th July.—10.30 a.m., at Chester, General Meeting of the Federation.

COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about five days or longer after the date of this issue. Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders. The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

June 13. **HULL.**—(See "Engineering.")

June 13. **BIRKENHEAD.**—(See "Miscellaneous.")

June 13. **WINDSOR.**—Alterations and additions to the boys' and girls' schools in the Bachelor's Acre, for the Managers of the Windsor Royal Free Schools, in accordance with plans and specification, which can be seen at the offices of the architects, Edgington and Spink, 52, High Street, Windsor. Tenders to be delivered at the offices of the architects.

June 13. **CHESTER.**—Erection of a new fire station at the premises in Northgate Street. Plans and specifications can be seen either at the Town Hall, Chester, or at the offices of the architect, James Strong, 11, Dale Street, Liverpool, and quantities obtained on deposit of £1. Tenders to be sent to the Town Clerk, Town Hall, Chester.

June 13. **NEWHEY (Rochdale).**—Erection of an elementary school for 350 scholars at Newhey, near Rochdale, for the Lancashire Education Committee. The plans may be seen and bills of quantities obtained at the office of the County Architect, Henry Littler, 16, Ribblesdale Place, Preston, by deposit of £2. Tenders must be delivered to J. A. Grindrod, 32, Lord Street, Rochdale.

June 13. **SHREWSBURY.**—Persons desirous of tendering for the erection of Public Abattoirs, Roushill, are requested to forward their full name and address to Arthur E. Williams, Architect and Surveyor, County Chambers, 12, High Street, Shrewsbury, not later than the 13th inst., together with a deposit of £2 2s. Bills of quantities, and form of tender, will be forwarded in due course.

June 13. **SWANSEA.**—Erection and completion of new school premises for the Trustees of the Wesleyan Chapel, Sketty, Swansea. Plans and specification may be seen with P. Watkins, Sketty Avenue, Sketty, Swansea, or at office of W. Beddoe Rees, Architect, 3, Dumfries Place, Cardiff, where bills of quantities may be obtained on deposit of £1 1s. Tenders are to be delivered to the secretary, Mr. Watkins.

June 13. **CHELMSFORD.**—Heating and ventilating works at the Trinity Road Council School, which is now in course of erection, for the Borough Education Committee. Persons tendering are to submit their own schemes for these works. The plans of the school building may be inspected at the office of the architect, W. H. Pertwee, the Institute, London Road, Chelmsford, from whom all particulars may be obtained. The contract for the erection of the school building has been let to Henry Potter and Son, of Chelmsford, and the person whose tender is accepted for the before-mentioned works will be, and act as, sub-contractor to, and will be paid by, that firm. Tenders, which must be on forms to be obtained from the architect, together with detailed schemes or specifications, must be addressed to W. Smith, Town Clerk, Municipal Offices, 16, London Road, Chelmsford.

June 14. **WALLASEY.**—Supply and erection of a water-cooling tower, for the U.D.C. Copies of the specification may be obtained on application to the Engineer and Manager, Mr. J. A. Crowther, at his office, Seaview Road, Liscard, Cheshire.

June 14. **OLDHAM.**—Alterations to the registrar's office at Greenacres Cemetery, for the Cemeteries Committee. Particulars may be obtained at the Borough Surveyor's Office. Tenders must be addressed to the Chairman of the Cemeteries Committee, Town Hall, Oldham.

June 14. **BIRKENHEAD.**—Building repairs at their stable and yard, Oliver Street, for the Guardians. The premises may be inspected any day between 10 a.m. and 11 a.m. Forms of tender, with specification, may be obtained at the offices of John Carter, Clerk, Poor Law Offices, Birkenhead, and must be delivered to him. Fair wages clause.

June 14. **TADCASTER.**—Conversion of Tadcaster old police station into two cottages, for the West Riding Joint Committee. Plans may be seen at Tadcaster New Police Station, and specifications, with quantities, obtained on application to the West Riding Architect, County Hall, Wakefield. Tenders must be addressed to J. Vickers Edwards, County Hall, Wakefield.

June 14. **DARLINGTON.**—Converting paint shop into power-house, for the Directors of the N.E.R. Plans and specifications may be seen, and quantities and further information obtained upon application to William Bell, the Company's Architect at York. Duplicate plans may also be seen upon application to the Station Master, North Road Station, Darlington. Quantities supplied on personal application to parties tendering for the whole of the works. Tenders to be sent to the Secretary at York.

June 14. **DURHAM.**—Alterations and additions at Black Boy and Eldon Council Schools, Manual Instruction Room, at Cockton Hill, and Caretaker's House at Murton Colliery, for the C.C. Sole tenders are invited for the above. Plans, specifications and general conditions of contract may be seen and bills of quantities obtained as follows:—1, for Black Boy Council School, at the office of F. H. Livesay, architect, Newgate Street, Bishop Auckland; 2, for Eldon Council School and Murton Caretaker's House (plans, specification, and general conditions only for the latter), at the office of F. E. Coates, Shire Hall, Durham; 3, for Cockton Hill Manual Instruction Room, at the office of W. Rushworth, Shire Hall, Durham. Tenders (endorsed with name of school) are to be sent to A. J. Dawson, Clerk to the Education Committee, Shire Hall, Durham.

June 15. **HALIFAX.**—"See Painting.")

June 15. **TROON.**—Erection of a new orchestra at the United Methodist Church. Plans and specifications can be seen at Joseph Rodda's House, Treslethan Road, Troon, to whom tenders must be sent.

June 15. **JOHNSTONE.**—Additions and alterations to the Post Office, Johnstone, Renfrewshire, for the Commissioners of H.M. Works and Public Buildings. Drawings, etc., may be seen on application to the Postmaster of Johnstone. Bills of quantities, etc., may be obtained at H.M. Office of Works, 3, Parliament Square, Edinburgh, on deposit of £1 1s.

June 15. **HULL.**—Erection of a park-keeper's lodge in the Pickering Park, for the Corporation. Drawings and specification may be seen at the office of Joseph H. Hirst, City Architect, Town Hall, Hull, and quantities obtained upon a deposit of £2 2s. Remittances to be made payable to the City Treasurer. Tenders, addressed to the Chairman of the Parks and Burial Committee, to be delivered at the Town Clerk's Office.

June 15. **CHISLEHURST.**—Erection of a new post-office, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster, Chislehurst. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be delivered addressed to the Secretary, H.M. Office of Works, Storey's Gate, London, S.W.

June 16. **PEMBROKE.**—Supply and erection of a weighbridge at the Union Workhouse, including the erection of necessary house, which must be described in the tender, for the Guardians of Pembroke Union. Persons tendering are requested to submit tenders for a machine of 3 tons, 4 tons, 5 tons, and 6 tons capacity, stating the name of maker of machine. Tenders to be sent to J. S. W. Jones, clerk, Union Office, Pembroke.

June 17. **BAILEY MILL (Bewcastle).**—Mason work required in the erection of a girder bridge at Bailey Mill, Bewcastle, for the Longtown R.D.C. Plans and specifications can be seen, and particulars obtained, from James Murray, Surveyor, Kirklinton, Carlisle.

June 18. **GUILDFORD.**—(See "Painting.")

June 18. **CHADDERTON.**—Erection of washhouses, etc., in connection with the caretaker's houses at Eustace Street and Stanley Road schools. Forms of tender may be obtained from J. Whitehead, Clerk to the Committee, Education Offices, Chadderton, to whom tenders must be sent.

June 18. **AGHADOWEY (Ireland).**—Erection of a combined hall and school at Aghadowey Presbyterian Church. Plans and specification can be seen with S. J. M'Fadden, C.E., architect, Queen Street, Coleraine. Tenders to be lodged with Hugh M'Fetridge, The Temple, Aghadowey.

June 20. **TENDRING (Essex).**—Erection of a reception home for children at the workhouse, for the Guardians. Plans and specification may be seen and forms of tender and other information obtained at the office of the architect, G. H. Page, Trinity Chambers, Colchester, and tenders must be sent to A. J. H. Ward, clerk, 42, Church Street, Harwich.

June 20. **WATERLOO WITH SEAFORTH.**—Erection of the Crosby Road North Council school, Waterloo, near Liverpool, for the U.D.C. Bills of quantities may be obtained from John I. Thompson, Clerk to the Council, Town Hall, Waterloo, near Liverpool, upon deposit of £1 1s. Drawings and specifications may be seen at the office of Appleyard and Quiggin, architects, 67, Lord Street, Liverpool. Tenders must be delivered to the Clerk to the Council.

June 20. **LEEDS.**—Erection of workshops for the Gas Department in Sovereign Street. The whole of the several trades will be let in one contract. Drawings may be seen and a copy of the specification, conditions of contract, and bill of quantities obtained at the office of W. T. Lancashire, city engineer, Municipal Buildings, Leeds, on deposit of £3 3s. Tenders must be received at the Town Clerk's Office.

June 21. **RICHMOND (Yorks.).**—Erection of public lavatories in the Ronaldshay recreation ground, for the Corporation. Plans, specifications, and full particulars may be seen at the office of H. W. Marsden, borough surveyor, Tower Street, Richmond, to whom tenders must be sent.

June 21. **FARNHAM.**—Repairs to be executed to Tilford East Bridge, for the R.D.C. Drawings and specifications can be seen at the office of the Surveyor, Arthur J. Stedman, South Street Chambers, Farnham, and quantities can be obtained from him upon deposit of 10s. 6d. Tenders to be sent to Ernest Crundwell, Clerk, South Street, Farnham.

June 21. **FARNHAM.**—To Builders and Contractors.—Erection of proposed cottages at their Ash and Hindhead Depots, for the R.D.C. Drawings and specifications can be seen at the office of the Surveyor, Arthur J. Stedman, South Street Chambers, Farnham, and quantities can be obtained from him upon deposit of 10s. 6d. each cottage. Tenders to be sent to Ernest Crundwell, Clerk, South Street, Farnham.

June 21. **CRAGHEAD (Durham).**—Erection and completion of a new Church at Craghead, S.O., Durham. Plans and specifications may be seen at the Colliery Offices, Craghead. Bills of quantities and other particulars may be had from the architect, Jas. W. Thompson, 63, Grey Street, Newcastle-on-Tyne, on receipt of a deposit of £1 1s. Tenders to be sent to the Rev. W. C. Chapman, Burnhope, Durham.

June 23. **BACUP.**—Erection of a new Post Office, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster of Bacup. Bills of quantities and forms of tender may be obtained at Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be delivered, addressed to the Secretary, H.M. Office of Works, ets., Storey's Gate, London, S.W.

June 23. **LONDON, W.**—Providing and laying pitch-pine floor, plastering walls, and decorative works to Wards Nos. 8, 16, and 17 of their Infirmary, Marloes Road, Kensington, for the Guardians. Specification and form of tender can be obtained at the office of W. R. Stephens, Clerk to the Guardians, Guardians' Offices, Marloes Road, Kensington, W., or by sending a stamped directed foolscap envelope. The contractor shall on all work executed for the Guardians pay the rate of wages and observe the hours of labour agreed upon by the association of employers and the representatives of the workmen, but where no such agreement exists then the rate of wages and hours of labour must be those current in the district where the work is executed. The contractor must find two sureties in such sum as the Guardians may require, who shall enter into a bond in the form prescribed by the Local Government Board for the due performance of the contract. Tenders are to be made only on the forms provided, and are to be delivered at the above office.

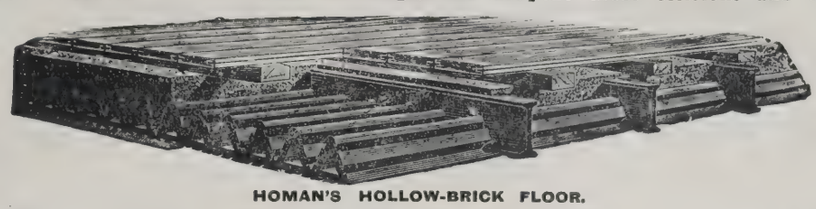
June 27. **MERTHYR.**—Alterations and additions for the conversion of Cyfarthfa Castle into a secondary school, and the erection of science laboratories, art and lecture rooms, with latrines, playgrounds, and other works in connection therewith. Specification, quantities, and form of tender may be obtained from T. F. Harvey, M.Inst.C.E., Borough Engineer, on and after June 6, on deposit of £5 5s. Plans and drawings may be seen at Cyfarthfa Castle, and other information obtained, on and after June 6. Tenders must be sent to T. Aneuryn Rees, Town Clerk, Town Hall, Merthyr Tydfil.

(*Contracts continued on page xiv.*).

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FLATS AT PENNER STREET, ST. JAMES STREET AND KENSINGTON HIGH ST. KINGSWAY, ETC.
WAREHOUSES AT HACKNEY, SOUTHFIELDS, SMITHFIELD ETC., ETC.

June 23. **HALIFAX.**—Erecting eight dwelling-houses, etc., in Leamington Avenue. Plans and specifications may be inspected from June 5. Tenders must be delivered to Medley Hall and Son, Architects, 1, Harrison Road, Halifax.

June 28. **SOUTHAMPTON.**—Erection of a work-room block and sundry alterations at the County Lunatic Asylum, Knowle, Fareham, Hants. Specifications, conditions of contract, and plans may be inspected and copies of the bill of quantities and all other necessary information obtained on application at the office of W. J. Taylor, County Surveyor, The Castle, Winchester, on and after, June 17. Drawings may also be seen at the Asylum. A deposit of £6 6s. will be required for copy of bill of quantities. Deposits must be made by cheque payable to the Hants County Council and crossed Bank of England, or the bills will not be sent. Tenders must be on forms supplied by the County Surveyor, and must be delivered to J. Railton, Clerk to the Committee of Visitors, Knowle.

June 30. **NEW MALDEN.**—Erection of church schools at Kingston Road. Plans and specification can be seen at the offices of Vincent Davison and Nicol, architects, Coombe Chambers, New Malden. Tenders to be sent to J. T. Thompson, Queensmead, Thetford Road, New Malden.

ENGINEERING.

June 13. **WEXFORD.**—Erection of ferro-concrete bridge (Hennebique principle) over River Slaney, for the C.C. Plans, etc., can be seen at Mouchel and Partners, 38, Victoria Street, Westminster, London, S.W.

June 13. **YORK.**—Supply and erection of steel-work in connection with the reconstruction of Holgate Road Bridge, York, for the Directors of the N.E.R. The work includes about 450 tons of steel-work, and about 350 cubic yards of concrete arching. The contract also includes the removal of the existing bridge, consisting of 200 tons of ironwork. Plans may be seen, and specification, detailed quantities, and form of tender obtained on personal application at the office of C. F. Bengough, the Company's Engineer at York. Tenders should be sent to the Secretary at York.

June 13. **HULL.**—Construction of a bridge over Stoneferry Road, in lieu of the existing level crossing, the diversion of the railway, and works in connection therewith for the Directors of the N.E.R. The work consists of about 90,000 cubic yards of earthwork, a new bridge, consisting of about 1,200 cubic yards of brick and concrete abutments on timber piles, and about 200 tons of steel girders and decking, the lowering of Stoneferry Road and connecting streets, the construction of retaining and boundary walls, fences, etc., a loading dock, and a passenger subway and timber platform at the new station. Plans may be seen and specification, detailed quantities, and form of tender obtained on personal application at the office of C. F. Bengough, the Company's Engineer, at York. Tenders to be sent to the Secretary, at York.

June 14. **WALLASEY.**—(See Buildings.)

June 14. **ABERCYNON.**—Construction of a two-span skew bridge across the River Cynon at Abercynon, for the U.D.C. The drawings may be seen at the office of, and copies of the specification, etc., obtained from, W. G. Thomas, Surveyor, Town Hall, Mountain Ash, upon deposit of £2 2s. Cheques or postal orders in payment of the deposit must be made payable to "The Treasurer, Mountain Ash Urban District Council."

June 14. **STAFFORD.**—Supply and erection of a triple-expansion vertical rotative direct-acting pumping engine and Lancashire boiler, together with all machinery, pipes, valves, and other works in connection therewith, for the Corporation. Conditions of contract, specification, form of tender, and bill of particulars may be obtained from W. Plant, borough and waterworks engineer, Borough Hall, Stafford, on deposit of £5. Tenders to be delivered at the office of Richd. Battle, town clerk, Borough Hall, Stafford, addressed to the Chairman of the Waterworks Committee.

June 15. **PONTEFRACT.**—Providing and laying about 1,681 yards of 3in. cast-iron pipes, 33 yards of 2in. hydrants, valves, etc., in the parish of Carleton, near Pontefract, for the R.D.C. Full particulars may be had from the engineer, R. Sidebottom, Tanshelf Drive, Pontefract, and tenders must be sent to J. Dickon Smith, clerk, Union Offices, Pontefract.

June 17. **HASLEMERE (Surrey).**—Laying about 4,250 yards of C.I. pipes, fixing valves, etc., for the Hambledon R.D.C. Copies of the specification and forms of tender can be obtained at the office of John H. Howard, The Cottage, Lower Street, Haslemere, on deposit of £2 2s. Tenders must be sent addressed to Ferdinand Smallpeice, Clerk, 138, High Street, Guildford.

June 18. **BRYNAMMAN (Wales).**—Sinking of a shaft, 18ft. diameter in the clear, at Gwaun-Cae-Gurwen Collieries, near Brynamman, South Wales, from the surface to the Brass or Peacock Seam, distance 380 yards or thereabouts, for the Gwaun-Cae-Curwen Colliery Co., Ltd. Full particulars may be obtained upon application to the Colleries Manager, Joseph Hargreaves, Gwaun-Cae-Gurwen Collieries, near Brynamman.

June 20. **BIGGLESWADE.**—Supply and laying of 12,133 yards of cast-iron water main as follows, viz.:—490 yards of 6in., 5,926 yards of 4in., and 5,717 yards of 3in., including the supply and fixing of waste water meter, sluice valves, wash-out valves hydrants, bends, branches, surface boxes, etc., required in connection therewith, for the R.D.C. Plans may be inspected and specifications obtained at the office of Henry Chaundler, clerk, Biggleswade, Beds., on deposit of £2 2s. Tenders must be sent to the Clerk.

June 22. **HOLMES CHAPEL (Cheshire).**—Carting, laying, and jointing of about 7,790 yards 2in. to 4in. cast-iron spigot and socket pipes, building meter chamber, etc., for the Congleton R.D.C. Plan and specification, bill of quantities and form of tender may be obtained from the Engineer, W. W. Wyatt, Whitchurch, Salop, on deposit of £1 1s. Tenders to be delivered at the office of H. Ferrand, Clerk to the Congleton Rural District Council, Sandbach, Cheshire.

June 23. **IPSWICH.**—Sinking one 18in. diameter or, in the alternative, one 24in. diameter borehole, into the upper chalk, including the provision of temporary pumping plant, and the carrying out the pumping to test the yield of the bore-hole up to 500,000 gallons, or, in the alternative, 1,000,000 gallons per 24 hours, for the Corporation Waterworks Committee. Plans may be seen and the site inspected by appointment with C. W. S. Oldham, engineer, Waterworks Offices, Ipswich, from whom copies of specification, form of tender, and schedule of prices may be obtained on deposit of £1 1s. Tenders must be delivered at the Town Hall, Ipswich, addressed to the Waterworks Committee.

June 23. **RHONDDA (Wales).**—Works for the U.D.C.:—Construction of a supply main and intakes from the head of the Rhondda River at Gareg-Lwyd, on the rough mountain lands at the head of the Rhondda Valley, Glamorganshire, together with an armoured concrete aqueduct overhead of 24 yards long in two equal spans, a valve-house, tunnel bywash, tunnel outlet face, retaining walls, etc., in concrete or rubble masonry, a balancing tank, and other works supplementary to the existing supply of water. The pipes and ironwork are for the most part lying near the site, and further pipes, valves, and ironwork required must be supplied by the contractor. There is a tramway connecting the tunnel works with the Taff Vale Railway at Fernhill, which may be extended and used for the work by arrangement. The works are about two miles distant from Blaenrhondda Station, on the Rhondda and Swansea Bay Railway. Drawings may be seen, and a copy of specification and form of tender, with a schedule of quantities may be obtained at the office of Joseph Vevers, engineer, Waterworks Offices, Treherbert, Rhondda, upon production of a receipt signed by the Accountant of the Council for the required deposit of £3 3s. The contractor will be required to pay the current trade union rate of wage prevailing in the district. Tenders, addressed to the Chairman of the Waterworks Extension Committee, at the Council Offices, Pentre, Rhondda, must be delivered at the office of W. P. Nicholas, clerk, Council Offices, Pentre, Rhondda, Glam.

July 4. **DUBLIN.**—Construction and erection of twin Scherzer rolling lift bridges across the entrance to the Royal Canal, North Wall Quay, Dublin, for the Port and Docks Board. Specification and drawings can be seen at the office of the Engineer of the Board, John P. Griffith, M.Inst.C.E., East Wall, Dublin, from whom any further information required can be obtained. If on examination of the specification and drawings, intending contractors should desire to obtain copies, these, together with the special printed form of tender, can be obtained on deposit of £5. Contractors are required to state whether they have constructed Scherzer rolling lift bridges, or other opening bridges, and to give full particulars of such works and the names of engineers under whom these were carried out, and to whom reference may be made. Tenders must be on the special form, and addressed to the Secretary, Port and Docks Office, Westmoreland Street, Dublin.

SANITARY ENGINEERING.

June 14. **DUNDALK.**—Providing and laying of about 1,100 yards of sewer, together with the building of manholes and other works, for the U.D.C., shown or described on the plans, sections, and specification prepared by Maurice Sellars, town surveyor, which can be seen at his office, Town Hall, Dundalk, and from whom forms of tenders, etc., can be obtained, on deposit of £2. Tenders, giving the names and addresses of two solvent sureties willing to join in a bond of £500, to be lodged at the office of Mathew Comerford, town clerk, Town Hall, Dundalk. The acceptance of any tender sent in will be contingent on the loan being granted by the Board of Works, and the accepted contractor must be prepared to await the granting of same, and to proceed with the work when called upon without any extra to the amount of the accepted tender in consequence of such delay.

June 14. **WEYMOUTH.**—Constructing and maintaining surface-water and other sewers for the diversion of surface water, Park District, Melcombe Regis, consisting of 16in. and 21in. cast-iron sewers, 21in. and 24in. steel-ribbed granite concrete sewer tubes, manufactured by John Ellis and Sons, Limited, Leicester; 6in., 9in., 12in. and 15in. glazed stoneware socket drain pipes, with outlet and flap chamber, manholes, overflows, stoneware gullies, and other works incidental thereto, for the B.C. Plans and specifications may be seen, and form of tender obtained at the office of the Engineer, W. Barlow Morgan, 4, York Buildings, Weymouth. The contractor must deposit with his tender Bank of England notes to the value of £10, also state on his tender the name and address of a properly-registered Guarantee Association willing to be jointly and severally bound with him in the sum of £1,000 for the due performance of his contract. Tenders, addressed H. A. Huxtable, Clerk to the Council, to be delivered at the Municipal Offices, Clarence Buildings, Weymouth.

June 15. **WORKINGTON.**—Provision and laying of about 2,900 lineal yards of 18in. diameter stoneware pipe sewer, with sea outfall, consisting of about 714 lineal yards of 18in. diameter cast-iron pipes supported on timber piling, together with manholes, lampholes, storm water overflow chambers, and other works in connection therewith, for the Corporation. Drawings may be seen at the office of H. Bowman Williams, Borough Engineer and Surveyor, Town Hall, Workington, from whom copy of the specification, bill of quantities, and form of tender, can be obtained on deposit of £3 3s. Tenders to be delivered to the Town Hall, addressed to John Warwick, Town Clerk, Workington.

June 20. **CHELMSFORD.**—Extending the sewer in Trinity Road, for the T.C. Forms of tender, and full particulars may be obtained, and the plans and specification may be inspected, at the office of the Borough Surveyor, Cuthbert Brown, 16, London Road. Tenders must be delivered at the office of W. Smith, Town Clerk, Municipal Offices, Chelmsford.

June 20. **YSTRADGYNLAIS.**—Schemes and estimated cost for sewering the Parish of Ystradgynlais Lower, for the R.D.C., who will pay a sum of £20 for the scheme which they consider most suitable, and the decision of the Council must be accepted as final. Competitors to state their terms for full detailed plans and specifications, and for carrying out the scheme they submit. Particulars of the area to be drained and any other information may be obtained from T. Watkins, Surveyor to the Council, Ystradgynlais. Schemes to be sent in to D. L. Moses Evans, Clerk to the Council, Commercial Street, Ystalyfera.

June 21. **RICHMOND (Yorks.).**—(See "Buildings.")

June 21. **SOUTHWELL.**—Alteration and additions to sewage disposal works, for the R.D.C. The contract will comprise alterations to present tanks, new storm-water tanks, pumping tank, engine house, percolating filters, cottage, effluent outfall, and other appurtenant works. Plans may be seen at the office of the engineers (Sands and Walker, Milton Chambers, Nottingham), and copies of conditions, specification and quantities can be obtained on deposit of £3 3s. The successful contractor will be required to enter into a bond in the sum of £500, through an approved Guarantee Society, or with approved sureties for the due performance of his contract. Tenders to be sent to John Ellis, Clerk to the Council, Southwell, Notts.

IRON AND STEEL.

June 13. **YORK.**—(See "Engineering.")

July 4. **DUBLIN.**—(See "Engineering.")

PAINTING.

June 13. **BARROW-IN-FURNESS.**—Cleaning, painting, and decorating at the technical schools, Abbey Road, for the Corporation. Form of tender and bill of quantities may now be obtained upon application at the Borough Engineer's Office, Town Hall. Tenders to be delivered, in the envelope provided for the purpose, at the Town Clerk's Office.

June 13. **ROCHDALE.**—Painting and other work required at the cemetery, for the Cemetery Committee. Further particulars may be had on application to the Borough Surveyor. Tenders to be sent to the office of W. H. Hickson, town clerk, Town Hall, Rochdale.

June 13. **DEWSBURY AND HECKMONDWIKE.**—Painting of two steel bridges over the river Calder and the Calder canal. Specification and forms of tender to be obtained from the general conditions seen on application at the Engineer's Office, Town Hall, Dewsbury. Tenders to be sent to H. Ellis, Clerk to the Board, Town Hall, Dewsbury.

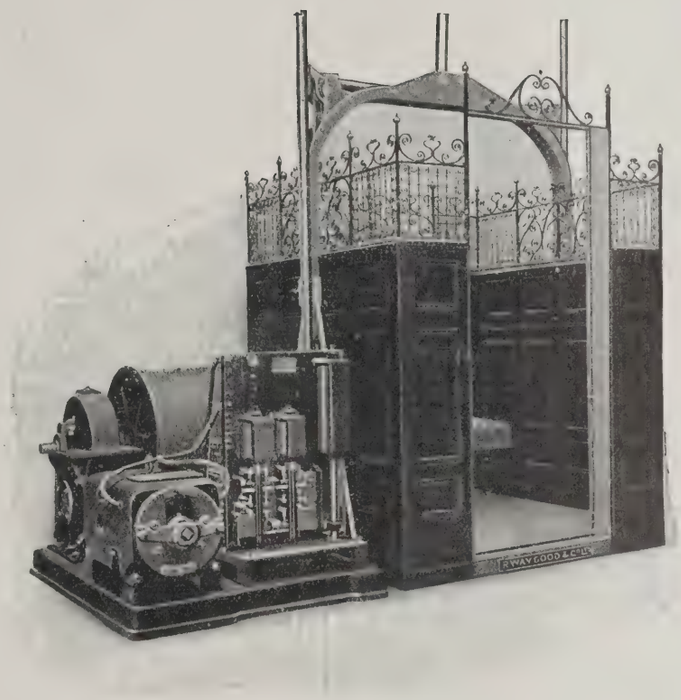
June 14. **CHORLEY.**—Painting and decorating of the secondary school, Union Street, for the Education Committee according to specification and conditions, which may be seen at the Borough Surveyor's Office, Town Hall. Tenders to be sent to Jno. Mills, Town Clerk, Town Hall, Chorley.

June 14. **WEST SUFFOLK.**—Painting, etc., at the following Council schools:—Brockley, Fornham All Saints, Glemsford, Mildenhall Beck Row, Mildenhall Fen, Mildenhall infants', Mildenhall West Row, Newmarket Exning, Semer, Whepstead, for the Education Committee. Specifications and forms of tender may be obtained on application to the building inspector, A. Ainsworth Hunt, Shire Hall, Bury St. Edmund's. Tenders, addressed to Fred. R. Hughes, Secretary to the Committee, are to be delivered at the County Education Offices, endorsed with the name of the school. The work is to be carried out during the summer holidays.

(Contracts continued on page xvi.)

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June 14. **LONDON, S.E.**—Painting, etc., at the Lambeth Children's Infirmary, and "Ivy Bank," Crown Hill, Upper Norwood, S.E., for the Lambeth Guardians. Tenders, which will be received only on the printed form, must be sent to James L. Goldspink, Clerk to the Guardians, Guardians' Offices and Board Room, Brook Street, Kennington Road, S.E., or placed in a box provided for their reception in the office of the Clerk to the Guardians by the contractors or their representatives, should they so desire, and will be opened at the Board Room at noon on the following day, when all persons tendering, or their authorised agents, must be in attendance. Forms of tender may be obtained at the above offices. Specification will be supplied on personal application on deposit of £2.

June 15. **HALIFAX.**—Painting and colouring of sundry schools, and for maple flooring at Portland Road Council school, for the Education Committee. Plans and specification may be seen, and forms of tender obtained, on application to James Lord, M.I.C.E., Borough Engineer, Town Hall, Halifax, upon deposit of £5 for painting, and £1 for maple flooring. Tenders must be sent to W. H. Ostler, Secretary. The person whose tender is accepted will be required to observe the fair contracts clauses adopted by the Corporation.

June 16. **LONDON, E.**—Painting at the Scattered Homes, or elsewhere, for the Mile End Guardians. Forms of tender, with specifications, may be obtained upon application to Benjamin Catmur, Clerk to the Guardians, Guardians' Offices, Bancroft Road, Mile End, E., by letter, enclosing stamped directed foolscap envelope. Persons tendering will be required to state in their tender that they pay such rates of wages and observe such hours of labour as are generally accepted as fair in the trade to which the work refers. Tenders to be sent to the Clerk to the Guardians.

June 18. **GUILDFORD.**—Decorative work and repairs to the elementary schools, under their administration, for the T.C. A plan and specification may be seen, and a form of tender obtained on application to the Borough Surveyor, C. G. Mason, Assoc.M.Inst.C.E., Tuns Gate. Tenders should be sent to F. S. Tosswill, Secretary to the Education Committee, Onslow Bridge Chambers, Guildford.

June 20. **GOODMAYES (Essex).**—Painting the exterior of the Asylum, Goodmayes, for the West Ham B.C. Specification, form of tender, and further particulars may be obtained at the office of John G. Morley, Borough Engineer, Town Hall, West Ham, E., upon deposit of £1. Tenders to be delivered at the office of the Town Clerk, Town Hall, West Ham, E., in the envelope supplied, by registered post. The contractor will be required to enter into a bond, with one surety, for the due performance of the contract, and no work will be ordered under the contract until such bond has been duly executed. The contractor whose tender is accepted, and with whom a contract is entered into, will be required to pay the whole of his workmen such rate of wages, and observe such hours of labour, as are recognised by the Workmen's Trade Unions, and in force at the time of signing the contract, and shall not assign, nor under-let, or make a sub-contract with any person or persons for the execution of any part of such work. In the event of any breach of such agreement the Council will enforce the penalty clause in its entirety.

June 22. **LONDON, S.W.**—Cleaning and painting works and repairs at the South Western Fever Hospital, Landor Road, Stockwell, S.W., for the Metropolitan Asylums Board, in accordance with conditions of contract and specification prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., Engineer-in-Chief. Conditions of contract, bills of quantities, specification, and form of tender may be inspected at the office of the Board, Embankment, E.C., and can be obtained upon deposit of £1. Tenders, addressed as noted on the form, must be delivered at the office of the Board.

June 23. **LONDON, W.**—(See Buildings.)

June 23. **LONDON, S.E.**—External painting and internal decorating (part of) the Workhouse at Ladywell Road, Lewisham, S.E., for the Bermondsey Guardians, according to the specification of A. H. Newman, F.R.I.B.A., etc., and quantities by W. T. Farthing and Son, of 46, Strand, W.C. (a) Forms of tender (which can only be received), (c) bills of quantities, and (d) specification, containing full particulars and conditions of contract, can be obtained at the office of E. Pitts Fenton, Clerk, No. 283, Tooley Street, S.E., between the hours of 10 a.m. and 12 noon daily, by depositing a £10 Bank of England note (cheques or cash will not be received). The amount deposited will be returned to persons sending in. Tenders, and other documents above referred to, must be delivered to the Clerk.

June 24. **EAST RIDING (Yorks).**—Painting and cleaning of certain schools in the Riding, such work to be carried out during the time the schools are closed for the summer holidays. A list of the schools intended to be painted or cleaned may be obtained on application to John Bickersteth, Clerk to the East Riding Education Authority, County Hall, Beverley. Specifications of the work may be seen and forms of tender obtained at each of the schools mentioned on the list, after June 9, and all tenders must be delivered at the same address.

ROADS AND CARTAGE.

June 13. **SOUTHAMPTON.**—Construction and maintenance of tar macadamized roads, for the Corporation. Conditions of contract and drawings may be inspected, and specification, schedule of prices and form of tender obtained at the Borough Engineer's Office upon production of the Borough Treasurer's receipt for a deposit of £1 1s. Tenders must be delivered at the Town Clerk's Office, Municipal Offices, Sauthampton.

June 13. **Church (Lancs.)**—Excavating, concreting, asphalting with Limmer rock asphalt, kerbing and flagging of Commercial Street, Maden Street, and Bank Street, for the U.D.C. Plans and sections may be seen and forms of tender and specifications obtained on application to W. E. Wood, surveyor, District Council Offices, Church. Tenders must be sent to John R. Reddish, Clerk.

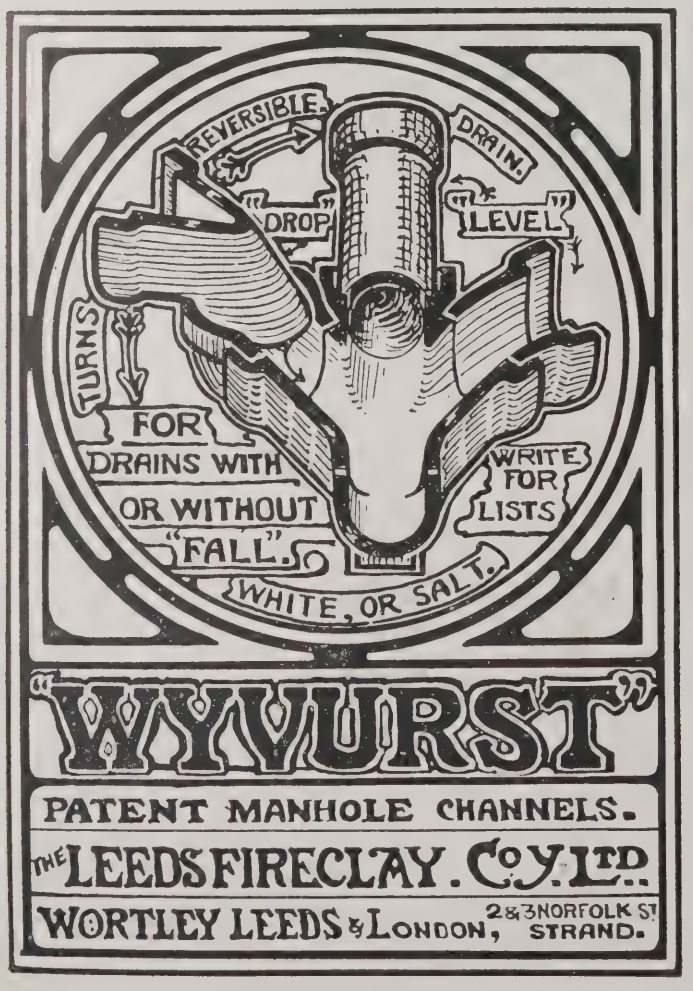
June 14. **BILLINGE (Lancs).**—Supply of about 1,000 tons slag during ensuing twelve months, for the U.D.C. Also for carting road material from the several stations during ensuing twelve months. Particulars obtainable on application from the Surveyor, at the Council Offices, Billinge.

June 14. **CASTLEFORD.**—Works of street improvements in Glebe Street, Hugh Street, and Pretoria Street, for the U.D.C., in accordance with plans and specifications prepared by W. Green, surveyor to the Council, and which may be seen on application by arrangement. Tenders to be sent to H. H. Broadbent, clerk, Council Offices, Sagar Street, Castleford.

June 14. **RISHTON (Lancs.).**—Labour, and part materials, in sewering, paving, etc., parts of the following streets:—Back Harwood Road East, back Brook Street North, back Cliff Street West, back Commercial Street East, back Spring Street West, back Clifton Street North, and back Danvers Street South, for the U.D.C. Plans may be seen and specifications and forms of tender obtained on application to the Surveyor, Council Offices, Brook Street, Rishton. Tenders must be sent to J. J. Adams, clerk.

June 14. **NORTHFLEET.**—The following items from July 1, 1910, to June 30, 1911, for the U.D.C.:—700 tons (more or less) Guernsey granite, 1½in.; 500 tons (more or less) Guernsey granite, 2in.; Thames ballast; 800 tons (more or less) broken Kentish rag stone; crushed Kentish rag stone, 1½in. gauge; 295 tons granite setts; castings; 18,000 gallons (more or less) coal tar; 315 yards granite kerb, and 11 3ft. radius corners and 26 4ft. radius corners; steam rolling and scarifying. Full particulars and form of contract may be seen at the Offices of the District Council, The Hill, Northfleet, to which address tenders must be sent. N.B.—No forms of tender or contract will be supplied. So far as practicable local labour shall be employed and trade union rate of wages paid.

(*Continued on page xviii.*)



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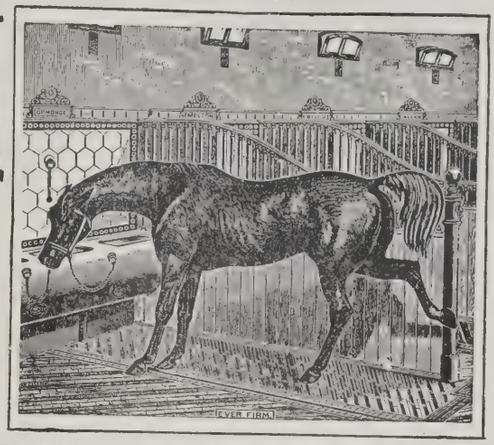
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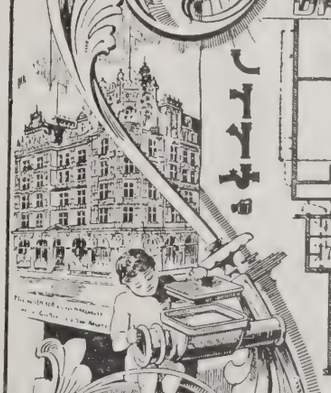
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June 14. **LONDON. E.**—1, private street works, Falcon Street, and Third Avenue (part of); 2, wood paving Upper Road and Helena Road; 3, attendants' quarters, Convalescent Home, The Grange, Harold Wood, for the West Ham B.C. Plans may be seen, and specifications, forms of tender, and further particulars obtained, at the office of the Borough Engineer, Town Hall, West Ham, E., upon deposit of £1 in respect of each form of tender. Note.—No tender will be considered unless the same is delivered at the office of the Town Clerk, Town Hall, West Ham, E., in the envelope supplied, by registered post, not later than 4 o'clock on June 14. The contractor will be required to enter into a bond with two sureties for the due performance of the contract, and no work will be ordered under the contract until such bond has been duly executed. The contractor whose tender is accepted, and with whom a contract is entered into, will be required to pay to the whole of his workmen such rate of wages and observe such hours of labour as are recognised by the workmen's trade unions and in force at the time of signing the contract, and shall not assign, nor under-let or make a sub-contract with any person or persons for the execution of any part of such work. In the event of any breach of such agreement the Council will enforce the penalty clause in its entirety.

June 15. **LANCHESTER.**—Draining, levelling, orming, kerbing, paving, and flagging Pine Street Back Bridge Street, Wood View, etc., etc., Langley Park, for the R.D.C. Drawings and specifications may be seen and bills of quantities obtained at the Surveyor's Office, The Grove, Lanchester. Tenders to be sent to W. H. Ritson, Clerk to the R.D. Council, Lanchester.

June 15. **ENFIELD (Middlesex).**—Supply of 2,300 tons (more or less) of hand-broken Clee Hill Dhu or best blue Guernsey granite, and 1,400 tons (more or less) of broken Leicestershire or other approved granite, to be delivered free in such quantities and at such times prior to March 31, 1911, as may be ordered by the Surveyor, at the several railway stations in the district, for the U.D.C. Tenders, on forms to be obtained only of Richard Collins, surveyor, together with samples as to size and quality of the granite proposed to be supplied (no tender will be considered unless accompanied by samples), to be sent to T. W. Scott, Clerk, Public Offices, Enfield.

June 16. **BEDDINGTON (Croydon).**—Making-up Milton Road, Beddington, for the Croydon R.D.C. Plans and specifications may be seen and form of tender obtained on application to R. M. Chart, F.S.I., surveyor to the Council, Katherine Street, Croydon. Tenders to be delivered to E. J. Gowen, clerk, Council Offices, Croydon.

June 17. **MANCHESTER.**—Supply of special (permanent way) track work, for the Tramways Committee of the Corporation. Specifications and forms of tender may be obtained on application to J. M. M'Elroy, general manager, Corporation Tramways, 55, Piccadilly, Manchester, on deposit of £2 2s. Tenders to be addressed to the Chairman of the Tramways Committee, 55, Piccadilly, Manchester.

June 17. **BEXHILL.**—Making-up Marina Court Avenue (part), 50ft. in length, Pier Road West, 225ft. in length, and Pier Road East, 215ft. in length, for the Corporation. Plans may be seen, and bills of quantities, specification and form of tender obtained upon application to the borough surveyor, G. Ball, A.M.I.C.E., Town Hall, upon deposit of £1 1s. Tenders to be sent to the office of T. E. Rodgers, town clerk, Town Hall, Bexhill.

June 17. **TOTTENHAM.**—Repair of the tar and asphalte paving throughout their district, for the U.D.C. Specifications and forms of tender can be obtained on application to W. H. Prescott, A.M.I.C.E., Engineer to the Council, at the Council Buildings, The Green, Tottenham. Persons tendering will be required to deposit with the Treasurer, when handing in their tenders, in a Bank of England note or cash, the sum of £5 in respect of each tender, which will be forfeited by the person whose tender is accepted if the contract be not executed within seven days from the date he is informed it is ready for signature, otherwise it will be repaid. This deposit will be repaid to the parties tendering who are unsuccessful. The contractor will be required to pay all workmen on the Council's work the recognised trade union rate of wages. A schedule of such wages will be inserted in the contract, and a copy of the schedule must be exhibited on the pay office at the works. Tenders to be delivered to Edward Crowne, Clerk of the Council, Tottenham.

June 23. **DORCHESTER.**—Supply of tar-macadam and broken granite, for the T.C. Further particulars and form of tender may be obtained from Percival T. Harrison, A.M.I.C.E., Borough Engineer, Dorchester. Tenders must be delivered at the office of A. G. Symonds, Town Clerk, Town Clerk's Office, Dorchester.

June 25. **LEWES.**—Supply of 600 tons of 2in. broken granite, 150 tons of coarse granite screenings, and 500 tons of broken surface picked flints, for the T.C. Forms of tender, etc., may be had, and further information obtained, at the Borough Surveyor's Office, Town Hall, Lewes.

MISCELLANEOUS.

June 13. **BIRKENHEAD.**—Plastering three wards at the Union Infirmary, Church Road, Tranmere, for the Guardians of Birkenhead Union. The premises may be inspected any day between 9 a.m. and 12 noon. Forms of tender with specification, may be obtained at the office of John Carter, clerk, Poor Law Offices, Birkenhead, and must be delivered to him. Rate of wages and hours of labour clause to be observed.

June 14. **SOUTHAMPTON.**—Supply of deals and matched boarding, for the Director General, Ordnance Survey. Application for forms of tender and specification should be made to the Officer in Charge of Stores, Ordnance Survey Office, Southampton.

LATE CONTRACTS.

BUILDING.

June 9-21. **WARLEY (Essex).**—Alterations and additions to Christ Church School. Send name and address to Frank Whitmore, architect, Chelmsford, not later than June 9, enclosing cheque for £2 2s. as deposit, when bills of quantities will be sent as soon as possible. Plans and specification, and form of contract can be seen at the School, Warley, and at the Office of the architect. Tenders to be sent to A. H. Tredennick, The Vicarage, Warley, Brentwood.

June 16. **MARDY.**—Erection of new conservative working men's club at Mardy, for the Trustees and Committee. Plans may be seen and bill of quantities obtained at the Conservative Working Men's Club, Mardy, upon deposit of £1 1s. Tenders to be sent to T. R. Leyshon, secretary, Conservative W.M. Club, Mardy.

June 17. **RHONDDA.**—(1) Building of river wall at Hafod School; (2) building of boundary walls and alterations to windows at Cwmclydach School, for the U.D.C. Plans and specifications may be seen and bills of quantities and tender forms obtained at the office of the architect, Jacob Rees, Hillside Cottage, Pentre, upon the production of a receipt from the accountant of the Council for the required deposit of £1 1s. in respect of each of the Works tendered for. Separate tenders must be submitted for each of the works. Tenders and priced quantities, enclosed in the printed envelopes provided for the purpose, addressed to the "Chairman of the Building Committee," must be delivered at the Council Offices, Pentre.

(Contracts continued on page xx.)

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June 13-22. **LEEDS.**—Beckett's Park, Headingley.—Demolition of the old buildings, levelling, and excavating the site, and the formation of main roads and main drains, at the City of Leeds Training College, Beckett's Park, Headingley, in accordance with plans prepared by G. W. Atkinson, architect, of 1, Mark Lane, Leeds, and with special contract conditions of the Leeds Corporation. Send in names to James Graham, Secretary for Education, Education Department, Calverley Street, Leeds, on or before June 13, together with a deposit of £2 2s. Tenders must be forwarded to the Secretary.

June 14. **CAERPHILLY.**—Erection of two public urinals, each with four stalls, with brick work, sanitary fittings, drainage, etc., at Abertridwr, for the U.D.C. To Painters.—Tenders are also invited for painting various structures and appliances throughout the Council's District. Plans, specifications, and forms of tender, together with further information, may be obtained from Alfred O. Harpur, Engineer and Surveyor, Council Offices, Caerphilly, upon deposit of £1 1s. Tenders must be addressed to the chairman of the Council, and delivered at the Council Offices, Caerphilly.

June 16. **BARNSTAPLE.**—Re-building a portion of No. 94, Boutport Street, in the occupation of S. Trott, for the Barnstaple Municipal Charities. Plans and quantities may be obtained from J. C. Southcombe, architect, Barnstaple, and tenders to be sent to G. Mills, Secretary, Barnstaple.

June 16. **ROMSEY.**—Building of a concrete wall surmounted by an iron fence, and for other work at The Abbey Water, Romsey. Full particulars can be obtained and drawings and specification can be seen at the office of the Borough Surveyor, Market Place, Romsey. Tenders must be delivered at the office of B. W. Attlee, Town Clerk, 2, Porters Bridge Street, Romsey.

June 16. **LONDON, N.**—Erection of money order department building, Holloway, second contract (consisting of the brick and stone work, etc., of the front elevation, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to John Rutherford, H.M. Office of Works, 22, Carlisle Place, S.W. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be delivered addressed to the secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

June 18. **GREENSIDE, near Ryton-on-Tyne.**—Several works required to be done in the erection of new club premises. Drawings and specifications may be seen at the Workmen's Club, Greenside, or at the office of Thomas E. Taylor, Architect and Surveyor, Lanchester (also Anfield Plain). Tenders to be sent to W. Harris, Secretary, Workmen's Club, Greenside, Ryton-on-Tyne.

June 23. **DALTON PARVA (Rotherham).**—New buildings and alterations and additions to existing buildings in connection with adaptation of farm buildings at Dalton Parva (near Rotherham), builder, joiner, slater, plumber, plasterer, painter (whole or separate tenders), for the West Riding Small Holdings Committee. Plans may be seen, and specifications with quantities obtained on application to the West Riding Architect, County Hall, Wakefield. A deposit of £1 must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders must be addressed to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

June 24. **WORCESTER.**—Re-building in brickwork of Kenswick Bridge, situate on the main road between Worcester and Martley, 3 miles from Henwick Station, for the Highways and Bridges Committee of the County Council. Drawings and specification may be obtained on deposit of £1 1s., of J. H. Garrett, Surveyor of County Bridges, Shirehall, Worcester (to whom tenders must be sent).

July 2. **TREVISCOE (near St. Stephens, Cornwall).**—Erection and completion of proposed Wesleyan Methodist Church, Grampound Road, according to plans and specifications, which may be seen by appointment at the residence of Capt L. H. Dyer, Treviscoe, to whom tenders are to be sent. Plans and specifications may be seen and particulars relating to the work may be obtained at the office of Sampson Hill, architect, Green Lane, Redruth.

ENGINEERING.

June 15. **LIVERPOOL.**—Provision and erection of stanchions and girders to carry on overhead travelling crane in North Docks Cotton Shed, Liverpool, for the Directors of the Lancashire and Yorkshire Railway. Plans can be seen and copies of the tender, quantities and specification obtained on application at the Engineer's Office, Hunt's Bank, Manchester. Tenders to be sent to R. C. Irwin, Secretary, Hunt's Bank, Manchester.

June 16. **ROMSEY.**—(See "Buildings.")

July 16. **BURNLEY.**—Construction of an impounding reservoir, with catchwaters, aqueducts, meter-houses, etc., at Hurstwood, near Burnley, for the Corporation. Plans may be seen, and specification, schedule of prices, form of tender, and all other particulars obtained, on application to James Diggle and Son, Engineers, 14, Victoria Street, Westminster, S.W., and Hind Hill Street, Heywood, Lancashire, on and after June 13, on deposit of £5. Tenders to be sent to Peregrine Thomas, Town Clerk, Town Hall, Burnley.

SANITARY ENGINEERING.

June 14. **CAERPHILLY.**—See "Buildings.")

July 17. **RHONDDA.**—Painting and colouring the undermentioned schools during the mid-summer vacation (July 29 to August 26), viz.:—Gelli, boys', girls', and infants'; Bodringallt, boys'; Bleanclydach, boys', girls', and infants'; Penygraig, girls'; Dinas, boys'; Trealaw, boys'; and Tylorstown, boys', girls', and infants, for the U.D.C. Specifications and bills of quantities may be seen and forms of tender obtained at the office of the architect, Jacob Rees, Hillside Cottage, Pentre. Separate tenders must be submitted for each school. Tenders addressed to the chairman of the Building Committee, must be delivered at the Council Offices, Pentre.

PAINTING.

June 13. **MANCHESTER.**—Tenders for painting at the Monmouth Street (Rusholme), Pollard Street (Ancoats), Little Lever Street (Ancoats), and Knowsley Street (Cheetham) Paving Yards, for the Corporation. Specifications may be obtained at the office of the City Architect, Town Hall, upon deposit of 10s. 6d. All cheques or postal orders are to be made payable to the order of "The Corporation of Manchester." Tenders, enclosed in the official envelope, to be delivered at the City Architect's Office.

June 13. **MANCHESTER.**—Painting at the East Gorton, Chorlton, and Ardwick and Chester Road Branch Libraries, for the Libraries Committee of the Corporation. Specifications may be obtained at the office of the City Architect, Town Hall, upon deposit of 10s. 6d. All cheques or postal orders are to be made payable to the order of "The Corporation of Manchester." Tenders, enclosed in the official envelope, to be delivered at the City Architect's Office.

June 14. **CAERPHILLY.**—See "Buildings.")

June 14. **GOOLE.**—Internal and external painting, etc., of the Goole Boothferry Road Council School and the Old Goole Council School, for the Education Committee. Specifications may be obtained from E. L. Harrap, W.R. Education Offices, Goole, to whom separate tenders should be forwarded.

June 14. **CARLISLE.**—Painting and other works required to be done at five of the elementary schools, such works to be commenced on June 25, and completed not later than July 16. Specification and full particulars may now be obtained from Henry C. Marks, M.Inst.C.E., Surveyor, 36, Fisher Street, Carlisle, on deposit of 10s. 6d., and to whom tenders must be sent.

[We regret that owing to pressure on our space, we are obliged to hold over our list of tenders till next week.]

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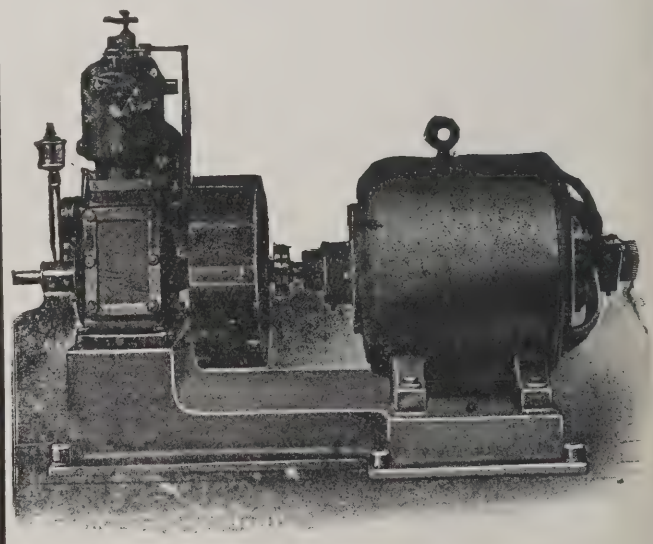
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THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JUNE 15th, 1910.

Volume XXXI. No. 802.



The west front is new, the old part, which "had run very much to seed," having been removed to make way for the new reception-rooms and other additions. (*See page 609.*)

NEWTON GREEN HALL, LEEDS: WEST FRONT. . ADKIN AND HILL, ARCHITECTS.



The floor is laid for dancing with narrow oak boards. No springs are used, but the necessary elasticity is obtained by the joists, etc., being fixed so that there is no direct bearing on the solid. The chimneypiece is in local stone with red Mansfield strings and green-slate dowels in the lintel. The panelling is mahogany, and the plasterwork left white. (*See page 609.*)

NEWTON GREEN HALL, LEEDS: THE MUSIC AND BILLIARD ROOM. ADKIN AND HILL, ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

JUNE 15th, 1910. *CAXTON HOUSE, WESTMINSTER.* VOLUME 31. No. 802.

Note: The List of Contents will be found on Page V of the front advertisements in this and subsequent issues.

American Lights on Competitions.

THE latest "Annuary," as it is called, of the American Institute of Architects, contains a new Code of regulations for the conduct of architectural competitions, which came into operation on the 30th March last. It deals with the subject in a very full and very incisive manner, and a comparison of the document with that issued by our own Institute of Architects ought to be of some interest to those concerned in competitions in this country, more especially as a revised code of regulations for competitions is at present under the consideration of the Institute.

Approval of Conditions.

The first thing that strikes one in the American Code is the decided attitude which is taken in regard to the approval of competition conditions by the American Institute, and the conduct of members of the Institute in case of their disapproval. It is expected that the conditions of every competition should receive the approval of the Institute, or of an authorised sub-committee, and "it is the duty of every member to advise the said sub-committee of any contemplated competition which may come to his attention." If the conditions are such as the Institute or its sub-committee do not approve, there is no question of "advising" or "requesting" members not to compete; it is roundly declared to be "unprofessional" for any member of the American Institute of Architects to take part in a competition, whether as competitor or juror, unless the programme shall first have been approved by the Institute, or an authorised Sub-Committee. This gives the American Institute a positive standing as official approver of competition schemes, instead of the merely negative standpoint taken by the British Institute, of merely disapproving of conditions that are brought to their notice and advising members not to compete. The American Institute takes the strong ground of ruling members guilty of unprofessional conduct who enter into a competition which has not been formally approved at headquarters. We recommend this precedent to the notice of the British Institute Council, and also to those of its members who persist in competing where the conditions have been disapproved by the Council.

Interests of the Owner.

The next point that specially strikes one is the plain and uncompromising statement that "competitions are instituted with the sole purpose of advancing the interests of the owner." That is plain speaking and plain truth. In the proposed revised scheme of competition conditions suggested by the Institute Committee, and already partially discussed, there was a sentence assuming that competitions were no doubt partially instituted for the procuring of the best design for the purpose in view, "together with the promotion of the best interests of the art of architecture," an assumption which was sharply and rightly criticised at the discussion on January 3rd, and which seems to us to amount to the kind of thing that is vulgarly called "humbug." As a rule it may be safely averred that the promoters of a competition (formally labelled "the owner" in the American Code) care nothing whatever about "the best interests of the art of architecture"; they are thinking about their own interests, or at best about the advantage to their own town and neighbourhood of securing an attractive building; and as far as the competitors are concerned their object is to get the most they can out of the profession at the least expenditure of money. The American Institute recognises the fact and states it in plain language; and it is right in doing so.

Are Competitions Desirable?

Having stated this, however, the American Code proceeds to express the opinion, in the very next clause, that "competitions are in the main of no advantage to the owner"; so that the promoters (as we call them here) are taxed with being in the first place self-interested, and in the second of not understanding their own interests. The American Institute are, in fact, obviously entirely opposed to the whole principle of competition. At the conclusion of the clause last quoted, they add: "It [the Institute] therefore recommends that, except in cases in which competition is unavoidable, an architect be employed upon the sole basis of his fitness for the work." The cases referred to are, we presume, such as those in which funds have been left for a building on the condition of its being open to competition, as has occasionally happened. But the American Institute Code practically sets out with the sentiment: "Do not have any competitions if you can help it." All the rest of the provisions are to minimise the evils of competition if it is unavoidable.

This is rather too strongly put. It would be easy to name instances in which the promoters of a competition have had the advantage of getting a better building for a special purpose than they would probably have obtained without a competition. When an architect is selected without a competition, he is always selected because he has carried out other buildings of the same class in a satisfactory manner. But it is always possible that there is another architect somewhere who could do it still better, but who has not, through circumstances, had a previous chance at that class of building. Instances of this will probably occur to our readers without our naming any particular ones; and moreover it is quite possible that the architect selected for his known ability in a particular class of building obtained his first commission of the kind, which founded his reputation, as the result of a competition. Therefore we consider that the attitude of the American Institute, which obviously regards competitions as an avoidable or an occasionally unavoidable evil, is somewhat too uncompromising. Although we quite agree that competitions are promoted for purely self-interested motives, there is something to be said for them on behalf both of architects and architecture. Some architectural reputations of the present day would never have been made but for the chance afforded by competition, and not only the architect but the public would have been the losers.

Limited Competitions.

The American Institute recommends limited competitions of men selected for their reputation, and is of opinion that, unless cogent reasons prevent it, all competitions should be of that type. We should be inclined to take the opposite view, and to say that those are just the occasions when competitions are of no real service, except to spend money, and (if the drawings are exhibited) to amuse the public. When six architects, say, are selected to compete for a special building because each of them has a reputation for that class of building, the presumption is that any one of them would produce a good building if commissioned directly, and therefore the trouble and expense of the competition is wasted.

And to reduce all competitions to "limited" ones would do away with what is really the strongest point in favour of competition—the chance it affords to talented men whom circumstances have kept in obscurity. The American Institute is practically contemptuous in regard to such competitions. A passing paragraph merely mentions the fact that such open competitions "have sometimes to be employed in consequence of legislative enactment," and does not condescend even to suggest any special regulations for their conduct. This will be understood if the clause is read in connection with Clause 3 of the Code, "On the Qualifications of Competitors," which commences with the remark—

> It is prejudicial to the interests of the owner that an architect should be admitted who cannot in advance establish his competence to design and execute the work.

Mandatory Conditions.

At the close of the document is a general clause stating that as competition practice must vary in different parts of the United States, considerable latitude of interpretation is given to Sub-Committees on Competitions, but there follow certain instructions which are "mandatory," and, which lay down conditions without which the approval of the Institute must be withheld; and the second of these reads—

> "(*b*) Unless the programme excludes from the competition all persons who cannot in advance establish to the satisfaction of the owner their competence to design and execute the work."

This condition is illogical to begin with, as the Code has already recognised the fact (Clause 4*b*) that open competitions may be unavoidable on account of legal requirements, and in that case the mandate quoted could not be carried out; so that the Code in this respect stultifies itself. Moreover, while the Code started with assuming (rightly) that all competitions are instituted with the object of advancing the interests of the owner, it now turns round to take the owner under its wing and assist him in his self-interested action. The defence for this attitude, which would practically render open competitions impossible, is found under Clause 3, before quoted ("Qualifications of Competitors"), in which it is urged that sketches give no evidence that the author has the matured artistic ability to fulfil their promise, or that he has the technical knowledge necessary to control the design of the highly complex structure and equipment of a modern building. Certainly mere showy sketches of elevations or perspective views do not give such evidence. But sketch designs for a complex building would be judged in the first place (if the assessor or jury knew their business) on the merits of the plan; and our experience is that a man who can produce a really good and practically workable plan for a public building will be likely to have practical knowledge enough to carry out that plan. It is the man who produces picturesque elevations on an ill-constructed plan who is generally found wanting when practical knowledge is called for. Moreover, even in an open sketch competition every competitor is, or should be, called upon to accompany his design with a report stating the methods of construction, heating, lighting, and ventilation proposed; and such a report, read in conjunction with the plan and section of his design, ought to give sufficient evidence as to whether the author knows his business or not—provided always, as aforesaid, that the assessor or jury know theirs.

A Binding Contract.

One of the most important points in the American Code, which finds no analogy in the English one, is the provision that the Programme issued to competitors "should constitute a definite and binding contract between the owner and competitors," guaranteeing that the award and the commission will be made in favour of one of the competitors. This is a suggestion which ought not to be lost sight of in England. We have often seen the question raised by disappointed competitors, whether the promoters were not really under a contract to award in accordance with the assessor's decision; and, as far as we understand, that position cannot, in most cases, at all events, be legally sustained. The point should not be lost sight of by our Institute Committee. Another point worth attention in the American Code is the very wise one that "the programme should not require or permit competitors to furnish their own or builders' estimates of the cost of executing the work in accordance with their designs. Such estimates are singularly unreliable"; a conclusion which will apply as much to the English as to the American side of the water. It is suggested that, if required, "they should be made for all designs by one unprejudiced person employed by the owner"; a suggestion which promises, at all events, a new harvest for the Quantity Surveyor.

Appointment of Assessors.

The provisions for the appointment and the duties of assessors, and for other details in the carrying on of a competition, are in spirit much the same as ours. The Americans seem to prefer plural jurors to single assessors. Nothing is said as to the payment of either, so that we presume their services are to be honorary; that they are so in France would be quite sufficient, since among American architects whatever is French is right.

The Important Points.

The important points for English architects to note in the American Code are the decisive manner in which compliance with the ruling of the Institute as to black-listed competitions is demanded from its members, under pain of their conduct being banned as "unprofessional"; and the view that the programme of a competition should be so drawn up as to constitute a contract between the promoters and the competitors. The first-mentioned course has more than once been urged, but the R.I.B.A. Council has so far been rather tamely rejected. These are two precedents which ought to be seriously considered at Conduit Street.

As to the general view taken of the good or evil of competitions, we hold that the American view is the wrong one, and that in almost ignoring open competitions they are, so to speak, dismissing with costs the form of competition which, from the point of view of the architectural profession, has (if the drawings required are reduced to a minimum) a better *raison d'être* than any other.

Architectural Use of Concrete.

THE subject of our last week's leading article is rather unfortunately brought back to us by the illustrations in concrete and constructional engineering which accompany an account of the visit of the Concrete Institute to Paris. The visitors were taken to see, among other things, M. Hennebique's country house at Bourg-la-Reine, which is illustrated as "a marvellous instance of what can be done with reinforced concrete." It is certainly marvellous, from an architect's point of view. The house exactly illustrates the kind of thing we deprecated last week; the pursuit of tricks of design in a kind of distorted imitation of mediæval masonry. The design, in our opinion, would tend to act as a warning rather than as an encouragement to the use of reinforced concrete in architecture. A far more interesting illustration is that of the great cantilevers which have recently been put up some little way out of St. Lazare Station, to support a roadway above the enlarged width of the railway. The railway formerly ran at the foot of a retaining wall rising to the

street level above. The retaining wall has been removed and the railway widened, while the roadway above remains *in statu quo*, carried by the vast cantilevers which overhang the new portion of the railway. That is, of course, the engineering rather than the architectural treatment of reinforced concrete; but it is a perfectly satisfactory and rather striking use of the material, which it is a pleasure to see. On the other hand, nothing worse or more unsuitable can be done with reinforced concrete than to make it the medium for architectural gewgaws. A broad and simple treatment is what is required to express the quality and character of the material, any detailed ornament being supplied by surface treatment or the addition of coloured materials applied to the wall surface, as already suggested.

A "Very Practical Suggestion."

IT is natural that all sorts of suggestions for a memorial to King Edward should find their way into print. Some —like that of erecting a new façade to Buckingham Palace—we regard as being wholly admirable; others, like that which was put forward last week by a correspondent of the "Morning Post," excite our wonder. "Long before the memorial to Queen Victoria is nearly finished," writes the correspondent just mentioned, "the question of a memorial to her successor is before the country. May I be permitted to make a very practical suggestion? Nine years ago it struck me that the best and most appropriate memorial to an English Sovereign would surely be a new chapel added to Westminster Abbey. Why not build it now? It is so badly wanted for the burial of our great dead. Some may carelessly think that a new chapel would spoil the ancient abbey. Henry VII. did not think so when he built *his* new chapel. It would not long remain glaringly white. Any amount of money could be spent over it. It would be the most national memorial possible." That this is indeed "a very practical suggestion" cannot be denied. That is its defect. It so completely ignores the strength of the sentiment in favour of maintaining the Abbey in its integrity, that it need not be further discussed. It is here cited as a curious instance of the absolute futility of many ideas that are nevertheless, in a sense, "very practical."

"In Restraint of Trade."

A DECISION given by Mr. Justice Coleridge in the King's Bench Division last week puts the trade unionist in a rather curious position with regard to his union's obligations towards him. The case was that of Mudd v. the General Union of Operative Carpenters and Joiners. The plaintiff sought to recover damages for the loss of his tools in a fire, and the jury awarded him £5. There arose, however, the question of whether he was entitled to judgment. The point at issue was whether the defendant society, being mainly in restraint of trade, was an illegal association at common law. The Trades Unions Act of 1871 provides that a trade union shall not, by reason of its being in restraint of trade, be considered unlawful in the sense that membership involves liability to criminal prosecution, nor so as to render void any agreement or trust, but it leaves untouched the inability to enforce agreements for the application of its funds to provide benefits to its members. If, therefore, defendants were an illegal association at common law, plaintiff could not enforce his claim. The question whether defendants were an illegal association depended upon its rules. Since the foundation of the society about 25 per cent. of the amount paid out for benefits had been paid in respect of strikes. There was nothing illegal in a strike, and if defendants' rules in that respect had been limited to assisting strikes or supporting strikers his lordship would be disposed to hold that not to disclose an illegal purpose. But the rules went further than that. Three of them were practically the same as a rule which, in the case of Russell v. the Amalgamated Society of Carpenters and Joiners, was held to contemplate such a restraint of trade as made all the other rules, generally, harmless or otherwise, unenforceable at law. He thought that where all parties had agreed to be bound by, and had acted on, certain rules, it must be very clearly shown that the rules having an illegal tendency were a main feature of the trade union before they could render unenforceable the harmless rules. If he could have found that the rules having an illegal purpose were not a main feature of the rules in general, he should have been disposed to hold that he was not bound, but, as it was, he considered that he was bound by the decision in the case he had referred to. He therefore gave judgment for defendants, with costs. It would seem to follow therefore that the member of a trade union cannot compel it to confer upon him any of the benefits to which he assumes that he is entitled. The interest for employers seems to reside in the inference that since, apparently, a member cannot legally enforce his claims upon any of the various funds, those funds might with impunity be applied purely in restraint of trade—that, for instance, a trade union might replenish its war chest at the expense of its sick or accident or superannuation fund. Such at least seems to be the bearing of this particular judgment.

The German Building Trade Dispute.

IT was announced in a telegram from Berlin dated June 7th that both sides in the building trades dispute had accepted the draft agreement submitted to them by the arbitrators on June 1st, and that local negotiations in the various cities would begin forthwith, and it was expected that the lock-out would be withdrawn in the course of the week. Thus it appears that an unexpectedly tame and swift conclusion may now fortunately be anticipated for what was held out to be the most bitter, and what was prophesied to be the most protracted labour struggle of modern times. There was no doubt a good deal of bluster and tall talk on both sides. This is quite natural and customary; but what cannot be quite so easily understood is the persistency with which the aims and objects of the employers have been misrepresented in the British newspapers. Suspecting that (for some reason that is still unfathomable to us) the employers were being treated with scant justice in this country, we took some trouble to ascertain the employers' views, and these, when placed before our readers in our issue of May 25th, at p. 537, put, we think, a very different complexion on the employers' case from that which it had been made to assume in the daily press, and in particular showed pretty conclusively that the employers had been unjustly credited with an implacable determination to crush the unions as the chief object of the lock-out. It was insinuated that the German employers had deliberately conspired to crush the unions at all costs—that the sole object of the lockout was to reduce the men to a state of demoralised disorganisation. This appears to have been a grotesque exaggeration. The employers, indeed, expressly and explicitly repudiated the charge that their action was directed against the organisation of the workmen. Their main object was more freedom from the tyranny of the workmen's organisations; and although the thesis which Thomas Henry Buckle elaborated with superabundance of ingenuity — that those who hold the preponderance of power will certainly abuse it—has in it doubtless some germ of truth, this is an additional reason why the employers should feel anxious for a readjustment which should give them greater liberty of action in the conduct of their business. Unhappily the struggle has been marked by several scenes of violence, in which there has been bloodshed and loss of life; and these regrettable incidents, as well as the whole tenour of the dispute, emphasise the truth of the contention that the more highly organised are the forces on both sides, the greater is the assurance of industrial peace. In this country, it is hardly necessary to remind our readers, the National Federation of Building Trades Employers has succeeded in establishing a system of conciliation boards that has been hitherto found to be wholly efficient and effectual for the settlement of disputes. Whether the same machinery could be adapted to the German environment and the Teutonic temperament can be best ascertained by actual experiment—a course that can be heartily commended to our German neighbours.

FOUNDATIONS IN UNSTABLE SOIL.

By W. NOBLE TWELVETREES.

[*This gives an interesting account of the Compressol system of forming foundations in unstable soil. Briefly, this consists of perforating holes in the ground, by means of heavy dies, until a hard stratum is reached, and filling up the perforation with concrete well rammed down.*]

The foundations of important buildings and structures of engineering character present little difficulty in places where the soil is reasonably firm, but cases often arise where very heavy loads must be transmitted to and spread over comparatively limited areas. Sometimes the ground may be such that it would be capable of supporting a moderate pressure per unit area, and alternatively it may be so unstable as to call for very special types of foundation work.

One of the most familiar methods of consolidating soil of low bearing power is to drive timber or reinforced concrete piles, and upon these to build footings or a general foundation platform.

Another method of dealing with unstable soil is to construct a general foundation raft of steel beams embedded in concrete, or preferably of reinforced concrete, over the entire site of the building or structure to be supported. This solution of the problem really involves consolidation of the soil, which is compressed more or less uniformly, the surface gradually sinking until further movement comes to an end.

Foundations in Chicago and other American cities were very largely designed on this principle in former years, but to-day the tendency is rather in favour of foundation wells by which the weight of heavy buildings is transmitted down to solid rock or some firm stratum below the compressible soil near the surface.

A Compression Method.

Yet another method, practically unknown in this country, but which has been adopted with perfect success and considerable economy on the Continent, is to compress the soil mechanically in such manner as to form holes of predetermined depth at selected points, and then to fill the holes with concrete. This method, which is known as the Compressol system, can be adopted even in water-bearing strata, and as the soil is compressed laterally as well as vertically its resistance is enormously increased. Moreover, the irregular outline of the hole, due to variable resistance of the soil, has the effect of distributing the load transmitted to each concrete pier over a relatively large surface area, instead of concentrating the greater part of it at the base, as happens where ordinary foundation piers are sunk.

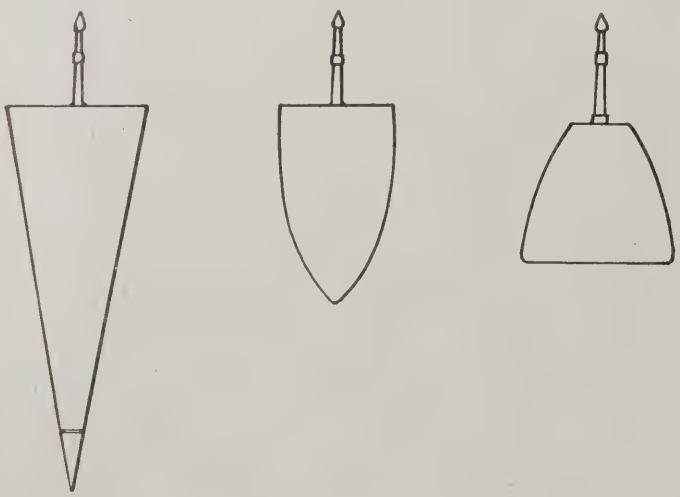


Fig. 1. *Fig. 2.* *Fig. 3.*

Fig. 1 shows the form of the perforating die first used; Fig. 2 the second perforating and compressing die; Fig. 3 is the third die for testing the bearing power of completed pier.



Fig. 4 shows the driving machine, using the first die.

As the process to which we refer is applicable to buildings of every class, and constructed of any standard materials, the particulars given below will probably interest most of our readers.

Method of Construction.

The construction of a foundation pier by the method in question comprises two operations, the first being the perforation and compression of the soil, and the second the deposition and ramming of concrete in the hole formed, with additional lateral compression of the soil.

The first operation is performed by means of a conical die of the form illustrated in Fig. 1, the body being of cast-iron and the point of steel. The die is of 33½in. diameter at the top, and weighs nearly two tons. It is raised to the required height by the aid of a machine similar to a pile-driver, and allowed to fall as many times as may be necessary to punch a hole of the requisite depth at any predetermined point.

The second operation is performed, so far as ramming is concerned, by means of another die of the shape represented in Fig. 2, the diameter of this being 29½in. at the top, and its weight about 1¾ tons.

A third die, employed for testing the bearing power of completed piers, measures 31½in. across the bottom and weighs about 1½ tons (see Fig. 3).

The driving machine illustrated in Fig. 4 has a revolving platform from which a steel tower rises to the height of

55ft. 9in., and whereon are installed a portable engine and boiler of from 35 to 40 horse-power, and a winch for hoisting purposes. The machine is fitted with an automatic clutch for engaging and releasing the various dies as required.

Fig. 5 is another view, showing three machines in operation on the foundations for the new Law Courts, Paris. It will be noticed that the perforating die is being used by two machines and the ramming die by the third.

The height of fall above normal ground level is usually from 26ft. to 32ft., the drop gradually increasing with the depth of the hole perforated. It should be noted that the fall can readily be fixed in accordance with the nature of the soil by adjusting the height of a collar attached to a bracket fitting around the vertical post of the tower, this collar serving the purpose of opening the clutch when the latter is drawn up so as to come in contact with its lower surface.

Calculating Soil Resistance.

During the perforation of a hole observations are taken of the depth penetrated at each fall of the die. Then the resistance of the soil is calculated by the following simple formula:—

$$R = \frac{Wh}{h_1}$$

Where W = the weight of the die, h = the fall of the die, and h_1 = the depth penetrated at each fall of the die.

In practical work a reduction of 50 per cent. is usually made to allow for air resistance, accidental friction against the sides of the hole, and other losses of force that cannot be precisely estimated. Then for any given load and factor for safety it is easy to determine the point where perforation may be stopped.

Fig. 6 is a section showing the nature of a well sunk in the manner described. The wall being consolidated by the action of the conical die, possesses considerable resistance to exterior lateral pressure, but when waterlogged soil has to be dealt with, or in cases where springs are likely to be encountered, clay is dropped into the boring before each fall of the die, so that a plastic water-tight lining may be formed. If preferred, the lining can be formed in the same way by depositing concrete instead of clay.

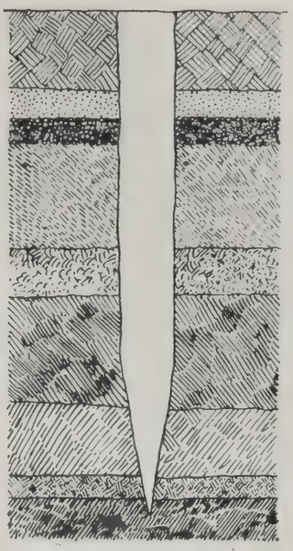


Fig. 6 is a section showing the nature of the well hole sunk by this system.

Filling the Perforations.

When perforation has been carried to the necessary depth, the bottom of the well is enlarged by dropping in concrete or pieces of hard stone, and then employing the ramming die to force the material laterally into the soil, the result being an extended base which naturally increases the bearing capacity of the foundation pier. The uppe rpart of the latter is formed by depositing and ramming concrete, in layers of about 12in. thick.

Owing to the powerful effect of the falling die, and to the variable consistency of the soil, the foundation pier



Fig. 5 shows three of the driving machines in operation on the foundations of the New Law Courts, Paris. The machine in the foreground is using the second die; the other two the first die.



shows the irregular outline of a pier constructed, the irregularity being due to the varying consistency of the soil.

assumes a very irregular outline, as illustrated by Fig. 7, which is an important feature from the standpoint of load-bearing capacity, the projections being more accentuated in places where the soil is of yielding character, than in places where it is moderately firm.

If desired, steel bars can be incorporated in the upper part of the foundation piers for connection with beams or arches between the piers and converting the whole series into a rigid structure beneath the building to be erected.

In cases where it is considered desirable to test the actual resistance of the piers, the testing die is brought into use when the piers have been completed nearly up to the level of the ground.

After several blows for the purpose of ascertaining the mean depression for each fall of the die, the effective resistance of the pier is calculated by the formula:

$$R = \frac{Wh}{2h_1A}$$

Where A = the surface area of the test die, 2 = a coefficient to allow for various indeterminate losses of force, and the other symbols have the significations previously stated.

Tests for Resistance.

Tests so conducted on the foundation piers of a bridge built across the Sambre at Louvroil, in Belgium, showed the mean depression of about 0.6in. for each drop of the test die from the average height of 15ft., the corresponding resistance of the pier calculated by the foregoing formula being 36 tons per square foot.

As the diameter of the piers was rather more than 40in., the safe load works out at about 320 tons per pier, or 160 tons per pier even if we double the factor of 2 stated above.

A more satisfactory method of ascertaining the safe bearing capacity of foundation piers constructed in the manner here under consideration, is that applied in October, 1907, by the Building Department of Vienna.

Several piers had already been constructed for the support of a large seven-storey building, when the Department intervened and prohibited further operations until tests had been made. The soil consisted of made ground to the depth of nearly 18ft., below which were beds of gravel and clay permeated by water. The average diameter of the pier selected for testing was 40in., and its length 24ft. 3in.

In order to impose a direct load on the pier a large box was constructed and placed as shown in Fig. 8, with screw jacks for supporting the loading before the first and between the remaining tests.

Operations commenced on October 10th, and ended on October 29th, being under the direction of an inspector attached to the Building Department, assisted by Dr. Ing. Fritz von Emperger as expert witness.

Test No. 1, involving the total load of 60 tons, caused no movement of the pier.

Test No. 2 brought into play the load of 108 tons, the effect of which was almost inappreciable.

Test No. 3, where the load of 152 tons remained in position for 72 hours, revealed no change of level.

Test No. 4 was made by imposing the load of 166½ tons on Oct. 17th, and taking several readings, the last being made on Oct. 29th, when the pier showed settlement to the extent of a few millimetres.

Further tests were considered superfluous, and the construction was officially authorised for the load of 110 tons per pier.

As the ground in its natural state was not capable of supporting more than 1 ton per square foot, or about 9 tons upon an area equal to that of one pier, the efficacy of this system of foundation work was convincingly demonstrated.

In addition to their advantage from the structural standpoint, Compressol foundations possess the advantages of simplicity and economy; they can be rapidly executed, and the workmen employed are never called upon to undergo the risks inseparable from the sinking of foundation wells in the ordinary manner.

Although the system was applied to the foundations of some two dozen buildings for the last Paris Exhibition, and has been employed in connection with numerous public and other important buildings in France, Belgium, Germany, Austria, Egypt, and even Siam, it is practically unknown in the United Kingdom, where local conditions frequently render the execution of foundation work by ordinary methods both difficult and costly.

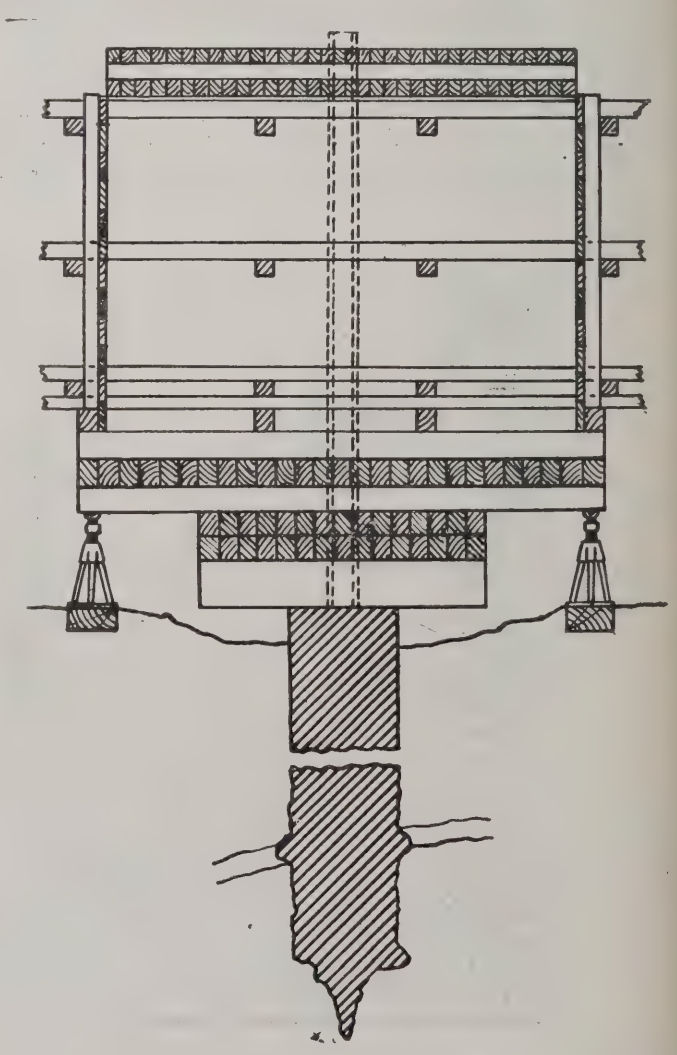


Fig. 8 shows the box arrangement constructed for the testing of foundation piers at Vienna in 1907.



This is in the old portion of the building, but the walls and ceiling are entirely remodelled. The chimneypiece is the old one refixed. The walls and ceiling are finished dead white. (See notes on page 609.)

NEWTON GREEN HALL, LEEDS: THE DINING-ROOM. ADKIN AND HILL, ARCHITECTS.

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NEWTON GREEN HALL, LEEDS.

We give in this issue several illustrations of Newton Green Hall, Leeds, which has been extensively altered and added to under the direction of Messrs. Adkin and Hill, architects, of Bradford. The Hall is the property of Sir Wilfred Hepton, and is situated at Chapeltown, a suburb of Leeds, almost abutting on a tram route, within twenty minutes of the city, and hemmed in by property of the usual suburban type.

When once the entrance gates are passed the park and grounds come as a revelation to the visitor, a fertile oasis in a desert of bricks and mortar. The drive is through an avenue of fine old timber; and the house, on a slight eminence with a background of foliage, overlooks the gently undulating park, characteristically dotted with forest trees. The old building was of brick, floated on the main frontages with cement, and roofed with grey Yorkshire flags.

Built in the middle of the last century, the south elevation is of an Italian type, crude in detail, but of a good general proportion, so that aided by time and creepers a really pleasing result has been attained.

The west side and back of the building ran very much to seed, and fortunately had to be almost entirely removed on account of the large size of the new rooms. Briefly the east end and front from the kitchen to one half the drawing-room are old, with some minor alterations. The drawing-room and hall were enlarged, and all the remainder is new work.

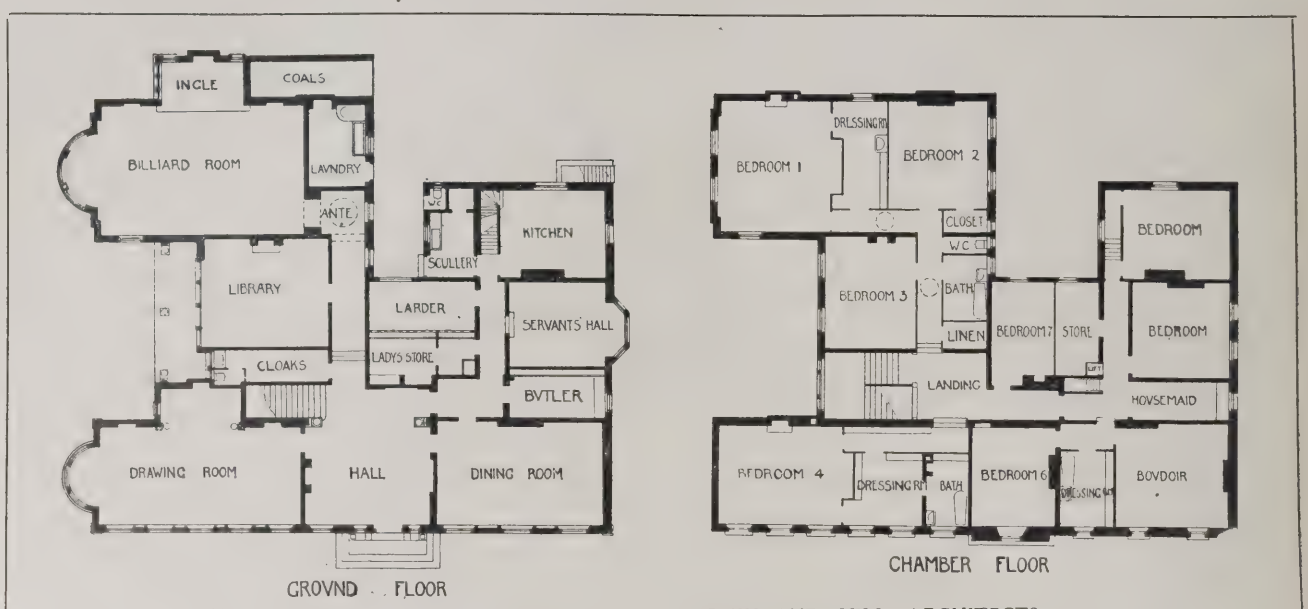
The billiard-room was designed in a different style from the remainder of the house, it being thought a more fitting setting for the trophies of big game shot by Sir Wilfred in various parts of the world. The grounds are charmingly wooded, and would lend themselves easily to the formation of a terraced garden of a formal type, a consummation which it is hoped will eventually be arrived at. The whole of the work, including alterations to the stabling, lodge, and new entrance gates, was completed ready for occupation within four months, whilst the owner was travelling in Canada.

In one of the largest rooms, the music and billiard room, the floor is laid for dancing with narrow oak boards. No springs are used, but the necessary elasticity is obtained by the joists, etc., being fixed so that there is no direct bearing on the solid. The chimneypiece is in local stone with red Mansfield strings and green-slate dowels in the lintel. The panelling is in mahogany, and the plasterwork is left white. The dining-room is in the old portion of the building, but the walls and ceiling have been entirely remodelled. The chimneypiece is old. Walls and ceiling are finished dead white. The woodwork on the staircase is in mahogany, and the walls are panelled in Parian cement. The panelling in the morning-room is in fumed oak, with mahogany inlay. The ceiling has a band of modelled plaster. The hall is panelled in oak, finished dull brown. The builder was Paul Rhodes, of Leeds, and he executed the carved stonework. The fireproofing was done by the Bradford Fireproof Wall Plate Co. The special woodwork and modelled plasterwork were executed by Marsh, Jones, and Cribb, of Leeds, and they also supplied the grates and electric light fixtures. Henry Lindley, Leeds, carried out the plumbing work, and the sanitary fittings were supplied by Hepton and Sons, Leeds. Dixon and Son, Leeds, executed the electric wiring, and Rawlinson and Co., Leeds, supplied the lift and heating apparatus.



The panelling is in fumed oak with mahogany inlay, and the ceiling is relieved with modelled plaster.

NEWTON GREEN HALL, LEEDS. THE MORNING-ROOM. ADKIN AND HILL, ARCHITECTS.



NEWTON GREEN HALL, LEEDS: PLANS. ADKIN AND HILL ARCHITECTS.

(*See previous page.*)

SOCIETY OF ARCHITECTS' TRAVELLING STUDENTSHIP.

As announced in our issue last week, the travelling studentship of the Society of Architects this year was awarded to Mr. D. W. Coombs, of Bournemouth. Mr. Coombs, who is 23 years of age, received his architectural training under Mr. J. J. Shepherd, of Bournemouth, to whom he was articled in 1906, and in whose office he is now acting as assistant.

The subject set for the design competition this year was a Golf Club to accommodate 175 members, of whom 140 would be men and 35 women. The site was a level one, with no restrictions as to available area, and the cost was not to exceed £4,000. A lounge hall, luncheon room, and bar, secretary's office, kitchen, scullery, waiters' room, stores, and larder, etc., had to be provided on the ground floor, together with ladies' and gentlemen's dressing and drying rooms, and bath and lavatory accommodation, etc., while on the first floor provision was to be made for a committee room, card-room, and caretaker's residence, etc. A room for professionals, a workshop, caddies' room, wash-house, and tool-house, also a covered shelter for six motor cars, were to be provided as outbuildings. A veranda to overlook the course and a clock turret were also asked for.

The official criticism of the winning design is as follows:—

No. 9, to the author of which the Studentship has been awarded, shows an excellent general arrangement, the separation of the garage and accessories from the pavilion being particularly good, as also is the idea of locating the putting green close and handy. The general scheme of the plan is that of two wings at right angles to one another connected by a lounge hall which cuts off the corner and passes through from front to back. The method of separating the women from the men, the planning of dressing and drying rooms is very ingenious. So also is the service from kitchen to luncheon room, bar, and hall. The ladies' room is so contrived as to overlook the golf course. The only objection that can seriously be taken is to the drainage, where some practical considerations have been neglected, and theory has been carried to the extent of faddism. The positions of tee No. 1 and hole No. 18 suggest that the designer has studied the intricacies of the game. The elevation is quiet and picturesque, and the drawings well prepared and workmanlike; although they are only in pencil and colour they are quite sufficient for the purpose of the competition.

LONDON GUILDHALL RESTORATION AND DISCOVERIES.

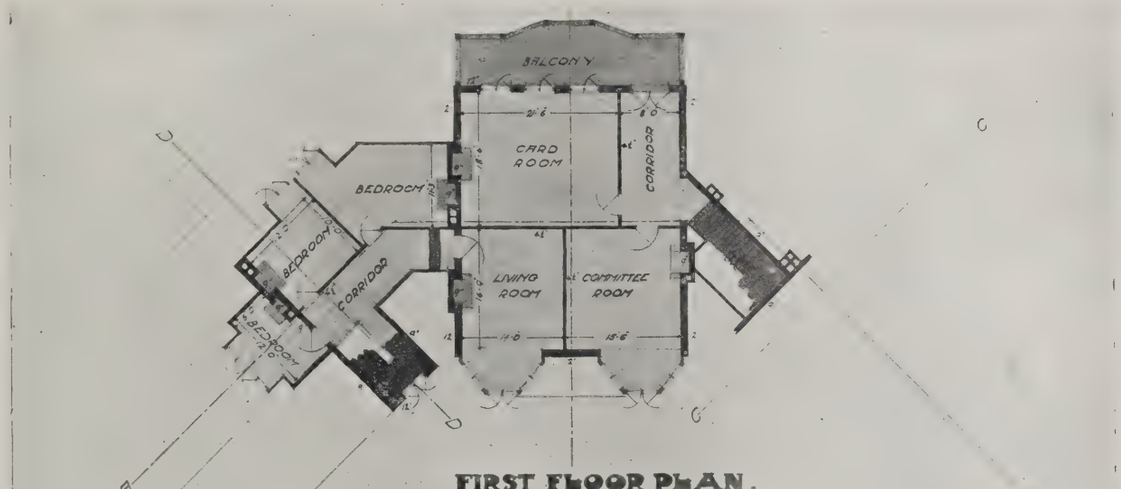
[*At the Royal Society of Arts, Mr. Sydney Perks, F.R.I.B.A., F.S.A., the City Surveyor, gave an interesting lecture, illustrated with a series of lantern views, on recent restoration and discoveries at the Guildhall. Below is a brief digest of the paper.*]

Little is known of any Guildhall erected before the present building; there was a previous structure apparently with a frontage to Aldermanbury, and I have heard it suggested that the west portion of the crypt was part of that Guildhall. It is well to note that the present Guildhall was considered a remarkably big building at the time it was erected, and the cost crippled the finances of the Corporation for several years. Old views of the exterior show that the appearance was roughly similar to what it is to-day. After the fire, Wren added a storey and provided the hall with a flat ceiling, and there are many views both of the interior and exterior, showing the appearance of the building until the present open roof was built by Sir Horace Jones in 1864. He followed, as far as possible, old traditions, but in place of two small ventilators he fixed one large flèche. Although this is very effective from a distance, it is open to criticism in that it has the effect of somewhat dwarfing the appearance of the front to the Guildhall Yard.

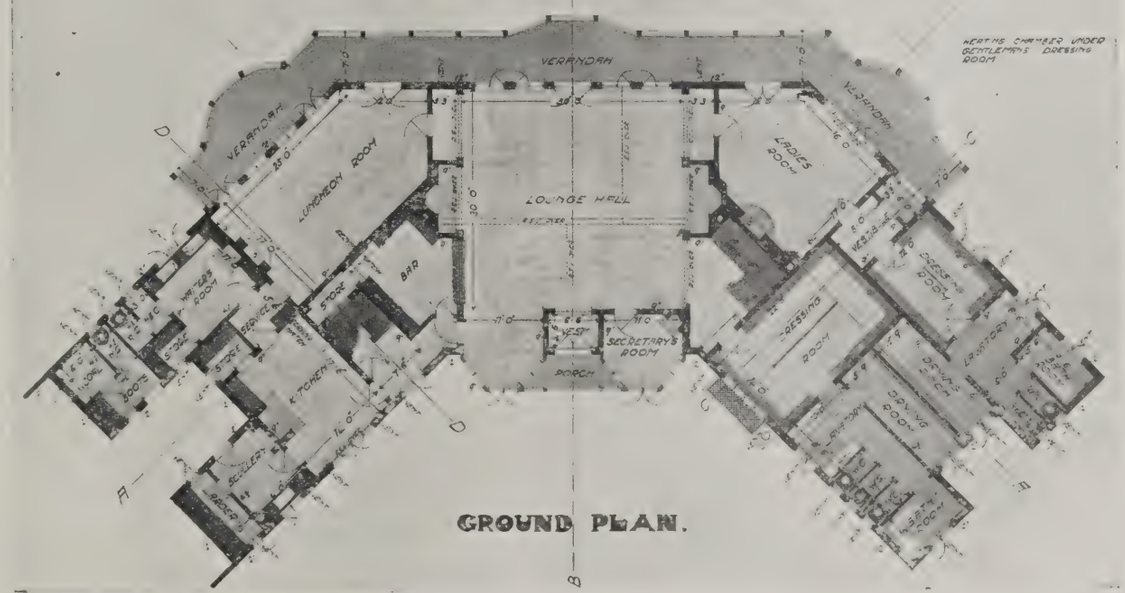
I have prepared plans of the crypt and Guildhall above, showing them, as far as I can judge, as they were when first built in the early part of the fifteenth century. With regard to the crypt, the eastern half, by far the most elaborate portion, is very little different to-day from what it was nearly 500 years ago. The crypt has been restored quite recently. Until then, the walls and vaulting were covered with dirt and grease, the shafts supporting the vaulting were quite black, and it was only after the removal of the grease and dirt that the colour of the blue Purbeck stone shafts could be seen. This eastern crypt was more expensively constructed than the Western portion. Its importance was emphasised by the fine entrance, which is quite as elaborate as the fifteenth century porch. Until about two years ago it was boarded up and completely obscured. Now a new staircase gives easy access to the crypt, and we can see the fine mouldings of the piers, the niches—that no doubt held statues—and many other interesting details. A few weeks ago brickwork that had been



ELEVATION TO ROAD.



FIRST FLOOR PLAN.



GROUND PLAN.

THE SOCIETY OF ARCHITECTS' TRAVELLING STUDENTSHIP, 1910. A GOLF CLUB.
DESIGN BY D. A. COOMBS. PLACED FIRST.

built across the doorway opposite the main entrance was removed, and the steps and other details uncovered. Wren built a series of brick arches, similar to a range of railway arches. He filled up the haunches, and replaced the floor. The workmen filled the space in with any stone or brick débris handy, and hundreds of beautiful Gothic fragments exist to-day in the brick walls. While removing the brickwork to uncover the Gothic work a very large number of the fragments have been carefully removed and labelled, and are ready for depositing in the museum.

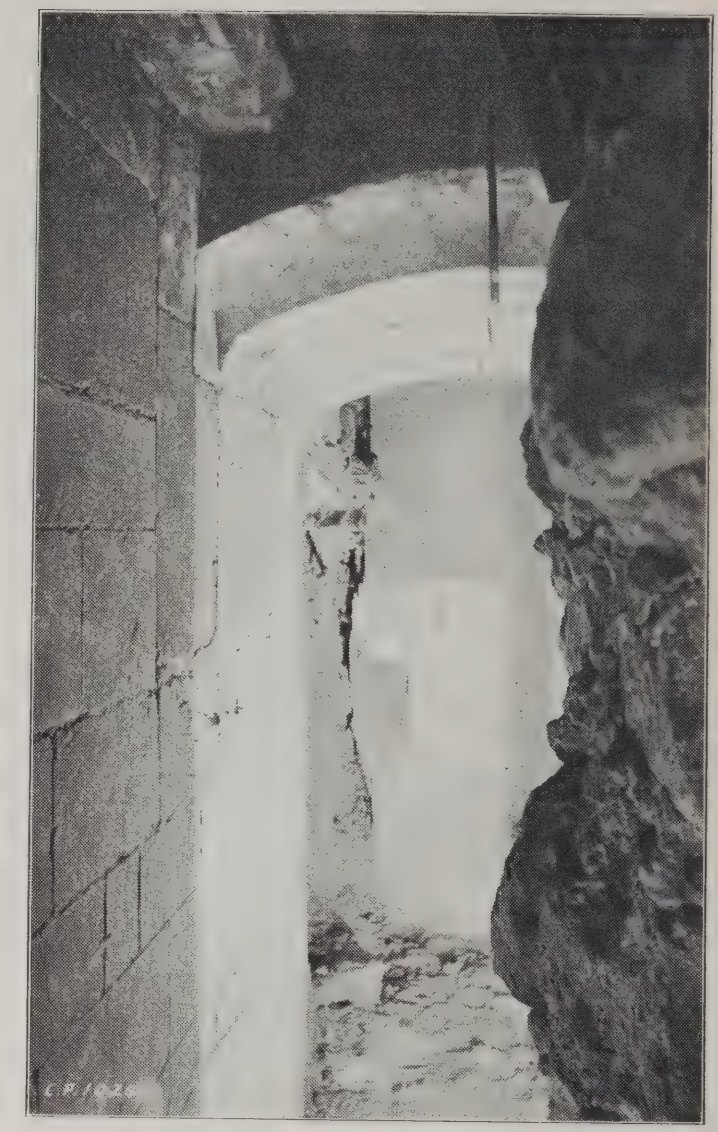
With regard to the western half of the crypt, last December I took up some paving in a direct line between two responds, and one-third of the way across the crypt I carefully cleared away the earth. Just below the surface I found the foundations of a pier that supported the vaulting. At once I opened the paving in the corresponding positions, and in every case—there are eight in all—I found the foundations I wanted. The result is that we know now exactly where the piers existed, and the number of them; and we can tell from the responds that the vaulting ribs spring direct from the shafts without any caps. Every detail is, therefore, at hand to enable the Corporation to restore the entire west end of the crypt, so that we could see it as in the fifteenth century.

Another very interesting discovery was a three-light window in the west wall of the building; this was entirely bricked up. It was, apparently, the only three-light window in the west end of the crypt. A portion of the sill remains. This is yet another link in the chain of belief that the building was an independent structure.

There is a very interesting staircase from the crypt to the side of the porch. It was partly bricked up until a few months ago.

In 1501 kitchens were erected at the north side of the building, opening off the western portion. Later on the western end of the crypt was used for stables, for we read in 1683 that two Aldermen were requested to report upon the "mischiefs arising from the keeping of a stable and a coach-house under the Guildhall." I was puzzled for a long while about the two stone staircases found in the thickness of the wall at the east end of the crypt. They start from the level of the east doorway, which was about 5ft. above the floor of the crypt, and turn outwards at a height of about 15ft. above the floor of the crypt. The plan of the hall shows a circular staircase at the north-east corner. Until a few weeks ago this was blocked at the foot by a boiler, and had not been used for very many years. On going up I found a doorway, bricked up as usual, opening outwards into space. This probably communicated with some building. There is a similar doorway in the south-east turret leading into a complete small room. There was no staircase in this angle, and consequently this room could only have been approached from a building at the east end of the Guildhall. In the circular staircase, about the level of the great hall, there is also a doorway. This was bricked up, and on removing the brickwork I came upon a passage about 23ft. long, 3ft. wide, and 8ft. 5in. high, which was also blocked with stonework. The filling in was removed with great care, and it was found that the passage led into the great hall, passing through a buttress on the way. By a little expense this ancient way can be restored, and communication opened up between the hall and crypt. Just under the great window there is a very fine stone canopy. This delicate piece of work can only be properly seen from a ladder, as the projection of the canopy of the wood screen below hides the view of it, except from a distance. At about the same level as the top of the wood panelling there is a horizontal line at the springing of the stone canopy. It is probable that tapestry was hung below.

Now we come to what we see to-day. The east end and two return sides on the hustings are panelled in oak. The woodwork has a heavy projecting canopy, and this is immediately under the stone canopy. The result is that the wood canopy prevents anyone near the east end from seeing the stonework above, and that we get two heavy horizontal lines



[*The City Press.*

A RECENTLY DISCOVERED PASSAGE AT THE GUILDHALL, LONDON.

immediately under the window, with the very unpleasant effect of dwarfing the end of the hall.

The work of restoring the porch to the Guildhall is now well in hand. The original porch, known as "the Guildhall Gate," was erected in 1425, and was very different from what we understand as an ordinary porch, for it was the full width of the Guildhall yard, about 63ft. wide. It had two doorways in it, and was in part certainly three storeys high. The upper portion of the porch suffered considerably at the Great Fire of London, and was restored by Wren in 1669. He rebuilt the destroyed portions in a severely classical manner, the central feature reminding one somewhat of Temple Bar. The original porch, with Wren's alterations, was pulled down in 1788. That fact is ever to be regretted. Dance's porch was very nearly treated in the same way, to give place to a modern porch erected by Sir Horace Jones. He pulled a third of it down, and then died. Now the missing portion is being restored. The work is well in hand, and should be finished this autumn.

Until last summer almost the entire wall surface of the Guildhall was covered with a preparation of cement about one-sixteenth of an inch thick. This had been painted and distempered, with the result that the sharpness of the mouldings had disappeared, and it was very difficult to distinguish between the original Gothic and the imitation work carried out from time to time. The plaster and paint work is said to have been started in Wren's time, the object being to paint the new stone used in restoration work after the fire, and also

the stone blackened by the flames, so that the whole should have what was considered a pleasing and uniform appearance. We can now see clearly the line of the old walls raised upon by Wren, and the clean stone of the modern windows. Two years ago the crypt was in a still worse state. It was fitted up with gas pendants, and common T pieces hung from the vaulting. These have all been removed, the gas-stoves are going, and the whole crypt has been lighted by electricity.

Considerable interest was taken in the discovery last autumn of the only original and complete window in the great hall. The recess opposite contained a like window, but this was much mutilated. I hope, however, it will be restored as soon as accommodation can be found for the occupants of the office at the back of it. With regard to the south window this has received further attention, and the brick wall on the outer side has been removed. Without doubt, this is an extremely interesting window. In the first place, we find the two window seats—one on each side of the opening. These are frequently seen in early domestic work, and fine examples exist at Stokesay and Alnwick; but no examples exist, so far as I know, in ecclesiastical work. The next thing to notice is the right-angled rebate formed for the shutters. A similar rebate exists in the windows in the crypt. At the lower portion of the window the old hooks can be seen on which the shutters were hung. The latches, although very rusty, are charming in design. The Guildhall was commenced in 1411, and consequently next year is the 500th anniversary of its foundation. What would be more fitting than to celebrate the event by restoring the western portion of the crypt? [For this report, and the illustration on p.612, we are indebted to the courtesy of the "City Press."]

THE R.I.B.A. ANNUAL ELECTIONS.

At the Business General Meeting, on Monday, June 6th, the Officers, Council, and Standing Committees for the ensuing Session were declared duly elected, in accordance with the Scrutineers' Report, as follows:—

THE COUNCIL.

President.—Leonard Stokes.

Past-Presidents.—Thomas Edward Collcutt; Ernest George.

Vice-Presidents.—*Reginald Blomfield; *Alfred William Stephens Cross; *Edward Guy Dawber; Ernest Newton.

Hon. Secretary.—*Henry Thomas Hare.

Representatives of Allied Societies.—Henry Clement Charlewood (Northern Architectural Association); John Bennie Wilson (Glasgow Institute of Architects); *Percy Scott Worthington (Manchester Society of Architects); William Morton Cowdell (Leicester and Leicestershire Society of Architects); *Arthur Stansfield Dixon (Birmingham Architectural Association); Robert Evans, jun. (Nottingham Architectural Society); Sydney Decimus Kitson (Leeds and Yorkshire Architectural Society); Arnold Thornely (Liverpool Architectural Society); *John Watson (Edinburgh Architectural Association).

Members of Council.—Maurice Bingham Adams; *John James Burnet; Walter Cave; *Max Clarke; William Flockhart; *William Adam Forsyth; James Sivewright Gibson; *John Alfred Gotch; *Edwin Thomas Hall; *George Hubbard; *Henry Vaughan Lanchester; *Edwin Landseer Lutyens; A. Beresford Pite; *Andrew Noble Prentice; *Halsey Ralph Ricardo; Henry Heathcote Statham; Sir Alfred Brumwell Thomas; *Paul Waterhouse.

Associate Members of Council.—Sidney Kyffin Greenslade; Charles Herbert Reilly; Harry Inigo Triggs; *Herbert Winkler Wills; Arthur Needham Wilson.

Representative of the Architectural Association.—Arthur Keen [F.].

Auditors.—John Hudson [F.]; William Henry Burt [A.]

THE STANDING COMMITTEES.

Art.—Fellows: Walter Cave; *Edward Guy Dawber; *William Flockhart; *Henry Thomas Hare; Gerald Callcott Horsley; *William Richard Lethaby; Robert Stodart Lorimer; *Edwin Landseer Lutyens; *Edwin Alfred Rickards; *John William Simpson.—*Associates*: *William Henry Bidlake; Thomas Davison; *Thomas Geoffry Lucas; *Walter John Tapper; *Septimus Warwick; Edgar Wood.

Literature.—Fellows: *Frank Thomas Baggallay; *John Alfred Gotch; Sir Charles Archibald Nicholson, Bart.; *George Halford Fellowes Prynne; *Halsey Ralph Ricardo; *Frederick Moore Simpson; Richard Phené Spiers; *Henry Heathcote Statham; *Charles Harrison Townsend; *Paul Waterhouse.—*Associates*: Frank Lishman; *Herbert Passmore; Charles Edward Sayer; Cyril Wontner Smith; *Arthur James Stratton; *William Henry Ward.

Practice.—Fellows: *William Henry Atkin-Berry; Howard Chatfeild Clarke; *Max Clarke; *Alfred William Stephens Cross; *George Hubbard; *Joseph Douglass Mathews; *Alfred Saxon Snell; *Henry Tanner, jun.; *Thomas Henry Watson; *William Woodward.—*Associates*: Kensington Gammell; *Edward Greenop; *Edwin Richard Hewitt; Herbert Hardwicke Langston; *Harry John Pearson; *Augustus William Tanner.

Science.—Fellows: *Harry Percy Adams; *Bernard Dicksee; *William Dunn; Frederic Richard Farrow; *Matt. Garbutt; *Francis Hooper; *George Hornblower; John Murray; *Charles Stanley Peach; *Herbert Duncan Searles-Wood.—*Associates*: *Henry William Burrows; Charles John Marshall; *Alan Edward Munby; *Digby Lewis Solomon; *Ernest William Malpas Wonnacott; *Ernest Alexander Young.

* Signifies re-election.

At the same meeting the following were elected to the Institute:

As Fellows: Ernest Robert Barrow, London; Arthur William Cooksey, London; William Bruce Dawson, London; Horace Gilbert, London.—*As Associates*: George Luard Alexander, London; Walter John Beall, Pietermaritzburg, Natal; Noel Waugh Hadwen, Kebroyd, Triangle, Yorkshire; Joseph Fearis Munnings, Government Architect, E. Bengal and Assam, Decca, India; David John Roberts, Erdington, near Birmingham; Hartley Sutcliffe, Melbourne, Australia; Edward Alexander Taylor, Wollstonecraft, North Sydney, N.S.W.; Morris Thompson, Doncaster.

THE ESSENCE OF THE HOUSING QUESTION.

The proposal to appoint a housing department for the city of Nottingham, to be managed by officials under the direction of the medical officer of health, shows a real determination to press on with the subject of housing reform. Public opinion is now, it appears, quite prepared for more effective action than has hitherto been possible, and in addition to this, the Housing and Town Planning Act has given greater powers and thrown greater responsibilities on to local authorities. Paid officials, whose sole duty it will be to attend to the subject of housing, will, in the opinion of a writer in a Nottingham paper, know a good deal more about it, and be less controlled by impulsive sentiment, than the amateur reformers, who only see one side of the subject, and that the least important side. But the question of housing reform, he continues, is both large and complex, and improvements will only be effected gradually. The people of this country have to learn much before it will be possible to make our country clean, and wholesome, and decent. Poverty is not by any means the only cause of bad housing, or even the worst cause. The difficulty arises with people who are either idle, or dirty, or vicious, and possibly all three. So far, it is possible to yield at least a modified assent to the Nottingham writer's proposition, but it is difficult to follow him when he declares that it is next thing to useless to provide such people with decent houses. He says "they do not want them—would not live in them if compelled to pay even a modest rent. They prefer their present conditions. This is where the chief difficulty comes in, and how long it will take to arouse the people of this country to a sense of its importance we do not know." This is only a specious half-truth. The writer has surely allowed his righteous indignation to blind him to the phenomena of interaction. While it is only too true that bad tenants make bad houses, the thing certainly works both ways. If it were not a well-ascertained fact that men are the creatures even more than they are the creators of their environment, the agonizing of the housing reformer were a vain exercise of the emotions. The action is reciprocal and mutual; and, in any case, you cannot reasonably expect to have clean and good people unless you provide clean and good houses.

The opposite view involves a policy of despair which is utterly foreign to the spirit on which the housing movement depends for its success. Lacking this vitalising moral force, the Housing and Town Planning Bill would have stood a poor chance of commending itself to Parliament and the country; so potent is the enthusiasm for humanity, and so general is the belief in physical means of moral betterment.

NOTES AND NEWS.

The Royal Automobile Club.

The daily papers have not yet grown tired of singing the praises of the new Royal Automobile Club. It "will be one of the seven wonders of Clubland, and the last word in commercial luxury." It will be the largest club in London, and "probably the most up-to-date in the two hemispheres." "Among the adjuncts of the club will be a magnificent swimming bath, about 100ft. long and 30ft. wide, of white marble. There are, too, in process of completion, three racket courts, a fencing-room, a gymnasium, business offices, a telephone exchange, assembly hall, photographic studio, post and telegraph offices, shooting range, Turkish baths, and a lawyer's office. There is also to be a ladies' restaurant. It it a five-floor building, and will contain about 40 rooms on the basement, 33 on the ground floors, while six will be sandwiched in a mezzanine floor, and 179 rooms will be split up in the five floors. The third and fourth floor will each take 50 of these rooms. Of the rooms, 95 will be bedrooms, and so the club will contain an hotel within its walls. The main entrance leads into a magnificent vestibule. The club dining-room and the club room will be on either side of this vestibule, and each of these will be 100ft. by 40ft. It has not yet been definitely decided whether the club journal will find a home in the new building, but if it does remove to Pall Mall, then the new R.A.C. will contain an efficient newspaper office within its walls. The kitchen will be of palatial proportions, and each department will have a room to itself, but everything has been arranged so as to be easily accessible, and on lines conducive to smart service. Two striking features of the club will be the magnificent terraces. One of these is above the assembly hall, and overlooks the Park and Carlton House Terrace. This is 132ft. by 32ft. On the ground floor level will be the main terrace, giving a promenade of over 200 feet." Of course, we cannot commit ourselves to all these superfine superlatives; but that we have nevertheless a very genuine appreciation of the merits of the club as a building will have been inferred from the fact that we long ago gave illustrated descriptions of it.

"Huddled Hospitals."

It is stated that, provided a sufficient sum can be obtained for the very advantageous site occupied by Westminster Hospital, the Governors would be very willing to put up a fine building elsewhere. For the site, though magnificent in its environment, facing as it does the Abbey and the Houses of Parliament, is not (as we have described it) "advantageous" for the purpose to which it is at present applied. The slums to whose doors it brought very necessary medical and surgical aid have now disappeared, and have been superseded by large public and commercial buildings, so that it may be said to be set in the midst of palaces. It still finds plenty of patients, its 210 beds being constantly occupied, but the removal of the hospital to a poorer and more populous district would no doubt be as "wise and right" as King Edward pronounced the removal of King's College Hospital from the vicinity of the Law Courts to the more appropriate district of Camberwell. According to the "Daily Mail," which has very usefully interested itself in the question of "Huddled Hospitals," the Committee of King Edward's Hospital Fund, who have a voice in the matter, are believed to be in favour of removing the Westminster Hospital to south-west London, somewhere between Battersea and Tooting, where the hospital accommodation is very inadequate to the needs of the vast aggregation of inhabitants. With the question of whether it is more convenient for great hospitals to be localised, or whether they are not really more accessible when centrally situated, we have for the moment nothing to do; but on architectural grounds we should certainly favour the change. Full advantage could then be taken of the opportunity for erecting at Westminster a noble building on an exceptionally fine site; and, besides, we might hope for the erection of a dignified hospital in the unutterably dismal region that stretches so drearily from Battersea to Tooting.

Torquay and its Pavilion.

It is stated that some of the ratepayers of Torquay are petitioning the Local Government Board in opposition to a scheme of the Corporation for the erection of a new Town Hall and Pavilion at an estimated cost of £45,000. This marks another stage in a somewhat uninteresting squabble. Torquay has not of recent years enjoyed the prosperity which one would expect in a seaside town with such unrivalled natural beauties, nor is its popularity among visitors anything like that of some of its neighbours—as, for instance, Paignton, about two miles away along the coast. The reason is that Torquay has done very little to deserve public patronage. In former times it was—if we may borrow a fashion-book word—a very modish town, and a considerable section of the inhabitants desire to keep it so. Royalty once patronised it; great men of art and letters forgathered in its borders. There are a large number of retired men and people of private means living in it who desire to be protected against the contamination of the "tripper," and they may be relied upon to oppose any project which would seem likely to encourage that class of visitor. The result is that Torquay provides attractions only for a fine day. On wet days there is no shelter and nowhere to go; and on such days, which, in the West of England, are neither few nor far between, even the respectable visitor and tourist must sit in his hotel or rooms and wait till the clouds roll by. It is reasonable to suppose therefore that that part of the community which must look to the visitor for a considerable part of its living is anxious to remove this reproach from the town; and that its endeavours, as crystallised in the Corporation scheme, are meeting with an opposition that is prompted quite as much by the reason given above as by the more politic plea of expense.

The L.C.C. Resumes.

At the first sitting of the London County Council after the Whitsuntide recess, Mr. Cyril Jackson, Chairman of the Education Committee, mentioned that the number of schoolchildren in London is not increasing in any large degree, but new schools had to be provided in order to accommodate those displaced owing to various causes. Mr. Lansbury complained of the non-provision of baths in elementary schools, and said that in this respect Germany was ahead of us. Miss Adler complained that the schools were not being modernised to the extent that they should be. The Education report having been disposed of, Mr. P. A. Harris moved that it be referred to the Building Acts Committee to consider and report immediately as to the steps to be taken under the Town Planning Act to preserve the essential features of Edwardes Square, Kensington; and that the President of the Local Government Board be asked to receive a deputation from the Council on the subject. He said it would be a real blot on London if any principle were set up which would permit of the closing of open spaces, such as the one under notice. Captain Swinton supported the motion, but remarked that Edwardes Square was not properly an "open space" in the accepted sense of the term, but was merely a big garden in connection with the surrounding houses. It was on those lines alone, he held, that "town planning" would succeed—it would only be by inducing landlords to lay out their property with fine open spaces on similar lines to those adopted by the first Duke of Bedford, who was the originator of town planning. Personally, he was of the opinion that the way to preserve open spaces was to refrain from taxing them, and that was the point he thought the Council should try to bring home to Mr. John Burns. This matter would be a big precedent for the whole of London, and he hoped it would be dealt with on these lines. Captain Swinton was suggesting an addition to the motion embodying his views in this respect when he was called to order by the chairman, and the motion, as proposed by Mr. Harris, was carried unanimously.

MEMORIALS TO KING EDWARD.

Proposals for memorials to King Edward are already very numerous, and it seems probable that eventually no town of importance will be without its monument to the late King. A few more or less definite proposals are enumerated below.

With regard to the proposal to build a new façade to Buckingham Palace as a memorial to King Edward, as suggested in "The Times" and as warmly approved in this journal, we gather that this project strongly commends itself to many of our leading architects and artists. Some considerable time ago, we urged that Buckingham Palace, never conspicuously beautiful or dignified, must inevitably suffer by the proximity of the stately monument to Queen Victoria, to which, probably, it will appear as a ridiculously mean and dowdy anticlimax. At the same time we admitted that there were difficulties in the way of reconstruction. There is always the question of cost; but beyond this there is to be reckoned with the natural and commendable reluctance to destroy a building that has acquired a certain sentimental sanctity from its close association with royalty. Moreover, destruction of the fabric might involve in ruin the many frescoes in which the interior is rich. On the whole, therefore, we think that the refacing of the Palace is a more feasible besides being a more easily practicable scheme, and we should be glad to learn that the authorities were giving serious attention to the proposal.

London.

At a meeting of the Corporation of the City of London at the Guildhall, at which the Lord Mayor presided, Mr. Deputy Wallace moved:—"That this court, profoundly conscious of the irreparable loss suffered by the nation and the corporation of this City by the death of their late King, Edward VII., do hereby resolve to mark in some permanent form their appreciation of his services to the country and to mankind at large." Mr. Deputy Millar Wilkinson seconded the motion, which was agreed to in silence. Mr. Deputy Wallace suggested that the further consideration of the matter should be postponed for a while, in order that they might have an opportunity of conferring with the Lord Mayor, and obtaining from him some intimation of his view and that of the corporation as to what form the memorial should take. In the course of some subsequent conversation, Mr. Kimber advocated the matter being at once referred to the special committee for consideration and report, a proposition which was seconded by Mr. Redding. Mr. W. H. Thomas, chairman of the Bridge House Estates Commitee, said it had been suggested to him that the proposed new bridge should be called King Edward's Bridge. The motion to refer the scheme to the special committee for consideration and report was agreed to.

With respect to the suggestion about the bridge, Mr. T. Lawrence Dale suggests that the new St. Paul's Bridge would offer an incomparably fine setting for a monument to our late King. The committee in charge of the bridge, he says, seem at present actuated by an unimaginative utilitarianism, but with this added incentive and the additional funds, by means of a competition open to all the architects, sculptors, and engineers of the British Dominions, might we not hope to obtain something truly worthy of the position and the purpose?

Lewisham is also moving for a memorial

Proposed Jewish Memorial.

A meeting has been held at the Jewish Working Men's Club, Whitechapel, to consider the question of a Jewish memorial to the late King Edward. Mr. Gordon presided over a large attendance. The Chief Rabbi moved the following resolution, which was carried: "That this meeting is of opinion that a suitable memorial should be raised to his late Majesty King Edward VII. by his Jewish subjects resident in East London, as a tribute to a monarch who was a peacemaker among the nations, as a King, and as the Sovereign in whose lifetime the Jews of the British Empire gained full emancipation and equality with non-Jews and enjoyed all the blessings of freedom. Further, that a 6d. fund should be established to enable all classes of the community to contribute, and this meeting pledges itself to do its utmost in carrying this proposal to the successful issue."

Cardiff.

At the opening of the annual exhibition of the South Wales Art Society at the Welsh Industries Association Buildings, Cardiff, Mr. J. M. Staniforth, who presided, referred to the desirability of having a permanent home for the society. There was a movement on foot in Cardiff just now to erect a monument in memory of the late King, and he would like to suggest to the gentlemen interesting themselves in that movement that a permanent art exhibition building in King Edward VII. Avenue in Cathays Park would be a most suitable and useful memorial.

Newcastle-on-Tyne.

A special meeting of the Council of Armstrong College, Newcastle-on-Tyne, has been held to consider the offer of a gift of £10,000 by Mr. J. B. Simpson, of Bradley Hall, Wylam-on-Tyne, for the purpose of developing the art department of the college. Sir Hugh Bell presided. For some years past the work of the art department at the college has been seriously hampered by the want of proper accommodation, and inspectors of the Board of Education have repeatedly reported that the rooms in which it is housed are insufficient for its proper progress and expansion. It is estimated that the cost of building a new school of art would be about £18,000. The council has offered a site and part of the cost of the buildings, and Principal Hadow reported that the remaining £10,000 required had just been offered by Mr. Simpson. Further contributions would, he said, be required for the maintenance and equipment of the buildings, but the main problem, that of providing the buildings themselves, might now be regarded as solved. It is Mr. Simpson's wish that the new buildings should be in some way connected with the name of the late King Edward, and the King has given his sanction to this proposal. The council expressed their gratitude to Mr. Simpson for his generous gift, and referred the matter to the Building Committee. It is understood that one of Mr. Simpson's objects is to stimulate the development of design in woodwork, metalwork, and other forms of art handicraft.

Pontypool.

The secretary of the Pontypool and District Hospital, Mr. Walter H. Hughes, has made inquiries of some of the medical men of South Wales and Monmouthshire relative to the proposal to establish a sanatorium as a memorial to the late King, and he reports a consensus of opinion in its favour. He has also communicated with several of the principal public men, and with one or two exceptions he reports they are strongly in favour of the memorial taking that form.

Liverpool.

A representative public meeting was held at Liverpool on June 7th, to inaugurate a town's memorial to King Edward. On the motion of the Lord Mayor, seconded by Sir Charles Petrie, it was decided to open a fund for the erection of a memorial to include an equestrian statue to his late Majesty. It was suggested that a sum of £25,000 might be raised. Lord Derby hoped the committee would consider no sum too small to receive in view of the universal grief of all classes at the death of King Edward. The subscriptions already promised include £250 from Lord Derby and £1,000 from Mr. L. S. Cohen, an ex-Lord Mayor of Liverpool.

Eastbourne.

The Highways Committee of the Eastbourne Corporation, on June 7th, adopted the suggestion that the Western Parades, extending from the Wish Tower towards Beachy Head, should be named King Edward's Parade. The question of erecting a statue or monument was deferred. The parades were opened by the late King.

Proposed Newmarket Statue.

At a meeting held in the Town Hall, Newmarket, to consider the provision of a memorial to King Edward, Mr. G. H. Verrall, M.P. for Newmarket, said a number of prominent patrons of racing had suggested to him that a statue of the late King should be erected at the entrance of the racecourse. Such a memorial at the metropolis of sport to the King of sportsmen would be not merely a local matter, but should receive world-wide support. A well-known baronet who had a residence at Newmarket had told him that on the first day he collected for such an object he would get £100 apiece from a number of sporting men. Lord Marcus Beresford had promised to ask King George's permission for the erection of such a statue, and the Earl of Derby, one of the most active stewards of the Jockey Club, quite approved of the idea. If the movement became a national and world-wide project, and the Jockey Club would take the lead, Newmarket must be prepared to take a back seat. He thought £5,000 or £6,000 might well be raised. A committee was appointed to decide upon a scheme.

Suggested "All India" Memorial.

Numerous suggestions are being received at Simla for the erection of a memorial to King Edward. It seems likely that contributions will be received from all over India, and that a statue will be erected at some central spot.

Montreal's Tribute.

At a mass meeting of English and French citizens held at Montreal, it was resolved, on the motion of Sir Thomas Shaughnessy, president of the Canadian Pacific Railway, and Senator Beique, that a statue "worthy of the fame of our beloved King Edward" be erected here. A General Committee was appointed, headed by Lord Strathcona, Lord Mount-Stephen, Sir Thomas Shaughnessy, and Sir Edward Clouston, to make the necessary arrangements.

Pembroke Dock.

The Executive Committee of the Victoria Nurses' Home and Meyrich Wards, Pembroke Dock, have resolved to erect an operating theatre to be known as the King Edward VII. Memorial Operating Theatre. The Secretary was instructed to send printed circulars to the chief residents.

MAGAZINES & REVIEWS.

The "Art Journal" is largely taken up, as is natural, with the Academy exhibition; but there is an article by Mr. Sketchley on the subject of "Holbein as a goldsmith's designer." If the designs engraved are all authentically Holbein's, they afford interesting proof of his talent in decorative design of this kind, and suggest the question whether some of the beautiful decorations in the costumes of his portraits may not have been designed by the painter himself, instead of being copied from the dress of his sitter. The most important of the works illustrated is a gold timepiece, with cupids supporting the dial, designed for Sir Anthony Denny as a present to Henry VIII.

In the "Burlington Magazine" Mr. G. F. Laking, who probably knows more about ancient armour than anyone else, writes an article on the Noel Paton collection of arms and armour now in the Royal Scottish Museum at Edinburgh, which appears to be very largely made up of spurious imitations—a painful truth which the writer had shrunk from telling during the lifetime of their enthusiastic collector. An article on the wall paintings in the *chaityas* at Ajantà, in India, by Mrs. Herringham, is accompanied by a photograph of one of these ancient and much-damaged Buddhist frescoes, which give a high idea of the beauty of these works, in spite of a certain naïvété of drawing.

The "Architectural Record" (New York) commences with an article on "The Architecture of American Colleges." The various stages of Columbia College buildings are curious. In 1790 it is a prim symmetrical façade with four pediments at equal distances, and an entrance door with a flight of steps under each of them; in 1857 it is a long low building with projecting eaves and rows of plain windows—the utilitarian phase, evidently. In 1879, "Hamilton Hall," one of its colleges, assumes much the aspect of English Collegiate Gothic; and at some date after 1893, when there was a special committee to consider the architectural questions, Hamilton appears with a monumental classic façade and a central portico of Ionic columns, at the hands of Messrs. McKim, Mead, and White, who also built the stately domed library with its decastyle Ionic portico. The same architects also, in the last years of the century, glorified New York University with a classic library in cross form, decorated with Corinthian columns and pilasters, so that the general progress seems to have been from simple and unpretending architecture of a more or less domestic type, to a grand display of buildings with columnar orders, which look rather Municipal than Collegiate. The same number contains an article on "Public School Architecture at Chicago," all the buildings being carried out by one architect, Mr. Dwight H. Perkins, who seems to have had a great architectural practice in this class of building, but to have ended by coming into serious differences with the scholastic authorities, apparently on a charge of extravagance in cost, and also of "insubordination," which probably means that he was an architect who liked to have his own way. There is a great deal of architectural merit in his buildings (of which the principal plans are given), but they have the same defect as the French Lycées, of looking stern and unhomelike (there should always be something of a domestic character about a school); this is especially the case with the best and most original, in a merely architectural sense, of the designs—the George W. Tilton school, which unquestionably looks more like a goal than a school.

There is an interesting variety in the contents of the "Berliner-Architekturwelt," from Herr Schulze's picturesque mediæval-looking house in the Wilhelmsdorfer Strasse, standing at the end of a street on the bank of a river or canal, to the ultra-modern Geschäfthaus in the Krausenstrasse, with its series of narrow moulded pilasters forming a series of stripes from the shop-cornice to the roof. A grim war memorial at Münster (Westphalia) comes into the scope of the magazine as being the work of a Grunewald sculptor, Herr Frydag (Grunewald is a suburb of Berlin); a ponderous circular stone erection on a spreading base, with some symbolic bas-relief sculpture around the middle portion. The thing looks barbaric, but it cannot be denied that the Germans put a certain significant power into war memorials of this kind, not out of keeping with their object.

The "Nineteenth Century" has a rather rambling article by Mr. Wedmore on "Some Tendencies in Picture-making," which represents some of the commonplaces of modern art criticism, together with a rather odd selection of some very mediocre pictures for special praise. Mr. and Mrs. Whishaw contribute a joint article on "Animate Life in Early Arabic Art." One object of the article is to show that the prohibition to represent animal forms in Mahommedan art was not so decisive or far-reaching as has been supposed, and that the Coptic artists who furnished the decoration of mosques for the Khalifs of Egypt introduced among their Arabesques, lions, griffins, human torsos, antelopes, peacocks, etc. A good many other examples are quoted of the representation of human and animal life in Arabic art.

To the "Fortnightly" Mrs. A. Tweedie contributes an interesting article of personal recollections of Orchardson. One of his remarks that is quoted is in regard to the present want of encouragement to painters and sculptors: "There is just as good talent as ever there was," he said, "if these millionaires would only encourage it and not pay vast sums for spurious old masters. You have only to call a thing *old* and it will be bought, but call the same thing *new*, and no one will even look at it." A good many of us are beginning to come to the same conclusion.

"Scribner," under "The Field of Art," has an article on "The Art of the Book-plate." The majority of the examples given, however, do not represent the true art of the book-plate, being far too pictorial in style, which is not the business of the book-plate. The style of the book-plate should be decorative and symbolical, and requires a special handling—one might almost say a special talent. Anyone can draw a small landscape in black and white and call it a book-plate. The symbolical book-plate is a more subtle affair.

In the "Antiquary" is an article by Mr. A. W. Clapham on the rather unexpected subject of "The Architecture of the Friars." So little is left of this that their part in mediæval architecture is almost forgotten. Yet there is documentary evidence that the church of the Black Friars at Endgate was a building some 300ft. long, and it is suggested in the article that it was the actual church described at length in "Pierce Ploughman's Creed," the anonymous fourteenth century satire. The article sums up a good deal of information on the subject.

COTTAGES ON THE WALKER ESTATE, NEWCASTLE-ON-TYNE.

(*See opposite and following pages.*)

These cottages were erected on the Walker Estate, and were awarded a silver medal at the recent North of England Model Cottage Exhibition. The walls are constructed of hard local bricks, 11in. thick, with a cavity in centre, faced externally with local red pressed facing, up to first floor level, and above covered with two coats of Portland cement and dashed with white spar. The roof is covered with Green's best French tiles and half-round ridge tiles. The whole of the windows are wood casements opening outwards. The total cost of the pair of cottages, including architect's commission, was £700. The contractor was Mr. James MacHarg, and the architect, Mr. Edward Cratney, of Wallsend, who also designed some other eight pairs of cottage on the same estate.

NEWS IN BRIEF.

It is expected that the Queen Victoria Memorial in London will be completed some time in May and June of next year.

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With reference to the development of the site between Aldwych and the Strand, upon which work will shortly begin, a member of the syndicate has informed a representative of the "Daily News" that the greater part of the capital (a million sterling) has been guaranteed in France, and it is believed that there will be no difficulty in raising the remainder in this country. The plans, which have been passed by the L.C.C., provide for 110 shops. The building is expected to cost between £600,000 and £700,000. The site comprises 124,000 sq. ft. The theatre will seat about 800. The architect is M. Ernest Gerard, with whom is associated M. Duval. Offices have been opened at 167, Strand, overlooking the site.

* * *

The new buildings which have been erected by the National Children's Home and Orphanage Committee on a ridge of the Chilterns about a mile beyond Harpenden, as a sanatorium for children, were opened by Lady Wernher last week.

* * *

In our reference to recent appointments by the Local Government Board for Scotland, it was stated that the name of the gentleman appointed to the position of architect was "Mr. John Walker." The name of the architect is Mr. John Wilson.

* * *

A meeting of the metropolitan members of the Surveyors' Institution will be held at the Institution, at 2.30 p.m., on Wednesday, the 15th June, 1910, when Mr. Howard Martin, past-president, will open a discussion on the Finance Act. Meetings of provincial committees will be called by their respective chairmen, at convenient dates, for the same purpose.

* * *

The foundations of what is presumed to have been a Norman castle have been discovered at Castle Close, Wareham, in the course of excavating for a new house. The walls have been discovered at depths varying from one to three feet. These old foundations are composed of various local materials—Purbeck freestone and marble, Bagshot sandstone and large flints. The discovery supports the old tradition that a castle formerly stood here.

After a delay of thirty-seven years, the long-promised copy of Michelangelo's "David," the original of which was removed in 1873 from the front of the Palazzo Vecchio at Florence to the Accademia di Belle Arti, has been at last unveiled to the public on the spot where the original statue stood.

* * *

The Local Government Committee of the London County Council state that it has been brought to their notice that in recent issues of the Ordnance Survey Map the whole of Blackfriars Bridge and a part of the southern approach thereto had been shown to be within the City of London instead of only that part of the bridge to the north of the centre of the river Thames as hitherto. The committee are advised that the Acts relating to the bridge do not affect the boundary except so far as the structure of the bridge is concerned, and that the bed and foreshore of the river under the southern half of the bridge are not within the City of London. The Corporation, however, contended otherwise, and the Director-General of Ordnance Surveys decided to allow the boundary to remain as at present shown until the Corporation and the Council can arrive at an agreement. Efforts to arrive at an agreement having failed, a letter has been sent to the Director-General, objecting to the action taken in altering the marking of the boundary on the map without previously communicating with the Council, and suggesting that in future editions a note should be added that the boundary line at the bridge is in dispute.

* * *

Of the late Goldwin Smith it is recorded that his beautiful home at Toronto is "the only example of an English manor-house on the North American Continent." The political party formed through his influence was known as that of the "Grangerites," partly because his house was called "The Grange," and partly because its members were mostly grangers, or farmers; with perhaps a side-glance at the fact that, in the United States, a "grange" is a kind of trades union or secret association of farmers.

* * *

A subway has been constructed under the racecourse at Ascot, affording a passage between the five shilling stand and the grand-stand on the one side, and the carriage stand on the other.

* * *

The lofty granite obelisk at Boconnoc Park, Lostwithiel, Cornwall, has just been climbed, the first time for 171 years, by W. Larkins, the London steeplejack, who accomplished the task in three-quarters of an hour. The obelisk, which is 120ft. high, is being thoroughly overhauled, and a lightning conductor fixed, the whole of the work being executed without the aid of scaffolding.

* * *

The great thunderstorm which occurred at the beginning of last week, did a great deal of damage to property, besides causing several deaths. At the Church of the Annunciation, Chislehurst, the lightning stripped off a considerable portion of the roof. The roof of St John's Church, Aylesbury, was struck, and masonry was dislodged from the bell-tower. Chatham General Post Office was also struck. A panic was caused among the children at Napier Road School, East Ham, where a chimney-stack was struck, several chimney-pots falling into the playground. Houses at Acton, Fulham, Herne Bay, Windsor, Shipston-on-Stour, and elsewhere, were also struck. It is noteworthy that in most cases the chimneys were hit, and, even when the chimney-pots were not damaged, stoves and mantlepieces were smashed.

* * *

The severe earthquake that occurred on June 7th in the Province of Avellino was felt most severely in the towns of Calitri and Calabritto. It caused many deaths, almost all the buildings on the Rio Costella having collapsed, burying in their ruins many persons who at the time were in bed. At Vallati many buildings were ruined; and at Costel Boronia houses, churches, and business premises were damaged, some falling to pieces. It is reported from Foggia that cracks have appeared in the walls of Bovino Cathedral, a building of great architectural beauty.

* * *

An exhibition of the Home Arts and Industries, held at the Albert Hall last week, consisting mainly of women's work, included specimens of furniture and other woodwork; and it is stated that the society which organised the exhibition is anxious to receive the advice and help of professional men, especially architects, who could afford valuable guidance in other matters besides decorative treatment.

* * *

The new library of the Society for the Promotion of Hellenic Studies and the new offices of the British Schools at Athens and Rome, were open for the first time at 19, Bloomsbury Square, London, on Tuesday, June 7th.

* * *

The Local Government Board has decided to hold inquiries into proposed expenditure by public bodies as follows:—Electricity undertakings: Aldershot Urban District Council, £1,500 (June 14th); Portsmouth Borough Council, £24,000 (June 15th). Sewerage, etc.: Cheltenham Borough Council, £18,450 (June 15th); Seaford Urban District Council, £1,860 for refuse destructor (June 15th); Poole Borough Council, £1,500 for protective works at outfall (June 14th); Upton-upon-Severn, £1,900 for Powick (June 14th); Southport Borough Council, £6,000 for sludge pressing plant (June 16th); Birkdale Urban District Council, £25,000 (June 15th). Street improvements, etc.: East Barnet Valley Urban District Council, £1,130 (June 14th). Various: Teignmouth Urban District Council, for sea defences, no amount stated (June 16th); Bexhill Borough Council, £6,700 for sea defence (June 14th).

* * *

An International Exhibition of Flemish Art of the Seventeenth Century is to be opened in Brussels during this month. It is being organised by the Belgian



A HALL, COTTAGES ON THE WALKER ESTATE, NEWCASTLE-ON-TYNE.
EDWARD CRATNEY, ARCHITECT.



COTTAGES ON THE WALKER ESTATE, NEWCASTLE-ON-TYNE: FRONT VIEW.
EDWARD CRATNEY, ARCHITECT.

Government, is under the patronage of the King and Queen, and the president is M. Beernaezt, Minister of State and president of the Commission of the Royal Museums of Painting and Sculpture; while the organising commission of the exhibition is under the presidency of the Baron Descamps, Minister of Arts and Science. The offices of the British Committee (of which the chairman is Mr. C. H. Read, president of the Society of Antiquaries, with Mr. M. H. Spielman and Mr. A. G. Temple as honorary commissioners) are at Queen Anne's Chambers, Broadway, Westminster.

* * *

Between 30 and 40 members of the Northern Architectural Association, of which Mr. Charlewood is president and Mr. W. Milburn vice-president, paid a visit to Sunderland on June 4th. The afternoon was spent in an inspection of the New Children's Hospital, Durham Road, of which the architects are Messrs. W. and T. R. Milburn. The new hospital, which will shortly be opened for patients, is built on the pavilion principle, with every modern convenience, and has cost £15,000. The builder is Mr. John Huntley, of Sunderland.

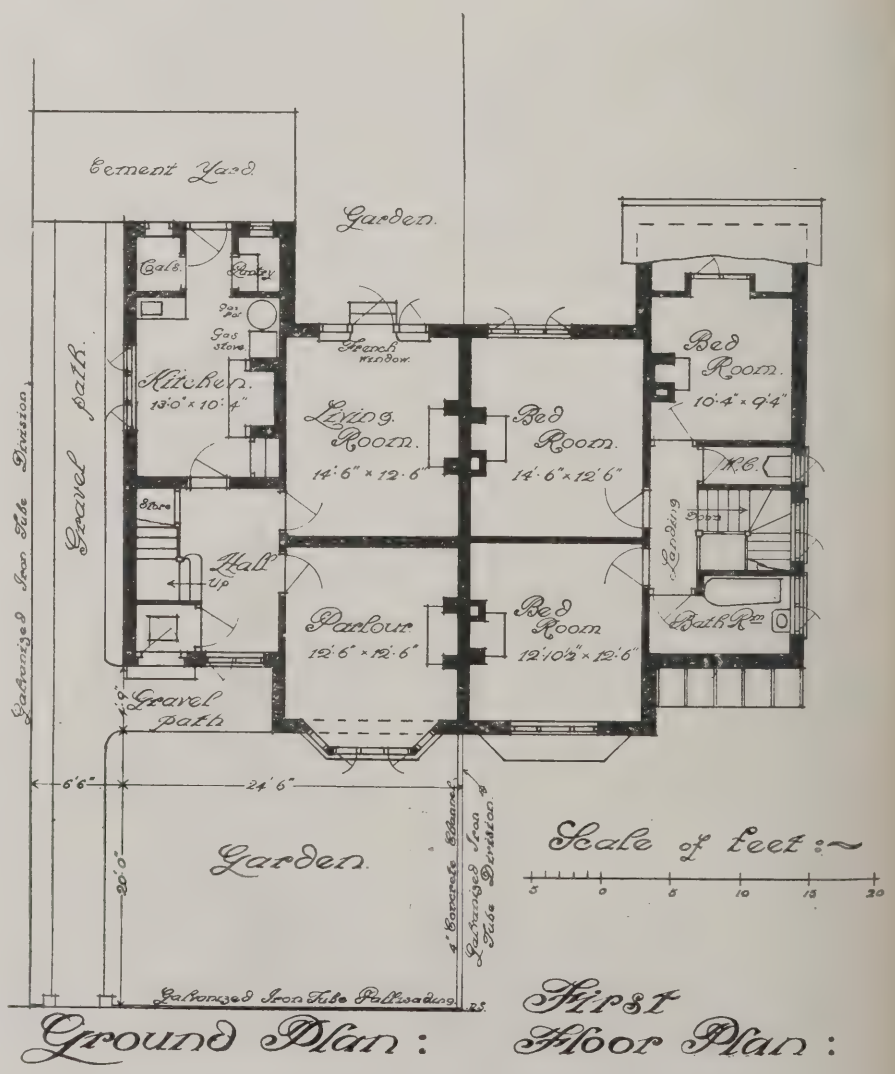
* * *

Some 69 competitive exhibits were included among the 163 exhibits at the fourth exhibition of castings and models held by the Company of Founders last week, in the Ironmongers' Hall. The following awards have been announced:—For the best model of a medal for the Founders' Company—first prize (£20), A. Stanley Young; second prize (£5 and certificate), Agnes Kershaw Halliday; certificates of merit, Edwin G. Payne and Charles Pibworth. Class 1a, for the best casting—first prize, Arthur Huskinson; second prize, George Ellis; third prize, Samuel W. White. Class IIa., certificate of merit, E. R. Atkinson. Class Ib., first prize and silver medal, Mortimer Brown; 2nd prize, J. A. Jackson; third prize, Samuel W. White. Class IIb., first prize, George H. Ellis; second prize, Frank Theodore. Class Ic., first prize, H. E. Warren; second prize, F. W. Braddock; third prize, Thomas Benton; certificates, J. A. Jackson and A. Stanley Young. Class Id., first prize, A. F. Sysachman; second prize, J. A. Jackson; special prize, James Hanks. Class Ie., first prize, J. W. Wilkinson; certificate, Dora Bard. Class If., first prize, Dora Bard and G. Edwards Tucker; special prize, A. Stanley Young; certificate, A. E. Harford. Class IIf., first prize, G. Taylor; second prize, R. Pratchett; certificate, H. Finch.

LEGAL.

Ventilation of a Picture Gallery.

In the High Court of Justice, King's Bench Division, Mr. Justice Darling and a special jury heard the case of Power *v* Raikes and another, in which Mr. William Mailes Power, picture-dealer, of Victoria Street, Westminster, sued Mr. Robert Taunton Raikes and Mr. Charles Oury King for damages for alleged breach of contract and negligence.—Mr. Clavell Salter, K.C., who appeared for the plaintiff, stated that at the end of March,



COTTAGES ON THE WALKER ESTATE, NEWCASTLE-ON-TYNE: PLANS.
EDWARD CRATNEY, ARCHITECT.

1909, a picture-gallery was built for Mr. Power at the rear of his premises, Mr. King being the architect, and Mr. Raikes, a solicitor, acted as the contractor. Plaintiff alleged that about five weeks later it was found that some of the pictures that had been hung in the gallery had been injured by damp. There was a further claim for loss sustained through inability to let the gallery for exhibitions for about twenty-four weeks. It was alleged that ventilation between the picture screen and the wall had been omitted, contrary to specification.—Mr. Foote, K.C., who appeared for Mr. King, submitted that the claim was exaggerated. Mr. King had offered to relinquish his fees (£26 5s.) in consideration of the omission to make certain holes at the bottom of the screen, and it was contended that this sum was ample to cover Mr. Power's loss.—Mr. P. A. Robson, architect, said that for adequate ventilation a hot-water or hot-air system should have been adopted. Providing a heating system was employed, it was possible to hang pictures immediately in a new gallery.—Mr. Colefax submitted that there was no case against Mr. Raikes, as the specification did not mention any arrangement for ventilation, of whose absence complaint was made. Mr. Goddard, for Mr. King, said that it would have been impossible to dry the gallery by making holes in the screen only. It could only be dried quickly by artificial means. The inability to let the gallery for twenty-four weeks, in respect of which plaintiff claimed £252 damages, had, therefore, nothing whatever to do with the defect in ventilation. The only damage for which Mr. King was liable was the cost of effecting the necessary ventilation.—The jury found that in the building of the gallery there was negligence on the part of Mr. King, but not on the part of Mr. Raikes. They awarded plaintiff £45 damages against Mr. King.—The latter having already paid 100 guineas into court, his lordship gave judgment for both defendants.

CORRESPONDENCE.

The Editor declines responsibility for the statements made or opinions expressed by correspondents.]

The Eighteenth Century Architecture of Bath.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The views on Baldwin's detail expressed by Mr. Falkner in your issue of the 1st inst. touch but the fringe of the subject. It was the utter want of appreciation shown by the speakers at Mr. Mowbray A. Green's lecture for what I might style "metropolitan" architecture, which goes to prove how hopelessly insular in his conception of a city the average British architect is. The inability to grasp the essentials of civic architecture bodes ill for town planning in this country. One speaker was reported to have said: "There seemed to be a dull monotony about the streets of Bath. . . . Bath was almost Continental in appearance, and recalled some of the older parts of Paris." Apparently he started out to curse Bath, and ended by unconsciously blessing her altogether. Even his curse is unwittingly half-hearted. There is plenty of "dull monotony" in Bloomsbury: the orderly repetition of parts as is exemplified in the Royal Crescent, Bath, produces the most stately architecture the world contains. I well remember on my return from my first visit to Paris how hopelessly provincial London appeared to me. To some extent this is accounted for by the use of bricks, for the air of distinction which is common to all towns which are cities more than in name cannot be obtained in a meaner material than stone. Some fifteen years ago I was walking down the Rue Denis Pepin at Blois and it occurred to me that this little city of some 22,000 inhabitants possessed a street which would put to shame any thoroughfare in the world's greatest metropolis. If my memory does not deceive me, this street was perfectly straight—unlike the Mall, it cannot even boast of a hump in the middle! At one end the Loire is crossed by a noble bridge, and at the other the vista is terminated by terraced gardens surrounding the memorial of Pepin. I have long since forgotten its architectural details.

Our leading architects and art critics are at one in regarding Bath as the finest city in England, but I will refrain from quoting them. Let us hear what the educated layman has to say; and here I must digress for one moment to point out that the British public usually value things architectural in a city according to their size. The American who, on the occasion of his first visit to St. Paul's, exclaimed "Colossal! Mammoth!!" did not feel the least overwhelmed by its size; in fact, it is one of the last sensations that would be aroused in him. He knew what was expected of him, and his innate tact stood him in good stead! Now, Bath is not a large city as cities go in this country; suburbs included, her population is well under 100,000—about the size of Athens and her buildings are proportionate to her size. Hence, the testimony I here quote is all the more remarkable:—

"That beautiful city which charms even eyes familiar with the masterpieces of Bramante and Palladio." *Macaulay.*

"A superb city of noble and picturesque aspect . . . it is the most beautiful town in the kingdom." —*Madame Le Brun.*

"Few excel it for situation and none for magnificence of buildings."—*Waagen.*

"I am convinced that no city in the world, except Rome (when it was rebuilt by Nero) and Corinth, ever equalled the magnificence of Genoa. I am inclined to believe that Bath comes next, but immense the distance."—*Walter Savage Landor.*

And to come down to our own time:—

"It really is a splendid city. . . Then the streets, when you go into them, are as handsome and gay as London—gayer and handsomer because cleaner and in a cleaner atmosphere." *Edward Fitzgerald.*

"Bath, I am inclined to believe, is the most distinguished city to look at that we can show south of the Tweed."—*Walter Besant.*

"At once I acknowledge the superiority of the architecture to anything I had seen in Bloomsbury. At first it was Pulteney Street that captured my admiration. The facades were magnificent, but saved from being grandiose by the sincereness of their proportion and the delicacy of the ornament. . ."—*Urbanus Sylvan.*

Notice, please, that I have purposely omitted any reference that might be construed to refer to history or environment it is Bath architecture that comes in for such unstinted praise. Both Edward Fitzgerald and Walter Besant found Bath the most cheerful of cities, and should one be willing to allow that our leading architects and art critics are obsessed with a desire for gloomy grandeur in a city, can we believe that the educated laity love dull monotony? I think not.

E. M. HICK.

Radlett, Herts.

Builders' Grievances.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

DEAR SIR,—In reference to the interesting article in your issue of June 1st, entitled "Builders' Grievances," I find myself almost wholly in accord with the opinions you express, with the exception of your remarks on arbitration.

On this point I fear you have to some extent misapprehended the situation. You state that "The real position of the architect is that of an arbitrator between client and builder," and whilst I now offer no objection to this definition, I would point out that disputes on building contracts very rarely arise between "client" and "builder": they are chiefly between "architect" and "builder."

With regard to disputes between client and builder, I agree that in comparatively few cases has any injustice arisen in



COTTAGES ON THE WALKER ESTATE, NEWCASTLE-ON-TYNE: VIEW FROM THE GARDEN. EDWARD CRATNEY, ARCHITECT

consequence of the architect having acted as arbitrator, but you must not lose sight of the fact that in adopting such procedure you are traversing one of the elementary principals of equity, viz., that in the event of a dispute between two parties, any person who is in the service or employment of either party for pecuniary consideration is disqualified from acting as arbitrator. One cannot disregard such a principle with impunity, and the practice cannot be justified even though in the majority of cases no miscarriage of justice results.

With regard to disputes between architect and builder, it is obviously undesirable, if not improper, that the architect should arbitrate.

Whilst I am fully in accord with your testimony as to the high character of architects in general, yet architects themselves do not claim to be infallible or immaculate, and consequently disputes may sometimes occur through the vacillation of the architect, or through oversight, or mistake, made by the architect or by his subordinates, for which causes the contractor may be involved in considerable expense, and a genuine difference of opinion might easily arise as to the extent of this extra expense.

Or there may be a dispute as to whether certain works executed by order of the architect are, or are not, included in the terms of the original contract, or in event of delay in completion of a contract a difference of opinion may arise as to whether this delay has been caused by the negligence of the contractor in performing his contract, or by the belated issue of the necessary drawings or instructions by the architect which has rendered it impossible for the contractor to complete his contract in the specified time.

Do you suggest that in such cases the architect should arbitrate? Should he not appear as witness rather than judge?

There is another aspect of the case that I fear you may have overlooked.

Does it not occur to you that a gentleman of high principle would be glad to be excused from the invidious task of delivering judgment on a case in which his own actions were involved? (In such a case a magistrate or a judge would retire from the bench.) Would he not regard with relief a clause in the building contract which transferred this onerous duty to some independent person who was in no way involved in the dispute and who was under no obligation (either real or superficial) to either party in dispute?

Pray do your best to dispel the unwarrantable delusion that the request for an arbitration clause in a building contract arises from any suspicion or want of confidence in architects. Such a request merely indicates the desire that business should be conducted upon the elementary principles of equity.

I may explain that my knowledge of the circumstances under which disputes arise under building contracts is the result of observation rather than experience, as my personal experience in this direction has happily been very limited.

BENJAMIN I. GREENWOOD.

London.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Your article certainly opens up a very wide field for discussion, and I appreciate the opportunity afforded to those who desire to ventilate their views upon this subject in the columns of the "Architects' and Builders' Journal."

While I am in full sympathy with you on many of the points raised in your article, I cannot agree with your view on others. I will therefore confine my remarks to the latter.

I do not believe there are many architects practising to-day who have any desire to become sole arbitrator between their clients (the building owners) and the builders. On the contrary, my experience is that they refuse to take up this position, and rightly, too, because now can it be expected that a man can arbitrate fairly upon a case or fault to which he himself may have contributed? He would most certainly lean towards the view held by him which probably led to the necessity of taking the case to arbitration. No man, in my opinion, is capable, however honourable he may be in his profession, of taking up such a position without laying himself open to very grave doubts. Personally, my experience is that the majority of architects are men of very high professional honour who deal fairly with those who deal fairly with them. I am afraid it is more often than otherwise the builder who is at fault through insufficient observance of the specification which the architect rightly demands should be reasonably carried out. Most of the railway companies appoint their chief engineer sole arbitrator in the contract, but this is not so objectionable since, if any mistake is made on the part of the architect or engineer, it is generally by a responsible official employed by the company other than the chief, who, when any case is presented to him, decides it upon its merits with an unbiassed mind. I have had some experience of this, and I have every reason to be satisfied with the impartial manner which appeared to govern the arbitrator's action in every detail.

The greatest trouble often arises when architects make a practice of taking out their own quantities. They cannot be expected to be so accurate in this work as a practical quantity surveyor; hence, many mistakes are made very difficult to cover, often leading to technical disputes. In such cases it would be unreasonable to expect the architect to give an unbiassed decision were he the sole arbitrator in the case; but to obviate the possibility of any such responsibility being cast upon the architect, let him, or his client, employ a quantity surveyor to take off proper quantities and thereby put an end to any quibbling, which so frequently happens under the above system.

I am pleased, however, to say that the majority of the leading architects never attempt to take off quantities, and I hope all other architects will in the near future follow the example of those who already engage properly qualified quantity surveyors for this purpose in the best interest, not only of their profession, but of their clients and the builders also.

W. THOMAS.

Cardiff.

Percentages off Quantities.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I am sorry to trespass further upon your space, but feel I must reply to the letter of "E. H. D." in a recent issue.

It may be that taking a percentage off the whole account will result in much the same thing as adjusting the percentage correctly, but whether this is so or not depends entirely upon whether the variations on the contract are many or few, and in any case the quantity surveyor, holding practically a fiduciary position in the settlement of accounts (and in many cases being unknown to the building owner), it is his duty to be absolutely correct even to pence in defining the amount of money which shall be paid by the owner to the building contractor in final settlement.

I can see no objection to this deduction of percentage by a contractor, and have myself never had any friction on the question. The percentage question usually arises from the fact that after the contractors' estimator has priced the quantities and made up the summary, the contractor himself upon looking through the bills decides that taking all matters into consideration the prices will bear some slight deduction or addition, as the case may be, and proceeds to effect this on the summary by percentage, and there can be no injustice to the client in this method which is all clear and above board.

To go through the quantities and deduct the percentage from each individual price would involve enormous mathematical calculations (as for instance obtaining the correct price of an article at 2d. less 10 per cent), and to ask a contractor to produce, after sending in a tender, a clean bill compels him to make alterations in the original price, upon which his tender was based, and this I consider is not in accordance with the generally accepted conditions of contract and should not be allowed under any circumstances.

W. W. D.

Inter-trading Rule.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

DEAR SIR,—At the fourth annual Conference of Midland Centre Secretaries in March last, the following resolution was passed:—"That this Conference requests the Executive Council to prepare a report on the inter-trading rule and its working in those towns which have adopted it, and to circulate same among the Associations in the Centre where the rule is not in operation."

This resolution was approved and adopted at the last meeting of my Executive Council. As I am now anxious to prepare the report referred to, I should be much obliged if some of your readers, especially secretaries of master builders' associations, would kindly supply me with information that would be useful to me for the purpose indicated. I should be extremely grateful if those who have had actual experience of the working of the rule would favour me with particulars as to the results accruing from its adoption.

FRED W. AMPHLET.

Secretary, Midland Centre of the National Federation of Building Trade Employers of Great Britain and Ireland.

58, New Street, Birmingham.

[We have no doubt that Mr. Amphlet's request will meet with a ready response from those whom it concerns. Communications should be sent direct to his address.—ED.]

Licentiate R.I.B.A.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Referring to the letter in the Notes and News of your issue for April 27th, I wish to say that I most thoroughly agree with all that "A.R.I.B.A." says. In fact, he has put into words my own thoughts on the matter.

ANOTHER A.R.I.B.A.

Wolverhampton.

TOWN-PLANNING TOPICS.

Birmingham Suburbs. The General Purposes Committee, in their report presented to the Birmingham City Council on June 7th, state that they have carefully considered Part 2 of the Housing, Town Planning, etc., Act, 1909, with the view of advising the Council as to any action which should be taken thereunder. The district which appeared to first claim attention, and upon which the attention of the committee has been concentrated, was that comprising the parish of Quinton and the undeveloped portion of the parish of Harborne. It lies in the south-west corner of the city in the line of the prevailing winds, and is ripe for development. This must go forward immediately, and will either be carried out in the haphazard way of so many suburbs, which is open to grave objections of sanitation and public convenience, or development may take place on scientific lines now rendered possible by the Act of last session. The parish of Quinton has an area of 838 acres, and with the exception of the village in the north-west corner, a few houses abutting on the main road near Balden Road, and a few isolated farmhouses and cottages, is unbuilt upon. As soon as proper drainage has been provided, the committee are assured that building operations will commence in the district of Quinton. There will also before long be a great development in the neighbourhood of Harborne, where much land is ripe for building. The committee indicate in detail the requirements of the regulations in order to show that at the present stage the Council, by adopting their recommendation, would not be committed to anything more than conferences with the property owners, etc., in the proposed area. Many of the owners have already met the city surveyor, and the committee believe they will recognise that it is in their interests, as well as in that of the community at large, that the subject should be approached with a view to making a model suburb of this at present undeveloped area. The committee recommend that the Council should authorise them to serve and publish the necessary notices of their intention to apply to the Local Government Board for authority to prepare a town-planning scheme for the area comprising the parish of Quinton, and parts of the parishes of Harborne and Edgbaston, within the city, and a portion of the parish of Northfield, within the King's Norton and Northfield Urban District. Also that the committee be authorised to confer with the landowners and others interested, with a view to their reporting again at a later date, when the Council can decide upon the lines, widths, and directions of principal roads and other particulars required before an application to the Local Government Board can be definitely made.

The Recalcitrant Ratepayer. A proposal by the Enfield District Council to purchase a farm of sixty-two acres in the district for a public park is meeting with some opposition. The Council has applied to the Local Government Board for sanction to borrow £6,138 for the purpose, and the Middlesex County Council has agreed to contribute £2,038 towards the cost, which works out at £128 an acre. At a public inquiry held regarding the matter, it was stated that, whereas the rates were 6s. 8d. in the £ in 1891, they now amounted to 10s. 6d. in the £. An argument used in support of the acquisition of the land was that it should be cheaper for the district to buy it than that it should be used for the erection of cottages. The average rating of a cottage was £11, and the cost of education per house of that character was £2 17s. 7d. per annum, which meant a dead loss of £1 12s. 4d. each year to the parish.

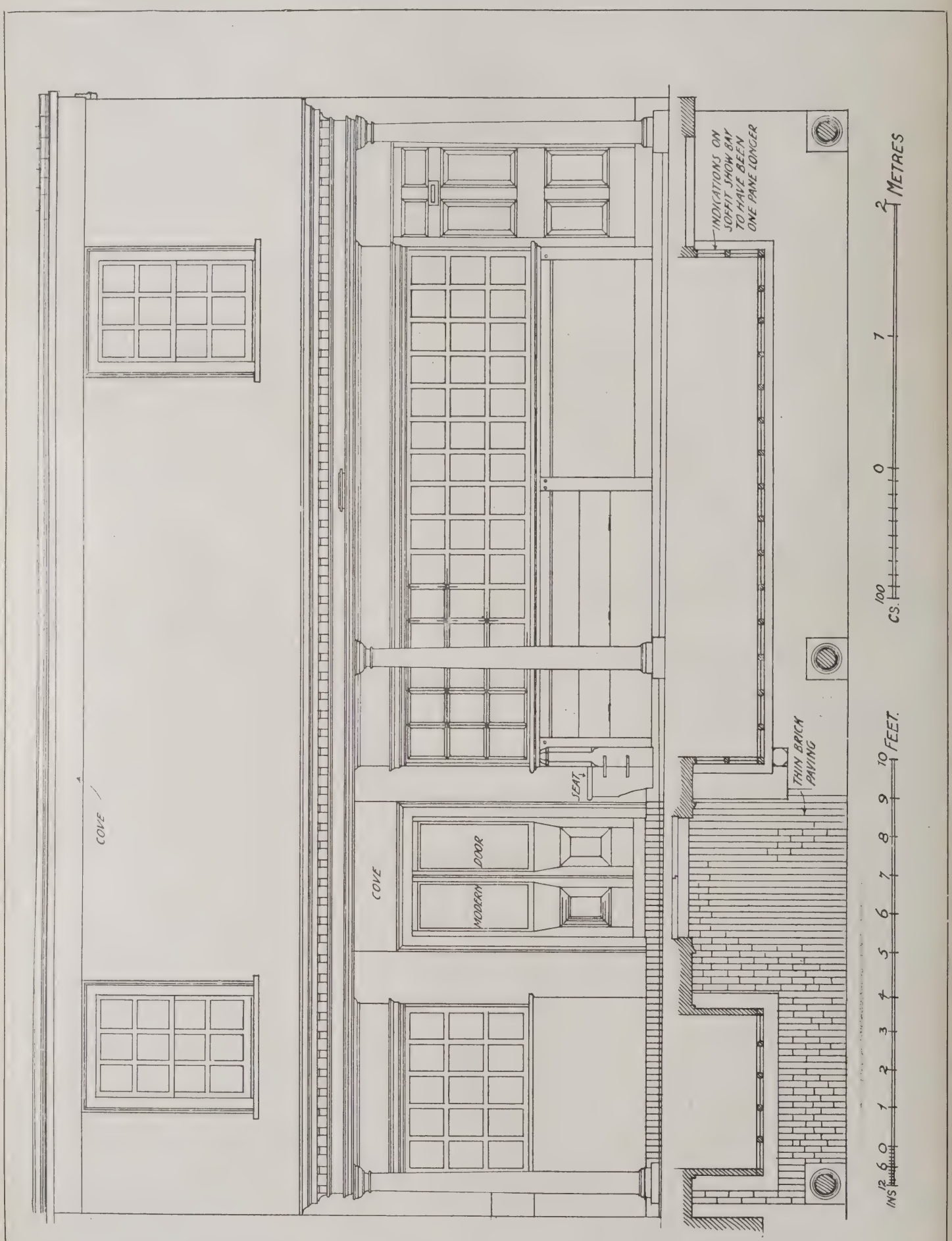
Transformation of Central Park, New York. It is proposed, almost immediately, to convert Central Park, New York, to purposes of much greater usefulness. A Special Committee has been appointed by the city to furnish playgrounds on an American plan which will not interfere with pedestrians, equestrians, and motor enthusiasts, but which will also cater on an unexampled scale for the children, who have so far, it is felt, been somewhat neglected. The playgrounds will furnish recreation in the way of swings, roundabouts, and gymnasiums for 10,000 little ones, and also wading pools, where the children can paddle without fear of being drowned. There will also be deeper pools, where children can learn to swim, nursery shelters, rests for mothers, milk depots, alfresco kindergartens, and such other devices as the benevolent and paternal Municipal Commissioners may think advisable. It is understood that all the milk sold shall be Pasteurised, and the cost will be the minimum.

A Middlesbrough Proposal. At a recent meeting of the Middlesbrough Corporation Streets Committee, the Borough Engineer (Mr. Burgess) proposed the preparation of a town-plan for land at Grove Hill. The area, about 120 acres in extent, is bounded on the south by the Asylum Farm, on the west by Martin Road, on the east by the North Eastern Railway, and on the north by Longlands Road. The resolution was carried unanimously.

Manchester Schemes. The Town Planning Committee of the Manchester Society of Architects have, during the past twelvemonth, devoted some time to further study of town planning, and the committee has now under consideration the preparation of a larger plan dealing with the main lines of extension on the northern side of the city. A scheme for the laying out of 150 acres of land at Blackley, which has engaged the attention of the city authorities, has received valuable assistance from the committee.

The Vienna Congress. The International Housing Congress at Vienna is over, and, says a leader-writer in the "Daily News," it may now be gathered how we compare with other countries in our handling of this important problem of social organisation. It is a little characteristic that though every other European State was officially represented at the Congress, this country was not, and there was an almost complete absence of any documents or illustrations of British activity. The conclusion might be drawn by a casual observer that in the matter of rational housing and town planning we are much in the rear; but that would be a good way from the truth. The proceedings, in fact, furnished very little material for the English housing reformer, which means that Englishmen have been the pioneers in this field, and still can teach more than they can learn. There are two directions in which housing reform has swept—there has been a reaction against the tenement, and there has been a growth of the conception of the ordered development of a city. To the evolution of these two fruitful ideas Great Britain has made the largest contribution. The tenement has its roots in a very ancient past. The Athenian probably lived in tenement houses, the Roman certainly did, and one has but to walk through an old city or an old quarter to know that the tenement dwelling was the mediæval type also. The tenement remains the feature of the Continental city, but it is the exception here perhaps because the chief outward burst of British cities occurred when an individualist philosophy was at its height. It would, however, be a mistake to believe that the tenement is a social institution in a sense in which the cottage dwelling is not. It is gregarious, but the flock that collects is fortuitous. It was not designed to express or cultivate any social ideal, but simply to pack as many human beings as possible into the smallest possible space. The cottage at least represents the idea of the family, which is a social unit. In the garden cities and the garden suburbs which have come into being of late years, Great Britain has made an attempt to build upon the cottage, and the family idea which it shelters, a large social institution, to make the homes of men image the harmony between the life of the family and the life of the city and the State.

The Edwardes Square Dispute. As mentioned in another part of the present issue, Mr. Harris has persuaded the London County Council to consent to his motion that it be referred to the Building Acts Committee to consider and report immediately as to the steps to be taken under the Town Planning Act to preserve the essential features of Edwardes Square, Kensington, and the President of the Local Government Board be asked to receive a deputation from the Council on the subject. At a meeting of the Kensington Borough Council the Law and General Purposes Committee reported, with reference to the closing of the carriage way of Earl's Terrace, Edwardes Square, by the Amalgamated Estates Company (the freeholders), that, "acting under the instructions given to them, the Council's solicitors, Messrs. Pontifex, Hewitt, and Pitt, have taken the opinion of counsel on the position as regards the roadway in question, and having had the opportunity of considering the opinion and other particulars before us, we have no hesitation in advising the Council to persevere in their claim that the road is a public highway vested in them, and that the public have the right of free user thereof. We have accordingly referred it to the Council's solicitors to take such legal action as they may be advised to protect the rights of the Council and maintain the public right of way over the said roadway." The Committee recommend that their action be approved by the Council, and that the conduct of the future proceedings be left in the hands of the Special Committee appointed on May 10th. This Committee, in reporting on the course they took in ordering the gates to be forced and the barricades demolished, state that after the 24th ult. they did not think it right or necessary to give instructions for the further demolition of the barricades, "it being evident that the legal question involved in the action of the company will have to be discussed in the Courts of Law."



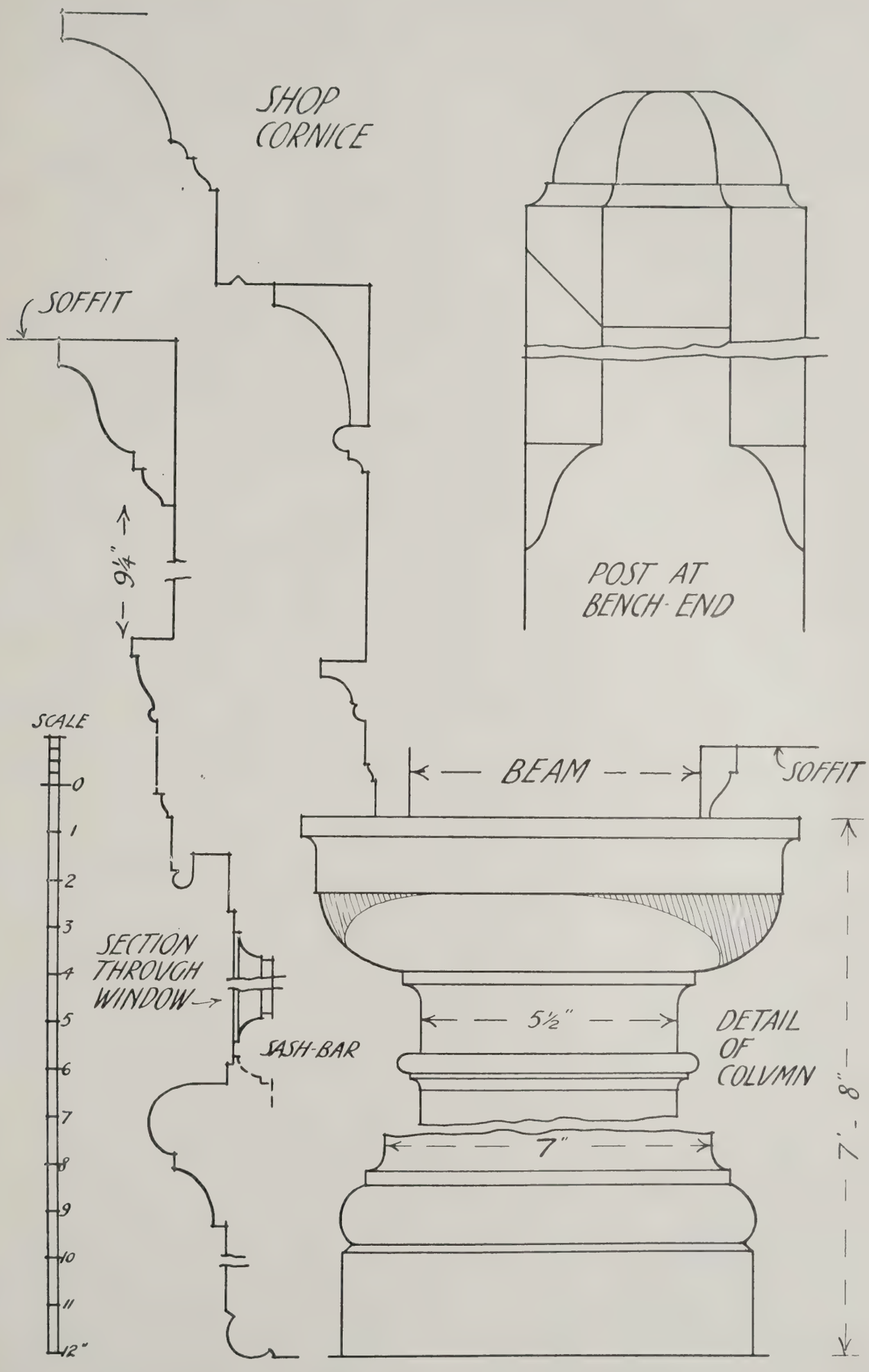
GEORGIAN SHOP-FRONT AT BOXFORD, SUFFOLK. MEASURED AND DRAWN BY EDWIN GUNN, A.R.I.B.A.



This simple front probably dates from the middle of the eighteenth century, and its slender proportions—so suitable to the material (wood)—are rather reminiscent of "Colonial" work.

GEORGIA SHOP-FRONT AT BOXFORD, SUFFOLK.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS



DETAILS OF GEORGIAN SHOP-FRONT AT BOXFORD, SUFFOLK. MEASURED AND DRAWN BY EDWIN GUNN, A.R.I.B.A

NEW BUILDINGS.

PROPOSED.

Central Ossett (Wakefield).—It is proposed to erect a new Baptist Church at a cost of about £3,000, which it is intended shall take the place of the present building. The church will be of stone and will provide seating accommodation for 750 worshippers, Messrs. John Mills and Sons, Derby, being the architects.

Dover.—New Artillery barracks, costing £16,000, are to be erected at Dover Castle.

Stourbridge.—The following plans have been approved by the Urban Council: Two houses and shops in Coventry Street; new elementary schools at the rear of the existing schools in Union Street; house in Witton Street; alterations and additions to the General Post Office in High Street; two houses in Bowling Green Lane; and a house in Ridge Street.

Stroud.—The Urban Council has approved the following plans: Sausage Factory at Union Street; dwelling-house at Stratford Road, Paganhill; dwelling-house at the Uplands; 20 dwelling-houses at Beard's Lane, Caincross Road; bay windows to the Oddfellows' Arms, Summer Street.

York.—It is proposed to demolish the old Church of Christ Church, King's Square, to carry out a necessary road widening, the surplus ground to be devoted to the purpose of an open space to be planted with shrubs and furnished with seats. It has been arranged that the Corporation are to pay the church authorities £500. There is considerable opposition to the scheme. It is also proposed to repair the tower of St. Sampson's at a cost of £1,700.

IN PROGRESS AND COMPLETED.

Elstow (Beds.).—The Bunyan Memorial Hall is in course of erection in this village, at a cost of about £1,600, and the foundation stone was recently laid. Messrs. Usher and Anthony are the architects.

Sheffield.—A new United Methodist Church is in course of erection in Stubbin Lane, near Firth Park, to accommodate 500 worshippers, at an estimated cost of £4,000, and the foundation-stones were recently laid. The building will be of brick, with stone tracings, and a Welsh green slate roof, Late Perpendicular being the style of architecture. Mr. F. W. Chapman, of Sheffield, is the architect.

Stroud.—The consecration of the new church at Uplands has taken place, the total cost being estimated at something over £7,000. Messrs. Gardner and Sons, of King Street, Stroud, were the contractors for the edifice, which was erected from the designs of Mr. Temple Moore, F.R.I.B.A.

Trent Vale.—The Trent Vale Church, the additions to which were consecrated by the Bishop of Lichfield recently, was erected in 1845 from plans by the late Sir Gilbert Scott. The additions comprise a new entrance porch, a nave, baptistery, and chancel. The old part of the church is now the south aisle, in which the altar is retained, and will be used as a chapel. The accommodation of the old building was 214, and, with the additions, will be 462. A new stone arcade divides the old part of the building from the new. The roof to the nave is open, and the chancel has a panelled wood ceiling. The nave seats are of kaurie pine, and the choir stalls are also, for the present, of the same material, but will be replaced at some future time by oak. The altar, communion rail, and pulpit are of oak, and have been executed by Messrs. Jones and Moss, of Newcastle. The windows are glazed with leaded lights with designs containing various symbols. The bosses to the whole of the arches have been carved with heads and foliage by Mr. W. Stevens. Externally the building is of local bricks and Hollington stone dressings. The builders' work has been carried out by the executors of the late Mr. J. Gallimore, under the supervision of Messrs. A. R. P. Piercy and W. F. Slater, acting as joint architects.

SOCIETIES' REPORTS.

Manchester Society of Architects.

The first of the summer visits of the Session, to Gawsworth, in Cheshire, took place on Saturday, the 28th May. Owing to the wet weather the attendance was small, and outdoor sketching was out of the question. The interior of the church, however, with its unique roof, which retains the original colouring, and the monuments of the Fyttons, was found very interesting, and the fine setting of the three old halls, the church, and the three lakes among the luxuriant spring foliage was very much appreciated. The great hall of the Rectory, with its fine timbering and roof open to the ridge, was also inspected. A passing visit was paid to Macclesfield Church, which has considerable remains of the original Perpendicular church, some fine Perpendicular and Jacobean tombs in the Savage Chapel, and a modern nave by Sir Arthur Blomfield.

On Tuesday evening, the 31st May, the visit to Bramhall was attended by over thirty members, under the leadership of Mr. Roger Oldham. The church of St. Michael and All Angels, the work of Messrs. J. Gibbons and Son, of Manchester, was first visited. The nave, chancel, and south aisle are now nearing completion, and a portion of the woodwork is in position. The drawings for the complete church, which provide for a tower, a north aisle, and an extension of the nave westward, aroused great interest. On leaving the church the party walked through the woods to Bramhall Hall, where they were met and conducted round the fine half-timbered hall by the owner, Mr. C. H. Nevill, J.P.

Edinburgh Architectural Association.

Members of the Edinburgh Architectural Association, to the number of upwards of forty, visited Broomhall, the seat of the Right Hon. the Earl of Elgin. Mr. J. P. Morton, the factor, conducted the party through the mansion, which dates from the eighteenth century, and is situated in an extensive and finely wooded demesne. One of the outstanding features of the house is the fine collection of Greek marble sculptures, about thirty in number. These include a celebrated Throne, with reliefs, from Athens; a large, richly decorated Sarcophagus, with roof-shaped cover, large sepulchral relief of Theogenes, Nikodemos, and Nikomachè, of the fourth century, B.C. One subject of great interest and beauty has no sculpture, the figures standing out (white) on a slightly coloured field. Another of small size is described in the "Journal of Hellenic Studies" as an excellent specimen of the beautiful style of the end of the fourth century. The pictures include examples of Velasquez, Teniers, Corregio, Murillo, Rembrandt, Leonardo da Vinci, Jamieson, Naysmith, and Raeburn. The attention of the visitors was specially drawn to two or three architectural pictures of Greek buildings by Lusiri, an Italian artist employed by a predecessor of the present Earl during his various journeys in Greece. On their return to Dunfermline in the evening, the members dined in the Royal Hotel. Mr. James B. Dunn, F.R.I.B.A., the president-elect, congratulated the leader of the excursion (Mr. Thomas Ross, F.S.A., Scot.) on the forthcoming honour of LL.D., which is to be conferred upon him.

The Cardiff, South Wales, and Monmouthshire Architects' Society.

The annual general meeting of members of the above society was held in their room, No. 6, High Street, Cardiff, last month, when Mr. Cecil L. Wilson, F.R.I.B.A., was elected president for the ensuing year, and other officers and members of the Council were also duly elected. The accounts of the society were shown by the hon treasurer to be in a very satisfactory condition, and a report was read by the hon. secretary (Mr. G. A. Birkenhead, M.S.A.) recording the various exhibitions of drawings held in the society's room, the various visits paid by members to works under construction, etc., and other matters of business transacted by the society during the past twelve months. Various suggestions were made as to the future work of the society, and there is a good prospect of interesting outings during the coming summer, and of instructive papers to be read at the following winter's meetings.

Institute of Metals.

Things Japanese being of particular interest at the moment, there was a large attendance at a general meeting of the Institute of Metals at Storey's Gate, St. James's Park, when Professor W. Gowland read a paper on "The Art of Working Metals in Japan." He said that the subject presented to the metallurgist and craftsman unique modes of dealing with metals and extracting and purifying them, and adapting them by simple processes to practical and ornamental uses. Gold, silver, copper, iron, and tin were the only substances recognised as metals proper by the early Chinese and Japanese writers. The Japanese were skilful washers of gold, and succeeded where modern methods could not be profitably applied. Gold on copper was used to ornament temples, and this led early travellers to imagine that there was a large quantity of gold in the country. Silver had been in use in Japan for many centuries. Copper was added to silver as an alloy. Silver was cast by being melted in earth furnaces with charcoal, and cast in linen moulds in water. Silver and copper articles were given the appearance of real silver by the outer surface having the alloy of copper removed. The art of the Japanese metal worker was best displayed in the peculiarly Japanese alloy known as Shakudo, containgold, silver, copper, lead, iron, and arsenic. It had deep rich tones of black, was capable of receiving a splendid polish, and was a perfect ground for inlaid designs of gold, silver, and copper, and for being similarly inlaid in tin. The Japanese made more numerous applications of copper than any other country. They had a simple furnace, blown by bellows, worked by eight men, who received a penny an hour. The furnace was put in the ground, and was so simple that prospectors might well use such a furnace with box bellows.

The Institution of Gas Engineers.

The annual general meeting of the Institution of Gas Engineers is to be held in the hall of the Institution of Mechanical Engineers, at Westminster, under the presidency of Mr. James W. Helps, M.Inst.C.E., engineer and general manager to the Croydon Gas Company, on Tuesday, Wednesday, and Thursday, June 14th to 16th. The president's address will be delivered at the opening of the proceedings, after which a paper on "Public Lighting from a Municipal Point of View," by Jacques Abady, of London, will be read and discussed. In the afternoon a meeting of the Joint Commercial Section of the United Kingdom will be held. After the annual general meeting of the Institution's Benevolent Fund on Wednesday morning, the report of the Gas Heating Research Committee is to be read and discussed, followed by papers and discussions on "Gas as a Universal Fuel," by Mr. H. L. Doherty, of New York, "Gas Calorimetry in the United States," by Mr. J. B. Klumpp, of Philadelphia; and "The Management of Small Gas Undertakings and Works," by Mr. F. J. Ward, of Knowle. On Thursday the report of the Institution's Carbonisation Research Committee, will be presented, after which papers on "Experiments in Carbonisation on the Birmingham Coal Test Plant," by Mr. William B. Davidson, of Birmingham; "The Latest Installation of De Brouwer Stoking Machinery and Coke Handling Plant," by Mr. S. Y. Shoubridge, of Lower Sydenham, are to be read and discussed, and the report of the Institution's Refractory Materials Committee concludes the technical programme of the meeting. A visit of inspection to the works of the Croydon Gas Company is to be paid on Friday, June 17th, the party proceeding in the afternoon to the Japan-British Exhibition.

ENQUIRIES ANSWERED.

N.B.—Owing to the very great increase in the number of enquiries received the Editor desires to give notice that answers to the following enquiries can no longer be undertaken :—

(1) Enquiries about buildings to measure in particular towns and districts.

(2) Enquiries embodying questions which have been set in examination papers.

(3) Enquiries which ask for or require the preparation of special designs as part of the answer.

Correspondents are particularly requested to be as brief as possible. The querist's name and address must always be given not necessarily for publication.

The Editor is willing to answer enquiries from readers who require information on architectural, constructional, or legal matters. Such information must be regarded as the gratuitous advice or information of a friend, and not as the professional opinion of one who holds himself out as possessing expert knowledge on the subject in question. The Editor will, however, avail himself of the assistance of a large staff of experts in the matters above mentioned, but the enquiries sent must be on the express understanding that he is not to be held responsible for any delays, mistakes, inaccuracies, or negligences which may occur.

Enquirers whose questions involve possible legal proceedings are strongly urged to consult their solicitors before taking definite steps in regard thereto.

Answers by post will be sent if the enquiry is accompanied by a postal order for 1s. made payable to Technical Journals, Ltd. and crossed, and stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

This fee of 1s. required for answers by post is in no case to be regarded as payment for the answer given, but merely as a registration fee to meet the extra clerical and other expenses incurred in dealing with these special replies.

The Editor also reserves the right of refusing to reply to any question that he may deem to be unreasonable or unsuitable, and it must be understood that both question and reply will, as a rule, be published in these columns.

Composition to Resist Sulphur Fumes.

R. J. S. writes: "Kindly recommend a composition that will resist the fumes of sulphur. It is required for lining a bleach house, and should preferably be in sheet form with air-tight joints."

—The choice of a suitable material for lining the walls of a bleach house in order to prevent their corroding by the action of sulphur dioxide fumes depends entirely on the amount of money which can be devoted to this purpose.

The ideal substance would be large sheets of glass with rubber strips behind and between the joints, the glass being held in position by stout pins of brass, the latter being covered with paint. A much cheaper material would be tar sprayed with moderate thickness on the present walls; but this might make the room too dark, though it is sometimes possible to spray whitewash on top of the tar.

In works where sulphur dioxide fumes are manufactured, the chambers are usually lined with lead, the joints being specially sweated and well overlapped, but this is necessarily a costly material, as very thin lead is useless.

Brickwork is usually satisfactory provided that the joints are covered with tar. Unless bricks are made of a poor material and are imperfectly burned, they are not easily attacked by the sulphur dioxide fumes, which chiefly destroys mortar.

Hence the mortar must invariably be covered by some non-resisting material such as glass, lead, or tar. S.

Overhanging Advertisement Sign.

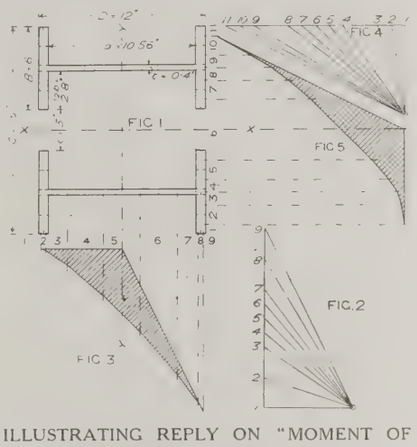
E. H. W. (Isleworth) writes: "Please answer the following enquiry: A is detached private dwelling-house, whose frontage extends to north wall of B; B is a dairy shop; C is an advertisement plate fixed to B's wall, which forms the southern boundary of A [diagram not reproduced]. A objects to advertisement plate as being unsightly when viewed from his windows, and claims that whatever its thickness it overhangs his property and is therefore an encroachment; and on that ground he can compel its removal. Is A right? What steps should he take to enforce his right should conciliatory measures fail? "A" existed before "B" was used as a dairy, and the advertisement complained of was attached to B's wall. For what period must the advertisement exist before a right is established?"

—It is clear that to place an advertisement board in a position where it will overhang a neighbour's premises is to commit a trespass. In a case heard a year or two ago it was held to be a trespass to allow the branches of a tree to overhang, and an injunction was granted. To gain a prescriptive right the board would have to be in the same position for 12 years. An action may be brought for trespass (for which nominal damages will be awarded), and for an injunction which will be granted as a matter of course if the boundary is really overstepped. Careful enquiry should be made as to this before the action is launched. X.

Moment of Inertia of Rolled Joists.

P. L. C. (Southport) writes: "I shall be glad if you will let me know the formula for the moment of inertia of two 12in.×6in. R.S.J.'s×44lbs., as per sketch [not reproduced], on axis XX and YY."

The two rolled joists may be as shown in Fig. 1, but as querist does not give the distance apart they have been assumed 3in. apart, and the axes XX and YY are as marked by querist. The moment of inertia about the axis YY= $2\,(BD^3 - bd^3)/12 = 12\,(6\times12^3 - 5.6\times10.56^3)/12$ 630, and from the tables given in manufacturers' catalogues 2×315.3=630.6, the difference being due to the flanges being taken as rectangular by the formula, whereas in the true section they are not. The moment of inertia may also be found by the graphic method as follows: Divide the section up



ILLUSTRATING REPLY ON "MOMENT OF INERTIA OF ROLLED JOISTS."

parallel with the axis into any convenient number of parts and find the area and centre of gravity of each part. Draw lines parallel with the axis from each centre of gravity and number the spaces. Set off the areas as a load line in Fig. 2 and draw 1—0 at right angles to 1—9 and equal to half 1—9. Join 0 to the points on the load line and parallel with the vectors across their respective spaces construct the inertia area, Fig. 3. Then I=Aa where I=moment of inertia, A=area of section, and a=inertia area. For Axis YY, I=Aa=25.9×24.32=629.89, which is very near to the true resuult. The formula for the amount of inertia about the axis is $XX = (D-d)(C^3-c^3) + d(C-b^3)d - (b+c)^3/12$

$= (12-10.56)(15^3-3^3) + 10.56(15-5.6) - 10.56(5.6+3)^3/12$

$= 573$. Working graphically by means of Figs. 4 and 5, the moment of inertia I=Aa=25.9×22.1=572.39, which differs very little from the calculated result. To use a pair of rolled joists for a stanchion, it will be necessary to connect them either by lattice bars or plates. Henry Adams.

Rough-cast.

F. J. H. (Ashton-on-Mersey) writes: "(1) Can you give me a good recipe for rough cast? None of the text-books I have give a very full explanation. I have seen a lot of the usual ¾-in. Portland cement rendering, the coat of cement made with limestone chippings thrown in. Do you consider this a really good job? (3) Most of the text books give one or two coats ordinary coarse stuff, and their gravel and lime in fluid state. What do you think of this? Is lime good for external use? (4) I fancy the cement one I have mentioned is the better job, but I want to get a finish that can be whitewashed or coloured periodically, and of course one would not do that over limestone chippings; and again, does not Portland cement kill colour? (5) What I really want is a good protective and pleasing finish at a reasonable cost, and none of the text books seem to go fully into the matter. The plasterers themselves all appear to have very different ideas."

—Taking your questions categorically, (1) the best rough-cast is made by using a mixture of cement with three parts of its weight of sand, this being plastered on the wall in a layer about ¾in. thick. Gravel or pebbles may then be thrown or "dashed" on to this layer whilst it is still soft. It is not satisfactory to mix the gravel or pebbles with the cement. Instead of cement, ordinary lime mortar may be used, and is somewhat cheaper. (2) The material dashed on to the cement mixture may be of any composition. Limestone chippings, gravel, shingle, spar, pebbles, or sand all being used with equally satisfactory results in different cases. Of course, if a relatively smooth surface is required, chipping or pebbles cannot be used; the pieces are too large and must be replaced by sand or the "dashing" omitted altogether, the wall being simply plastered. (3) It is not good practice to use either the gravel or lime in a fluid state, except under special conditions. They should be wetted thoroughly, but should be distinctly "solid," the only object of the water being to make them adhere better to the plastered surface. Lime may be used if it is weather-resisting, and is employed hot, but it is mixed with the plaster and not dashed on afterwards. (4) To produce a surface which can be whitewashed or coloured periodically it is best to use a cement-sand mixture as in (1) with no dashing. If white clay is used along with the whiting used for whitewashing the surface, a coating between the colour-wash and the cement is obtained, which will usually preserve the colour. There are some colours not affected by cement. Ask your dealer about these. In any case the action of the cement is overcome after about three coats of colourwash if each is dried thoroughly before the next is applied. (5) For its low cost and effectiveness in keeping the damp out of buildings, there is nothing so good as the cement-sand mixture referred to above. The particular surface given to it will depend entirely on the material (if any) which is dashed on afterwards, or whether the walls are simply rendered in the ordinary plasterer's manner. A. B. S.

Bakers' Ovens.

X. Y. Z. (Golspie) writes: "Can you recommend any book dealing with the construction of bakers' ovens, or give particulars of any articles on the subject?"

—No book dealing with bakers' ovens has ever been published to our knowledge, and we know of no articles upon the subject. The ordinary cottage oven for baking consists of a closed chamber paved and domed in brick. There is an open flue immediately over the opening to take the smoke, which would otherwise come straight out of the door into the room. This flue connects with the main chimney flue higher up, and there are no special details necessary beyond the provision of a sufficient draught to cause the smoke to travel up the flue. The only iron fittings consist of a flat plate furnished with handles for removing it. It merely rests

against the framing, and is not hinged or fastened unless there be lugs to keep it securely in its position in the throat of the oven mouth. B. J.

Girder Fixed to Stanchion.

F. P. W. (Harlesden, N.W.) writes: "Kindly give me your opinion on the following: A 14 by 6 R.S.J. 20ft. span, carrying a distributed load of 25 tons, is cleated to a 6 by 5 stanchion, 14ft. long, fixed at both ends. It is claimed that the girder is perfectly fixed and a bending moment of $\frac{wl^2}{12}$ has been taken. Am I right in presuming that the difference of the bending moments betweeen $\frac{wl^2}{8}$ and $\frac{wl^2}{12}$ is picked by the stanchion and consequently introduces a bending moment on it? How should this be calculated graphically and mathematically?"

—This query raises a point which is rather difficult to answer definitely, and which is generally passed over. Girders with cleat connections at their ends are nearly always treated as freely supported, i.e., the additional given by fixing the ends is neglected. For the beam to be treated as fixed, its ends must be very securely fixed in direction, because the amount of play necessary to allow it to act as a simply supported beam is extremely small. Assuming for the moment that the ends are to be considered as fixed, we get B. M. diagram shown in Fig. 1.

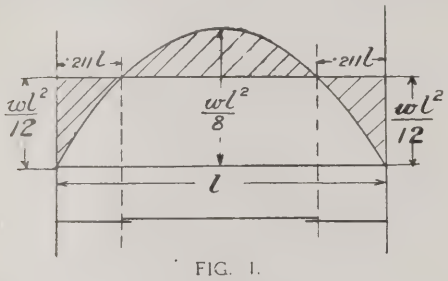


FIG. 1.

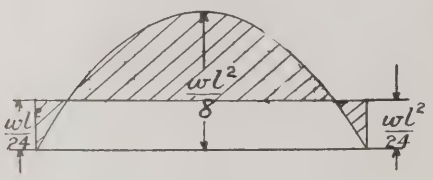


FIG. 2.
ILLUSTRATING REPLY ON "GIRDER FIXED TO STANCHION."

From this it is clear that the fixed beam is equivalent to two cantilevers of length .211l supporting a simply supported beam at the centre as indicated below the B.M. diagram. In this case the B.M. transmitted to the stanchion is $\frac{wl^2}{12}$ the case being similar to that of a stanchion with an overhanging bracket. The calculations for the stanchion are then usually carried out as follows:—First find the stress in the stanchion due to the bending moment; this we will call f_b. Next find by means of Rankine's or some other column formula the safe central load per sq. in. for the given stanchion. This we will call f_p.

Then $f_p - f_b$ = Permissible load on stanchion per sq. in. allowing for the bending moment.

In the given case $\frac{wl^2}{12} = \frac{25 \times 20 \times 12 \times 20}{20 \times 12} =$ 500 in. tons.

From the table of standard sections we see we see that for a 6″×5″ I section, A=7·35 sq. in.; Z=14·53; R=2·43, Z and R being about a central axis perpendicular to the plane of the paper.

$\therefore \int_b = \frac{500}{14 \cdot 53} = 34 \cdot 4$ tons per sq. in.

This is obviously too much.

Try a 16″×6″ section; for this A=18·23, Z=90·71, R=6·31.

$\therefore \int_b = \frac{500}{90 \cdot 71} = 5 \cdot 52$.

The length of the stanchion is 14ft., fixed at both ends.

$\therefore C = \frac{L}{2K} = \frac{7 \times 12}{6 \cdot 31} = 13 \cdot 3$.

$\therefore$ Taking Rankine's formula $\int_p = \frac{6}{1 + \frac{C^2}{6000}}$

$$\int_p = \frac{6}{1 + \frac{13 \cdot 3 \times 13 \cdot 3}{6000}} = \frac{6}{1 \cdot 03} = 5 \cdot 82 \text{ tons per sq. in. nearly.}$$

$\therefore f_p - f_b = 5 \cdot 82 - 5 \cdot 52 = \cdot 3$ Tons per sq. in.

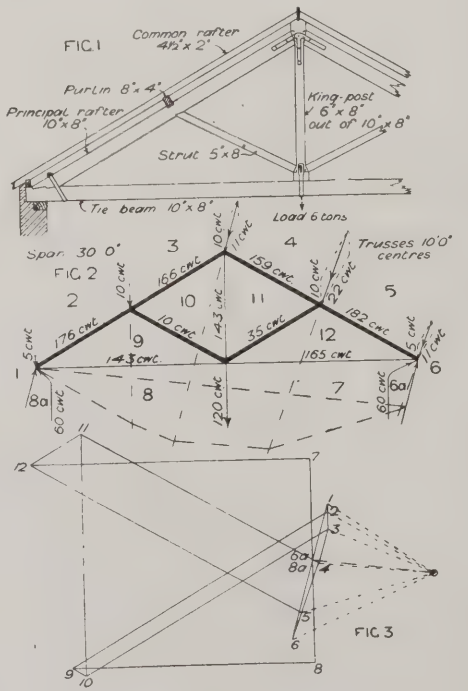
$\therefore$ Safe loan on stancheon $= 18 \cdot 23 \times 3 = 5 \cdot 5$ tons nearly.

The stanchion is still a little too light by this method of calculation, but would probably be quite satisfactory. Returning to the question of the fixing of the ends of the beam, the B.M. diagram will probably in practice be somewhere between that for the freely supported beam and the fixed beam. Fig. 2 shows the B.M. diagram for a beam which we may term "half fixed." In this case the B.M. transmitted to stancheon is $\frac{wl^2}{24}$. The writer believes that this is occasionally used. A.

Roof Truss with Hanging Load.

G. P. (Rensueth) writes: "Kindly inform me if the roof as sketch [not reproduced] is in order. The roofing is 300ft. long, and has roof principals every 10ft. You will see it is compulsorily a wood roof. There is also a runner to be fixed to the centre of the tie beams to carry a load of 6 tons. I shall be glad if you will illustrate: How to calculate the weight per foot pressure, how to ascertain the various stresses, how to determine the size of the timbers."

—The sketch submitted shows a type suitable for twice the span and not convenient for the present case. Trusses of the usual types are constructed for a top load, while in this case the chief load will be hanging from below. As the truss must be constructed of wood, a king post form may be adopted as in Fig. 1. The frame diagram will be as Fig. 2, and the stress diagram as Fig. 3. For the principal rafter with a maximum stress of 182 cwt. and supported



ILLUSTRATING REPLY ON "ROOF TRUSS WITH HANGING LOAD."

length of 8ft. 6ins., try a 10-in. by 8-in. section. Then

$$W = \frac{fS}{1 + \frac{m}{nq}\left(\frac{l}{d}\right)^2} = \frac{6 \times 80}{1 + \frac{2 \cdot 5}{1 \times 250}\left(\frac{102}{8}\right)^2} = 183 \text{cwt}$$

For the struts with a maximum stress of 35 cwt. and length of 8ft. 6ins., try a 5-in. by 8-in. section, then

$$W = \frac{6 \times 40}{1 + \frac{2 \cdot 5}{1 \times 250}\left(\frac{102}{5}\right)^2} = 48 \text{ cwt.}$$

Allowing 3 tons per sq. in. tension, the tie beam will require a net affective area of $\frac{165}{3} = 55$ sq. ins., which will be given by a 7-in. by 8-in. section, if there were no junctions, but this should also be made 10ins. by 8ins. The king post requires a minimum sectional area of $\frac{143}{3} = 48$ sq. in., or, say, 6ins. by 8ins. out of 10ins. by 8ins. The purlins will have to carry, say, 24 cwt. distributed, then $\frac{bd^2}{L} = 24$, or $\frac{bd^2}{10} = 24$, whence $b\,d^2 = 240$, say an 8-in. by 4-in. section. The runner must be carried by bolts through tie beam on each side of king post, not through centre.

Henry Adams.

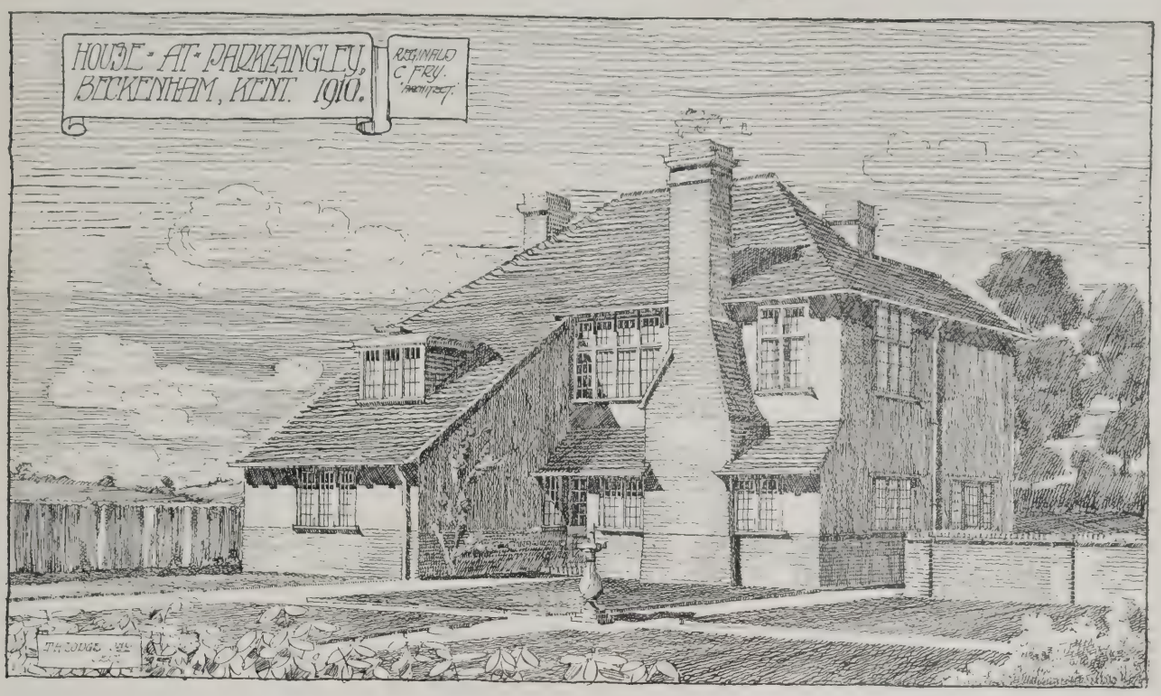
Building Agreement.

Distracted (Thames Ditton) writes: "I have purchased a plot of ground 28ft.×15ft., and one of the stipulations in the agreement is that no house on this part of the estate is to cost less than £450. I have submitted plans to the estate surveyor in accordance with clause in the agreement, and he cubes it up and prices it at 4½d., and my design does not come to the £450 at 4½d. He therefore refuses to pass the plans, notwithstanding the fact that if built according to my specification, the house cannot be erected for much under 7d. per cubic foot. It is practically impossible to build a more convenient plan than mine on a 28ft. plot, and the elevation has a frontage of 23ft. 9in., I having designed so as to get light from both front and back. The estate surveyors suggest two methods whereby I could increase the cost, but it seems to me that to adopt plan 'A' (not reproduced) is to build a kitchen which will be so dark as to be uninhabitable should the next house be built right up to my boundary. To adopt the other suggestion 'B' (not reproduced), keeping the kitchen at the back, is to spend the extra £100 in a lot of useless dark passages. The agreement states that the costs are to be the net amount involved in materials and labour, but the estate surveyor argues that builders' profit is not labour. He also states that he alone is to estimate as to cost and he prices at 4½d. or 5d. at the most.

"What is my position if I build without getting plans passed by the estate surveyor? Can I build right up to my boundary, even though I am obliged to block out some light from the next house already erected?"

—It is not easy to answer these queries without having access to the agreement—which is apparently in the nature of a building lease. It is clear law that if a man agrees to build a house to be approved by the landlord (or vendor), or his architect, the stipulation must be complied with; the architect in such a case being appointed sole judge. So it has been decided that where there is a condition which is clearly expressed making the architect the sole and exclusive judge in all disputes which may arise in consequence of breaches of the conditions in the agreement, the lessee will be bound by his determination *Roberts v. Bury Commissioners*, L.R. 5 C.P., 310). Having this principle in view, the decision of the surveyor would seem to be final. Although the tenant may desire to build in one way, he must accept the surveyor's suggestions if he is to build in accordance with the agreement. As to the meaning of "labour," the decision of the surveyor on this point also appears to be final.

With regard to the proposal to build up to the boundary line, there is nothing (so far as one can see) to prevent this. The adjoining owner may object, but he has no legal right to prevent his neighbour from building on all his property. X.



This house is designed to occupy a site on the southern side of a road at Parklangley, the new garden suburb at Beckenham, Kent, running east and west. The house is designed to present a typical Sussex exterior. The Architect is Mr. Reginald C. Fry, of London.

VIEWS AND REVIEWS.

*Theory of Structures.**

At the end of 1903, Mr. R. J. Woods, M.E., M.Inst.C.E., Fellow and formerly Assistant Professor of Engineering at the late Royal Indian Engineering College at Cooper's Hill, wrote a book entitled "Strength and Elasticity of Structural Members." That work has obtained considerable success as a manual for students in technical institutes and engineering colleges. It certainly was very clearly and ably written, the chapters originally being compiled as a series of lectures to students at Cooper's Hill. The favourable reception given to the former work has led the author to write this present volume on "The Theory of Structures." Though self-contained and independent, it really forms a continuation of the former work, suitable for more advanced students and draughtsmen engaged in structural design. There is a good deal of duplication, for the elementary principles and formulæ of the former book are extended and utilised for the determination of the stresses in, and the design of, masonry and steel structures, and this book thus shows more their application to practical problems. The book is replete with examples from practical designs worked out in detail. The two books traverse very closely the course in theory of structures at the City and Guilds of London Central Technical College, South Kensington. The one now under notice is very suitable for such engineering colleges, and in preparing for examinations, but at the same time it will be found a useful work of reference for engineers and architects.

We can heartily commend it, though we would wish to see it incorporated in the same cover as Mr. Wood's first book.

The concluding chapter is devoted to reinforced concrete, but it practically merely follows the R.I.B.A. Report, and is of very elementary character.

*"The Theory of Structures," by R. J. Woods, M.E., M.Inst.C.E. London: Edward Arnold, 41 and 43, Maddox Street, W. Price 10s. 6d. nett.

*Books on Reinforced Concrete.**

Cheap books for the student of reinforced concrete are to be welcomed if they treat the subject fairly thoroughly, and with discernment. The publisher of this work is well-known for issuing architectural books of goodly size at a low price, and he has performed a service in issuing Mr. Rings' book at the low price of 7s. 6d. net, at which it should prove popular with architectural students. We note with interest that the author is the first book writer to use the Standard Algebraical Notation of the Concrete Institute for his calculations, and it certainly makes the text so clear that "he who runs may read." Every symbol is logical to the English reader, and there is but little need to use the key which has wisely been put both back and front of the book, the first in a fold-out sheet so that it can be by the side of the reader while studying the formulæ.

The author has not attempted any great novelty or put forward any very original suggestions in this work, but has solely been concerned with summarising the practice and best established theory of the subject. The book is intended more for students of architecture, though the author hopes to appeal to the young engineer also. After an introduction on the history and advantages of reinforced concrete, chapters are devoted to the materials employed, their proportioning and manipulation, and the execution of work. Then follows a chapter on loads, moments, and various applications of reinforced concrete to structures of many kinds. Next comes a chapter on continuity, coefficients of expansion, moduli of elasticity and safe stresses, followed by chapters explaining formulæ for slabs, beams, ribbed floors, shear stresses, columns, and arches. There is a chapter descriptive of most of the patent bars and systems on the English market, and the work is concluded by memoranda and tables (among which we notice an error on p. 149 in recording the weight of a cubic foot of steel). In a pocket at the end of the book an ingenious ready reckoner for calculating the reinforcements in slabs and rectangular beams is given, but we do not think it nearly so serviceable as graphs would be to the practical designer.

The book forms a useful summary of the practice and theory of reinforced concrete in most general acceptance in Europe, and will form a good introduction to the subject.

The second of the two books under notice is one for the advanced student of reinforced concrete, and the qualified engineer. It is the translation by an American engineer of a work originally written in German. It does not deal exhaustively with all aspects of reinforced concrete construction, but its treatment of the principles is masterly. The book is written in a real scientific way by a designer of considerable experience, and it is entirely to the point judged from a practical aspect. Indeed, it is true theory founded on experiment and practice, to the furtherance of which latter it is related in turn. This translation is of the third (1908) German edition, but the first edition of the work was issued in 1902. The manner of its publication is noteworthy. The firm of Wayss and Freytag, who, it will be remembered, were responsible for pushing the Monier system to the front for engineering and building works, being the first to take up Monier's patents for Germany and Austria, and put the practice of his system on a scientific basis, felt impelled by the absence of a uniform literature, and in view of systems based on wholly unscientific methods of calculation being pushed into recognition by systematic advertisement, to familiarise those interested in the scientific principles of reinforced concrete with all the experimental researches available at that time, and to counteract the imminent danger that reinforced concrete might forfeit a large proportion of the confidence it already enjoyed by inefficient and unscientific practice, especially if a few failures should occur. A little over a year after the publication of the first edition, the Verbands Deutschers Architekten und Ingenieur-Vereine, and the Deutscher Beton Verein published their

*"Reinforced Concrete: Theory and Practice," by Frederick Rings, M.S.A. London: B. T. Batsford, 94, High Holborn, W.C. Price 7s. 6d. nett.

"Concrete Steel Construction," by Professor Emil Mörsch, of the Zurich Polytechnic, Zurich, Switzerland. Translation from the third German edition, by E. P. Goodrich. London: Archibald Constable and Co., Ltd. New York: The Engineering News Publishing Co. Price 21s. nett.

"Leitsätze" (recommendations), and the Prussian Government issued its "Bestimmungen" (regulations), which harmonised exactly with the first edition. Indeed, the firm of Messrs. Wayss and Freytag and Prof. Mörsch, the author, had a great share in the compilation of the preliminary "Leitsätze," and manifested much interest in making them final. The "Recommendations" and "Regulations" inspired widespread confidence in the new methods of building, but even the best of directions could not altogether obviate mistakes and failures by those inadequately equipped with that knowledge of the properties of concrete and steel in combination which the regulations presupposed; for the "Leitsätze," could obviously not be made a book of instructions on the principles of the design of reinforced concrete. Prof. Mörsch, who is Director of the Technical Bureau of Messrs. Wayss and Freytag, therefore set himself the task of thoroughly revising and extending the work for the second edition (published at the end of 1905), in the light of the experimental data (in great part hitherto unpublished), the whole of which his firm placed at his disposal in the preparation of the work, together with the valuable results of tests conducted for the reinforced concrete commission of the Jubiläumstiftung der Deutschen Industrie, published in 1905, which Prof. Bach of Stuttgart gave him, especially those relating to adhesion.

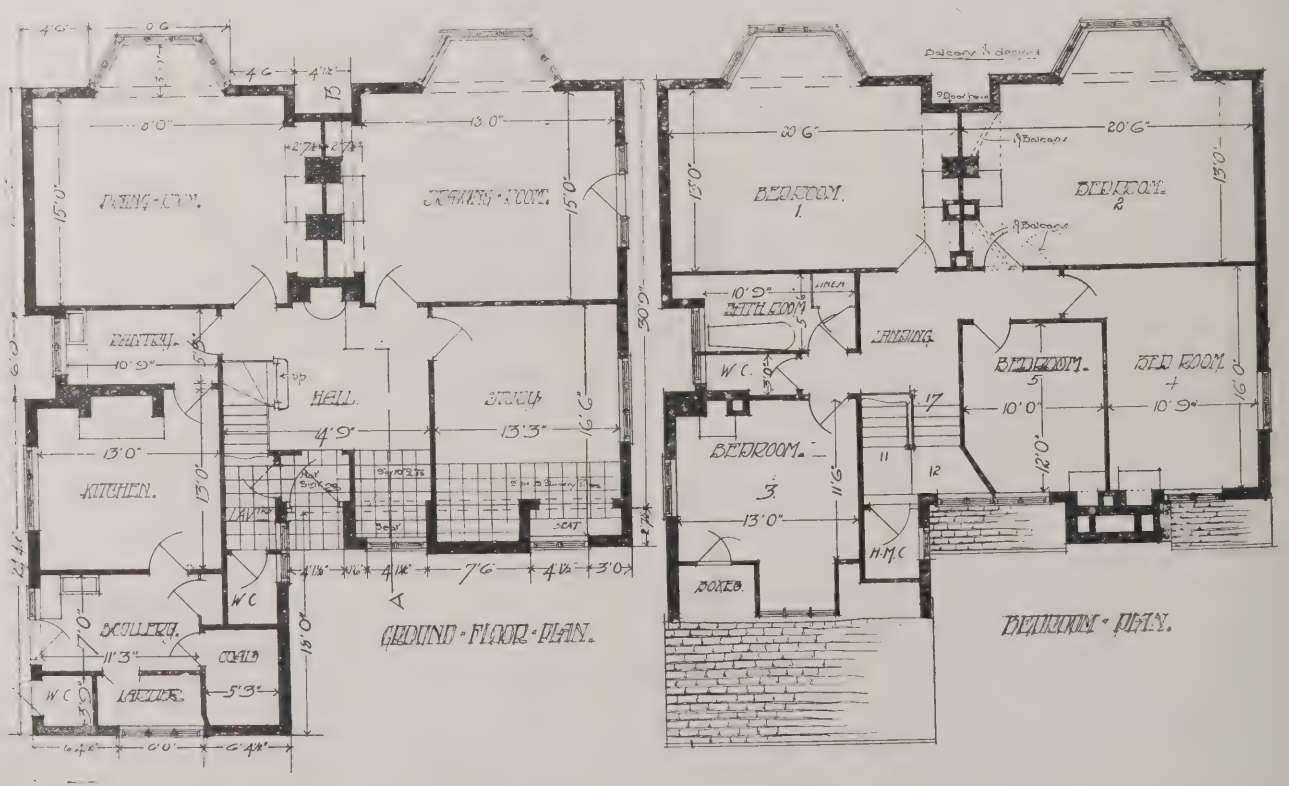
The policy of Messrs. Wayss and Freytag is a broad one, for of course the material presented by Prof. Mörsch has been of considerable service to their competitors; but they believed that by a deepening of knowledge of reinforced concrete they were rendering the most service to the subject. At the end of 1907 a third edition was published, in which were included the results of new experiments conducted by Messrs. Wayss and Freytag, especially noticeable being those relating to shear in T beams, and those on continuous beams. There were also included tests on shear stresses in T beams made for the reinforced concrete commission of the Jubiläumstiftung der Deutschen Industrie, and published in 1907. References were also included to the experiments conducted by the French Government Commission on Reinforced Concrete, also issued in 1907. Various portions of the work were enlarged.

The arrangement of this third edition is that after some general or introductory remarks upon the practical reinforcement of beams, columns, and arches, under the most widely varied loading, attention is closely given to the the theory of reinforced concrete, exhaustively covering the properties of materials and applying the theory in the closest possible manner to interpret the results of tests. Prof. Mörsch does not repeat a lot of useless theories, but just shows how closely the methods of calculation given in the "Leitsätze" apply to actual tests, and that they are well founded and useful. In this portion of the book one of the most useful chapters is on shear in beams. It is the best and most detailed treatment we have seen, and no doubt it has influenced the authors of other books on the subject. The author goes into minute detail as regards the detailing of beam reinforcements, and his book will be most useful to the practical designer. A third portion of the book is devoted to a description of structures of various kinds in reinforced concrete executed by the firm of Wayss and Freytag, selected from their fifteen years' experience, for the most part under the direction of the author, with a running commentary and explanation of the designs, and theoretical data regarding the different kinds of structures. The author clearly states that he does not contemplate giving a complete presentation of all the applications of reinforced concrete, and he has limited his choice of examples to the work of his firm because he knows that it has been designed in accordance with the recommended methods of calculation, and because, he claims, the present advance in the art of reinforced concrete design is in large part due to the efforts of Messrs. Wayss and Freytag. We do not cavil at his conclusion of the work of other constructors. If the book is somewhat limited in consequence, it nevertheless contains a most valuable treatment of the general principles, and deals exhaustively with beam, slab, and column construction, which are, after all, the most important elements of design, and with the instruction contained in this book the designer will be well equipped to deal with structures of all kinds. No doubt the author would be ready to admit that there is still much room for experimental work; and the theory of the subject is not yet cleared up, though much has been done to eliminate obscure points therein by Prof. Mörsch and the experimental investigators whom he has had a great part in inspiring.

We must commend the proprietors of the "Engineering News" for having published this translation. It was badly needed. The translator has done his work well on the whole, but we think it could be greatly improved by being revised by others, for we know how difficult it is to select just the right phraseology—what appears clear to the translator who has the original in his mind and knows what he is trying to express, may by no means be clear to the reader; and it is difficult to render a work of this character immediately into the best English phraseology. The algebraical notation is awkward for the English reader to follow. In conclusion, we wish to say that we think every designer of reinforced concrete would be better for a close study of this work, which we consider the best treatment yet of the subject from the point of view of the advanced student and the practising specialist.

Historical Illustrations.

The object of this work appears to be a very praiseworthy one. In four portfolios, devoted respectively to the eleventh, twelfth, thirteenth, and fourteenth centuries, it presents drawings accompanied by short descriptions of costumes, armour, furniture, buildings, and architectural details of the periods. The majority of the illustrations have been derived from contemporary documents and manuscripts, from the Bayeux tapestry and other sources. A dozen plates are included in each portfolio. In many cases, Mr. T. C. Barfield, who is responsible for the drawings, has built up interiors from various existing portions of contemporary buildings, and to some extent, as in "the Great Hall in the Keep of the Castle," plate 13, these synthetic restorations must be taken with reservations. In plate 15, for instance we do not think that Mr. Barfield is justified in taking a wall from Southampton, a "possible gateway," the striped roof of a tower from a MS. picture, the upper part of a house from Viollet-le-Duc, and much of the Jew's house at Lincoln, as the proper ingredients for "A street in the reign of Henry II." He should not forget that there were then varying building traditions in different parts of England; and, after all, what justification has Viollet-le-Duc in this compound? Curiously enough Mr. Barfield omits any illustration of the Tower of London, or even of the famous Chapel of St.



HOUSE AT PARKLANGLEY, BECKENHAM, KENT. REGINALD C. FRY, ARCHITECT.

John in the White Tower in his eleventh century portfolio; and there is no illustration of Westminster Hall in the thirteenth century portfolio, Mr. Barfield contenting himself with a conjectural drawing of King's Hall, Winchester, based on particulars given in Hudson Turner's book. There are numerous other omissions from the architectural point of view, but doubtless the illustrations of costumes and armour will be found interesting and instructive, especially in schools, for which the portfolios are primarily intended.

Longmans' Historical Illustrations: England in the Middle Ages. Drawn and described by T. C. Barfield. 4 portfolios; 2s. 6d. each. Longmans, Green and Co.

Estate Development.

Although, owing to trade depression, the check in the rate of increase of population, and other adverse conditions, the development of building estates is not, for the moment, proceeding at the normal rate, it may be supposed that the lull is only temporary. Not long hence, activity will probably be greater than ever, as a consequence of the operations of the Town Planning Act, which may be confidently expected to cause the development of many new estates as well as the modification of many that are old. The present solstice or truce affords an admirable opportunity for taking stock of the subject, and Mr. Bright's book will be widely welcomed as an efficient aid to a full comprehension of the somewhat complex data involved.

Mr. Bright divides his book into eight chapters, which deal respectively with (i.) Building Land, its characteristics, qualifications, and mode of preparation; (ii.) Extent and nature of demand for building land; (iii.) Development schemes; (iv.) Powers and requirements of metropolitan and local authorities; (v.) Practical development procedure; (vi.) Road materials; (vii.) Methods of forming and making up of new roads; (viii.) Valuations. There are also some useful appendices, comprising forms of specification, contract, building agreement, lease, etc. There are about twenty-six illustrations, comprising plans, sections, and diagrams of almost everything that really demands graphic treatment; and a series of valuation and other tables adds considerably to the practical value of a book that, considering its handy size and moderate price, is remarkably complete. It is rather surprising to find that, in spite of the supposed "dryness" of the subject, and the compactness of the book, the matter is for the most part very interesting to read. The author has a clear style and a cheery outlook, as may be inferred from his citation of the following piece of versified proverbial philosophy:—

"The richest crop for any field
Is a crop of bricks for it to yield.
The richest crop that it can grow
Is a crop of houses in a row."

It is a weird sort of agriculture that produces a crop of such permanence; but the speculative builder who, through neglect of such information and guidance as this book affords, loses heavily by his enterprise, may develop (if he is not tired of developing) the analogy by remarking that "others reap what I have sown."

The Development of Building Estates. A practical handbook for the use of surveyors, agents, landowners, and others interested in the development, management, equipment, administration, or realisation of building estates. By Tom Bright, F.A.I., etc., With plans and illustrations by T. Spencer Bright, P.A.S.I. London: B. T. Batsford, 94, High Holborn. Price 7s. 6d. net.

LIST OF COMPETITIONS OPEN.

JULY 9. PROPOSED USHER HALL, EDINBURGH. Particulars given in our issue of April 20th. Inquiries to be addressed to Thomas Hunter, Town Clerk, City Chambers, Edinburgh.

JULY 20 YSTRADGYNLAIS SEWERAGE SCHEME. The Rural District Council will pay £20 for the most suitable scheme for sewering Ystradgynlais Lower. Particulars from Mr. T. Watkins, surveyor to the Council, Ystradgynlais.

AUGUST 23. COUNTY OFFICES AT NAVAN for the Meath County Council. Inquiries to the Secretary, Meath County Council, Ireland.

AUGUST 31. COVENTRY. NEW ELEMENTARY SCHOOL in Centaur Road. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

SEPT. 5. THE QUEEN'S UNIVERSITY OF BELFAST. Enlargement of the present buildings at a cost of about £52,000. Particulars in our issue of June 1st.

NO DATE. ASHTON-ON-MERSEY. WESLEYAN SUNDAY SCHOOL. Limited to Architects practising within ten miles of Sale. Inquiries to Mr. J. O. Barrow, Barker's Lane, Ashton-on-Mersey.

ARCHITECTURAL GARDEN FURNITURE.

The growing recognition that the planning of the garden is work that properly falls within the province of the architect, or of the specialist in architectural gardening, finds its corollary in the special attention that is being given to the design and construction of garden furniture. As an instance, we have received from Mr. John P. White, the Pyghtle Works, Bedford, a handsome catalogue containing 240 large quarto pages, nearly all of which contain several fine illustrations, which are thus classified: Garden seats, chairs, and tables (nearly a hundred examples); sundials (twenty-five); treillage (nearly a hundred); Tuscan pottery (forty-six); vases for terraces, steps, etc. (fifteen); figures in lead or stone (thirty); fountains (four); well-heads (a dozen); pigeon-cotes (ten); summer-houses (twenty-two); palmboxes (a dozen); tubs and vases for palms and shrubs (fourteen); pergolas (a dozen); bridges (eleven); horticultural buildings (twenty-eight); gates (thirty-seven). These illustrations include several excellent specimens of colour-printing.

We have been at the pains to give this rough indication of the "proportional representation" of the various objects illustrated because it may possibly afford some idea of the direction in which taste is running with regard to garden furniture. Of course this is an instance in which numerical values may or may not possess any particular significance. The fact that there are a hundred examples of garden seats, chairs, and tables, implies much less than the similar number of examples of treillage. Chairs and tables are always with us, but treillage in a hundred variations is a pretty clear indication of a current trend of taste.

The designs throughout are, almost without exception, excellent, whether they are original or whether they imitate classical, Italian, or Japanese models. The Italian seats, by the way, appear to be in some instances more handsome than comfortable. Some of the treillage really deserves the term "architectural" that is applied to it in the catalogue; and most of it would seem to be readily responsive to architectural treatment, and to require such control.

The Tuscan pottery, of which some striking examples are illustrated, consists largely of reproductions of designs by old Italian



A TREILLAGE ROSE GARDEN: INTERIOR OF THE ROSE GARDEN AT SURRENDEN, KENT.
("*Architectural Garden Furniture.*")



This design is copied from a seat in an old picture.
THE "LEAGRAVE" GARDEN SEAT.
("*Architectural Garden Furniture.*")

artists, including Michaelangelo, Donatello, and John of Bologna. Many of the figure designs—the disc-throwers, Mercurys, Bacchuses, fauns, etc.—follow classical models, and so do the fountains.

The pigeon-cotes, summer-houses, gates, and horticultural buildings savour more characteristically of rural England, which is peculiarly rich in wooden gates of multitudinous designs, many of them truly artistic in at least the essentials of dignity, simplicity, fitness for their purpose, and harmony with their surroundings.

Among the bridges, those of Japanese design are, for obvious reasons, of peculiar interest at the moment, and have, indeed, an intrinsic picturesqueness which renders them independent of the adventitious aid of the Japan-British Exhibition, which is nevertheless certain to give them a considerable vogue. In this and in many other respects the catalogue is singularly opportune, and it will be welcomed by all who are interested in the growing cult of architectural gardening.

TRADE AND CRAFT.

A New White Undercoating.

Upon the undercoat in painting the success of the finish greatly depends. The painter knows this well enough, and if he is a conscientious workman he acts accordingly. Yet, with all his care, and all his skill, he does not invariably succeed in producing a satisfactory groundwork, the materials at his command being occasionally very refractory, so that all his rather elaborate preparations are very apt to go for naught. With the object of securing more satisfaction and more certainty in the results, Messrs. Walter Carson and Sons, Grove Works, Battersea, S.W., have produced a new body white for undercoating. They have given it the name of "Coverine," and claim for it that as it is ready for use in five minutes, requiring to be thinned with turpentine only, it saves much time in the preparation of undercoats. One coat of "Coverine," it is stated, is equal to two coats of white-lead paint; while as it dries hard, and can be coated in a few hours, the finishing coat can be applied and the work completed in one day. It has such body and opacity that it can be used over existing old paint, so that in cases of urgency the labour of cleaning off is dispensed with

"Bitumastic" at the Japan-British Exhibition.

In the Transportation Section of Building No. 48, at the Japan-British Exhibition at Shepherd's Bush is the stand of Wailes, Dove and Co., Ltd., Newcastle-on-Tyne, patentees and sole manufacturers of the patent "Bitumastic" enamels, coverings, and solution, for the prevention of corrosion in iron and steel, and the protection and preservation of wood. On the stand is shown a model of the midship section of a vessel, and also a model workshop with smoke stacks, etc. These are all coated with their different "Bitumastic" specialities. There is also shown a small model of ship's steel deck plating, flushed up and levelled with patent "Bitumastic" deck covering, on which "Corticene" is laid. This material is similar to that applied successfully to the promenade, shelter, upper, main, and lower decks, etc., of the celebrated turbine liner "Mauretania." The advantages obtained by using this material in place of wood decks are as follows: No piercing of decks, more head room in 'tween-decks, steelwork efficiently protected, corticene, rubber tiling, or parquetry easily laid on, greater cheapness and durability, saving in weight, perfect sanitation, more air space, no accumulation of foreign matter as is usual under wood decks. Beyond executing very large orders on board the largest and latest liners afloat, like the "Mauretania" and "Lusitania," this firm's latest advance is the application of "Bitumastic" to valuable steel and iron structures and plant on land, the material proving invaluable for the protection of bridges, water tanks, pithead gears, refrigerating plant, roofs of buildings, etc. The firm have been awarded gold medals and first-class diplomas of merit at the following exhibitions: Genoa, 1905; Milan, 1906; Savona, 1906; Bordeaux, 1907; and Franco-British, 1908. The firm have offices and stores, with efficient staffs, at all the chief centres of shipping and industry throughout the United Kingdom, and agencies at all the principal ports in the world. Their London office is at 10 and 11, Lime Street, City.

COMING EVENTS.

Wednesday, June 15.

INSTITUTION OF GAS ENGINEERS. — Annual General Meeting: second day.

THE SURVEYORS' INSTITUTION. — Private meeting of Metropolitan members to discuss the land clauses of the Finance Bill. 2.30 p.m.

EAST LONDON COLLEGE (University of London).—Professor J. T. Morris on "The Illumination of Interiors." 8 p.m. (second lecture).

BUILDERS' FOREMEN AND CLERK OF WORKS ASSOCIATION. Ordinary meeting. 8 p.m.

Thursday, June 16.

INSTITUTION OF GAS ENGINEERS. — Annual General Meeting. Concluding day.

ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS. Special general and annual meetings at Plymouth.

Friday, June 17.

ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS. Special general and annual meetings at Plymouth.

INSTITUTION OF GAS ENGINEERS. — Visits to the Croydon Gas Works, and to the Japan-British Exhibition.

Saturday, June 18.

JUNIOR INSTITUTION OF ENGINEERS.—Visit to Letchworth. Train from King's Cross, 1.45 p.m.

ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS. Special general and annual meetings at Plymouth.

ARCHITECTURAL ASSOCIATION.—Visit to House at Godalming (E. Guy Dawber). Train at Waterloo, 2.40 p.m.

Monday, June 20.

R.I.B.A.—Ordinary General Meeting. Presentation of Royal Gold Medal. 8 p.m.

Tuesday, June 21.

R.I.B.A.—Practice Committee meets.

INSTITUTION OF HEATING AND VENTILATING ENGINEERS.—Summer meeting at Bournemouth.

Wednesday, June 22.

NORTHERN ARCHITECTURAL ASSOCIATION.—Students' Sketching Club Annual Excursion.

INSTITUTION OF HEATING AND VENTILATING ENGINEERS.—Summer meeting at Bournemouth (second day).

INSTITUTION OF CIVIL ENGINEERS. — The 18th James Forrest lecture. 8 p.m.

EAST LONDON COLLEGE (University of London).—Professor C. A. M. Smith on "The Illumination of Interiors." 8 p.m. (third and concluding lecture).

NOTICE.

The Institution of Civil Engineers, in consequence of the death of His late Majesty King Edward VII., will not hold the Annual Conversazione this year.

FEDERATION NEWS.

We regret to record the death of Mr. Wilton A. Rycroft, the secretary of the Newcastle Association, which took place on May 23rd. Mr. Rycroft was a member of the firm of Rycroft and Glenton, chartered accountants, Newcastle-on-Tyne, and at one time held the position of secretary of the Northern Counties Federation, which he relinquished owing to ill-health, in 1900, when Mr. W. H. Hope took up the post. Mr. Rycroft leaves a wife and one child.

Cardiff.

A meeting of the committee of the Cardiff District Association was held at the Association offices on Friday, May 27th, the president (Mr. W. T. Morgan) in the chair.

Mr. C. Hoare reported that in accordance with the resolution passed at the last meeting the sub-committee had met and had requested the secretary to write to the Master Builders' Associations in various towns, making the following enquiries, viz.: —(1) Whether the builders in those towns were required to pay the Council for making connections of house drains to sewers; (2) whether the Council made a charge for fixing a meter to check the supply of water for new buildings, and, if so, what was the amount of the charge; also whether a deposit was demanded while the meter is in use, and, if so, the amount of the deposit; (3) what method obtained for the apportionment of private improvement charges for flanks of houses; and (4) where such improvement (pavement and road) constituted a public thoroughfare, are the whole of the improvements adjacent to such house payable by that house, or are they apportioned over the district, or how? The secretary reported that he had written to nine towns, and had received replies from seven, namely, Manchester, Southampton, London, Portsmouth, Carmarthen, and Barry Dock, which were read and discussed, and it was resolved that the matter be referred back to the sub-committee to go carefully through the replies, and also to communicate with other towns if they considered it necessary to do so.

Llandaff and Dinas Powis Rural District Council,—Rule 70 of by-laws requiring concrete to be placed under and around house drains.—The president reported the result of the interview with the committee of the Rural District Council, with a view of getting this objectionable by-law altered or withdrawn, and the secretary read a letter since received from the Clerk to the Council stating that the Council had resolved to take the necessary steps to revise their by-laws generally, which was considered satisfactory.

Cardiff Gas Company.—The secretary read correspondence with the secretary of the Gas Co. on the subject of the concessions applied for by this association, and the further consideration of the matter was deferred till the next meeting.—I. WATKINS, Secretary.

COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about five days or longer after the date of this issue. Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders. The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

June 18—July 4. **ST. ALBANS.**—Erection of new Carnegie public library in Victoria Street. Drawings, specification, and conditions of contract can be inspected at the offices of Guildford Dudley, architect, 2, Spencer Stret, St. Albans, on June 30, between ten a.m. and one p.m. Send names and addresses to the Town Clerk, Town Clerk's Office, on or before June 18, together with a deposit of £3 3s., when a copy of the bill of quantities and form of tender will be forwarded. Tenders must be sent to E. P. Debenham, Town Clerk, St. Albans.

June 20. **WATTSVILLE.**—Shops, houses, and bakehouse at Wattsville, near Cross Keys. Particulars at office of R. L. Roberts, M.S.A., Abercarn.

June 20. **NEWTOWNARDS (Ireland).**—Erection of business premises at Newtownards. Plans and specification may be had at the office of Thos. Houston, architect and civil engineer, King's Court, Wellington Place, Belfast, with whom tenders must be lodged.

June 20. **HUDDERSFIELD.**—Alterations and additions to the Primrose Hill Liberal Club House, for the Trustees and Committee. Copies of the quantities may be obtained on application at the office of Norman Culley, A.R.I.B.A., architect, 13, John William Street, Huddersfield, to whom tenders must be sent.

June 20. **TENDRING (Essex).**—Erection of a reception home for children at the workhouse, for the Guardians. Plans and specification may be seen and forms of tender and other information obtained at the office of the architect, G. H. Page, Trinity Chambers, Colchester, and tenders must be sent to A. J. H. Ward, clerk, 42, Church Street, Harwich.

June 20. **LEYLAND.**—Erection of nine houses in Cowling Lane, Leyland (separate tenders) to plans and specifications prepared by Wm. Forrester, Leyland, for the Leyland and Farington Co-operative Society, Ltd. Plans and specification may be seen at the Boardroom. A deposit of 5s. will be required from anyone taking out specifications.

June 20. **CWMDARE (Wales).**—Erection of 54 houses, etc., at Cwmdare, for the Aberdare Cottage Company (Limited). Drawings and specification may be seen at the office of J. Llewellin Smith, M.S.A., architect, Aberdare. Tenders, addressed to the Chairman of the Company, to be delivered to above address.

June 20. **LEEDS.**—Erection of workshops for the Gas Department in Sovereign Street. The whole of the several trades will be let in one contract. Drawings may be seen and a copy of the specification, conditions of contract, and bill of quantities obtained at the office of W. T. Lancashire, city engineer, Municipal Buildings, Leeds, on deposit of £3 3s. Tenders must be received at the Town Clerk's Office.

June 20. **NORTH BERWICK.**—Separate offers for mason, joiner, slater, plumber, and plaster work and heating apparatus for proposed additions to high school, North Berwick, for the School Board. Plans may be seen and schedules of measurement obtained at the office of James S. Richardson, architect, 14, Randolph Place, Edinburgh; or at that of A. D. Wallace, Solicitor, North Berwick, Clerk to the Board, to whom tenders must be sent.

June 20. **WATERLOO WITH SEAFORTH.**—Erection of the Crosby Road North Council school, Waterloo, near Liverpool, for the U.D.C. Bills of quantities may be obtained from John I. Thompson, Clerk to the Council, Town Hall, Waterloo, near Liverpool, upon deposit of £1 1s. Drawings and specifications may be seen at the office of Appleyard and Quiggin, architects, 67, Lord Street, Liverpool. Tenders must be delivered to the Clerk to the Council.

June 20. **LONDON, E.**—Supply and erection of certain iron buildings, and for the brickwork and concrete foundations thereof, for the Poplar B.C. Plans and specifications may be inspected, and further particulars obtained, at the office of the Borough Surveyor, Council Offices, High Street, Poplar. Contractors will be required to pay trade union rates of wages, observe trade union hours of labour, and not to sublet any part of the work without permission. Tenders to be delivered to Leonard Potts, town clerk, Council Offices, High Street, Poplar.

June 20--30. **BLACKWOOD.**—Erection of new premises at High Street, Blackwood, for the Tredegar Industrial Co-operative Society, Ltd. Plans, etc., may be seen at the office of the architect, A. E. Webb, 60, High Street, Blackwood, Mon., where bills of quantities may also be obtained upon deposit of £1 1s.

June 21. **MALLING.**—Repairs to the Mereworth parish cottages. Apply to C. Souter, Myrtle Villa, West Malling, Kent.

June 21. **BALLYCONNELL (Ireland).**—Repairs and alterations, etc., at Tomregan Church, Ballyconnell, Co. Caran. For specifications and particulars apply to the Rev. M. W. Rogers, Rector.

June 21. **TINTERN (Mon.).**—Erection of a police station, for the Standing Joint Committee. Plans and specification may be seen at the office of William Tanner, F.S.I., county surveyor, and a copy of quantities obtained on deposit of £1 1s. Tenders to be sent to the County Surveyor.

June 21. **RICHMOND (Yorks.).**—Erection of public lavatories in the Ronaldshay recreation ground, for the Corporation. Plans, specifications, and full particulars may be seen at the office of H. W. Marsden, borough surveyor, Tower Street, Richmond, to whom tenders must be sent.

June 21. **FARNHAM.**—Repairs to be executed to Tilford East Bridge, for the R.D.C. Drawings and specifications can be seen at the office of the Surveyor, Arthur J. Stedman, South Street Chambers, Farnham, and quantities can be obtained from him upon deposit of 10s. 6d. Tenders to be sent to Ernest Crundwell, Clerk, South Street, Farnham.

June 21. **WREXHAM.**—Erection of a park superintendent's house at the Parciau, Wrexham, for the T.C. Plans and specification may be seen, and bill of quantities and form of tender obtained, on application to John England, borough engineer, Willow Road. A deposit of £1 will be required. Tenders to be delivered to Lawson Taylor, town clerk, Guildhall, Wrexham.

June 21. **NEWCASTLE-UPON-TYNE.**—Erection of a single-storey shed in connection with the quay extension, for the Trade and Commerce Committee of the Council. Copies of the general conditions, etc., can be obtained, and drawings inspected, at the City Engineer's Office, Town Hall, Newcastle-upon-Tyne, on deposit of £2 2s. to the City Treasurer, at the same address.

June 21. **FARNHAM.**—To Builders and Contractors.—Erection of proposed cottages at their Ash and Hindhead Depots, for the R.D.C. Drawings and specifications can be seen at the office of the Surveyor, Arthur J. Stedman, South Street Chambers, Farnham, and quantities can be obtained from him upon deposit of 10s. 6d. each cottage. Tenders to be sent to Ernest Crundwell, Clerk, South Street, Farnham.

June 21. **WREXHAM.**—Erection of boundary wall, gate pillars, and entrance gates and railings at the Parciau, Wrexham. Plans and specifications may be seen, and bill of quantities and form of tender obtained, on application to John England, Borough Engineer, Willow Road. A deposit of £1 will be required. Tenders to be delivered to Lawson Taylor, Town Clerk, Guildhall, Wrexham.

June 21. **CRAGHEAD (Durham).**—Erection and completion of a new Church at Craghead, S.O., Durham. Plans and specifications may be seen at the Colliery Offices, Craghead. Bills of quantities and other particulars may be had from the architect, Jas W. Thompson, 63, Grey Street, Newcastle-on-Tyne, on receipt of a deposit of £1 1s. Tenders to be sent to the Rev. W. C. Chapman, Burnhope, Durham.

June 21. **EAST HAM.**—Erection of extensions to the public offices, etc., consisting of public health, education, and other offices, also public mortuary, etc., for the Corporation, all in accordance with drawings and specification which may be seen at the office of the borough engineer, A. H. Campbell, M.I.C.E., from whom bills of quantities can be obtained on deposit of £7 7s. Tenders to be addressed to his Worship the Mayor, Town Hall, East Ham. Rate of wages, etc., clause to be observed, and contractor is to enter into a contract with a bond for the performance of contract.

June 21—July 2. **MAIDENHEAD (Berks.).**—Enlargement of the County girls' school, Maidenhead, Berks, by the addition of a new wing. Send names to the Secretary to the Education Committee, Market Place, Reading, Berks, by June 21, together with a deposit of £2 2s. for bills of quantities, which will be supplied by post. Plans, specification, and form of contract may be seen at the school. Tenders must be delivered at the office of the Education Secretary

June 22. **LONDON, W.**—Alterations and additions to the lavatory accommodation at the public baths, for the Hammersmith B.C. Plans and specifications may be seen, and forms of tender obtained, on application to H. Mair, Borough Surveyor. Tenders must be delivered to H. Thompson, Town Clerk, Town Hall, Hammersmith, W.

June 22. **TIBSHELF.**—Alteration of the old Council school at Tibshelf, for the Derbyshire Education Committee. Drawings, etc., may be seen, and a copy of the bill of quantities, etc., obtained, upon payment of £1 1s. at the office of George H. Widdows, A.R.I.B.A., Architect to the Committee, County Education Office, St. Mary's Gate, Derby.

June 22. **MACCLESFIELD.**—Alterations to sanitary blocks in the main building at Parkside Asylum, Macclesfield. Plans and specifications can now be seen at the office of H. Beswick, F.R.I.B.A., County Architect, Newgate Street, Chester, or at the Asylum, and quantities obtained on deposit of £1. Tenders to be delivered to Arthur C. Procter, Clerk to the Committee of Visitors, Macclesfield.

June 22. **BRISTOL.**—Construction of stores, showroom, offices, and lavatories at Corn Exchange Buildings, Corn Street, Bristol. Copies of the specifications, bills of quantities, and forms of tenders can be obtained from H. Faraday Proctor, City Electrical Engineer, City Electrical Engineer's Office, Temple Back, Bristol, on deposit of £2 2s. Tenders must be sent sent to the Engineer.

June 22. **LONDON, N.**—Erection of a sorting office at Stoke Newington, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to J. Rutherford, H.M. Office of Works, Carlisle Place, S.W. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be delivered, addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

June 23. **HALIFAX.**—Erecting eight dwelling-houses, etc., in Leamington Avenue. Plans and specifications may be inspected from June 5. Tenders must be delivered to Medley Hall and Son, Architects, 1, Harrison Road, Halifax.

June 23. **CWMBACH.**—Erection of a pair of cottage homes for children at Cwmbach, Aberdare, for the Guardians. Plans, etc., may be seen, and quantities obtained, at the office of the architect, Thomas Roderick, Clifton Street, Aberdare.

June 23. **BELFAST.**—Erection of a disinfecting station in Lagan Bank road, for the Public Health Committee. Drawings and specification may be seen at the office of the city surveyor, where bill of quantities may be obtained on deposit of £3 3s. Tenders, accompanied by bill of quantities in a separate envelope, endorsed with the contractor's name, to be lodged with R. Meyer, town clerk.

June 23. **BACUP.**—Erection of a new Post Office, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster of Bacup. Bills of quantities and forms of tender may be obtained at Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be delivered, addressed to the Secretary, H.M. Office of Works, ets., Storey's Gate, London, S.W.

June 23. **LONDON, W.**—Providing and laying pitch-pine floor, plastering walls, and decorative works to Wards Nos. 8, 16, and 17 of their Infirmary, Marloes Road, Kensington, for the Guardians. Specification and form of tender can be obtained at the office of W. R. Stephens, Clerk to the Guardians, Guardians' Offices, Marloes Road, Kensington, W., or by sending a stamped directed foolscap envelope. The contractor shall on all work executed for the Guardians pay the rate of wages and observe the hours of labour agreed upon by the association of employers and the representatives of the workmen, but where no such agreement exists then the rate of wages and hours of labour must be those current in the district where the work is executed. The contractor must find two sureties in such sum as the Guardians may require, who shall enter into a bond in the form prescribed by the Local Government Board for the due performance of the contract. Tenders are to be made only on the forms provided, and are to be delivered at the above office.

(Continued on next page.)

June 23. **DALTON PARVA (Rotherham).**—New buildings and alterations and additions to existing buildings in connection with adaptation of farm buildings at Dalton Parva (near Rotherham), builder, joiner, slater, plumber, plasterer, painter (whole or separate tenders), for the West Riding Small Holdings Committee. Plans may be seen, and specifications with quantities obtained on application to the West Riding Architect, County Hall, Wakefield. A deposit of £1 must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders must be addressed to Francis Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

June 24. **MERTHYR TYDFIL.**—Construction of the necessary buildings, for the Merthyr Central Laundry Co., Ltd., Plans and specifications may be seen at the office of C. M. Davies, M.S.A., 112, High Street, Merthyr Tydfil. Tenders to be delivered to J. M. Berry and Son, auctioneers, etc., Victoria Street, Merthyr.

June 24. **WORCESTER.**—Re-building in brickwork of Kenswick Bridge, situate on the main road between Worcester and Martley, 3 miles from Henwick Station, for the Highways and Bridges Committee of the County Council. Drawings and specification may be obtained on deposit of £1 1s., of J. H. Garrett, Surveyor of County Bridges, Shirehall, Worcester (to whom tenders must be sent).

June 25. **NORTH SKELTON.**—Erection of a Working Men's Club, at North Skelton. Plans and specifications may be seen on application any day after two p.m.

June 25. **OSWALDTWISTLE.**—Erection of a new school in Union Road, Oswaldtwistle, near Church railway station, for the Higher Education Committee. The plans may be seen and bills of quantities obtained at the office of the County Architect, Henry Littler, 16, Ribblesdale Place, Preston, by deposit of £2. Tenders must be delivered to Albert Wade, Technical School, Lord Street, Oswaldtwistle.

June 27. **MERTHYR TYDFIL.**—Erection of an additional pavilion, together with other work, at the Mardy Isolation Hospital for the T.C. Plans may be inspected and specification and bills of quantities obtained on deposit of £2 2s., upon application to the Borough Engineer, Merthyr Tydfil. Tenders must be sent to T. Aneuryn Rees, town clerk, Merthyr Tydfil.

June 27. **MERTHYR TYDFIL.**—Erection of two semi-detached houses of design (A), also two semi-detached houses of design (B), near the Thomastown Park. Plans and specifications can be seen at the office of Rees Morris, architect, "Idrisville," Queen's Road, Merthyr. Tenders for houses of design (A) to be sent to C. L. Stewart, Accountant, Milbourne Chambers, Merthyr Tydfil, and tenders for design (B) to be sent to the architect.

June 27. **MERTHYR.**—Alterations and additions for the conversion of Cyfarthfa Castle into a secondary school, and the erection of science laboratories, art and lecture rooms, with latrines, playgrounds, and other works in connection therewith. Specification, quantities, and form of tender may be obtained from T. F. Harvey, M.Inst.C.E., Borough Engineer, on and after June 6, on deposit of £5 5s. Plans and drawings may be seen at Cyfarthfa Castle, and other information obtained, on and after June 6. Tenders must be sent to T. Aneuryn Rees, Town Clerk, Town Hall, Merthyr Tydfil.

June 28. **KEYNSHAM (near Bristol).**—Erection of a new goods shed at Keynsham, near Bristol, for the Directors of the G.W.R. Plans and specification may be seen and forms of tender and bills of quantities obtained at the office of the engineer at Bristol Station. Tenders must be addressed to G. K. Mills, Secretary, Paddington Station, London.

June 28. **DEVIZES (Wilts.).**—Erection of new waiting rooms, footbridge, and verandahs, at Devizes station, for the Directors of the G.W.R. Plans and specification may be seen and forms of tender and bills of quantities obtained at the office of the Engineer at Bristol Station. Tenders must be addressed to G. K. Mills, Secretary, Paddington Station, London.

June 28. **LEYTON.**—Construction of underground conveniences in High Road, Leytonstone, for the U.D.C. Plans may be seen, and specification, bill of quantities, form of tender, and other particulars obtained of William Dawson, M.I.C.E., Town Hall, Leyton. Tenders (in special endorsed envelopes supplied with the forms) must be delivered at the meeting of the Council to be held on June 28, at the Town Hall, Leyton, at 7 p.m. Sureties will be required.

June 28. **KNOWLE, near Fareham (Hants).**—Erection of a work-room block and sundry alterations at the County Lunatic Asylum, Knowle, Fareham, Hants. Specifications, conditions of contract, and plans may be inspected and copies of the bill of quantities and all other necessary information obtained on application at the office of W. J. Taylor, County Surveyor, The Castle, Winchester, on and after, June 17. Drawings may also be seen at the Asylum. A deposit of £6 6s. will be required for copy of bill of quantities. Deposits must be made by cheque payable to the Hants County Council and crossed Bank of England, or the bills will not be sent. Tenders must be on forms supplied by the County Surveyor, and must be delivered to J. Railton, Clerk to the Committee of Visitors, Knowle.

June 29. **ADWICK-LE-STREET (Doncaster).**—Erection of a mortuary chapel, caretaker's house, and board-room for the Burial Board. Plans and specification can be seen and particulars obtained at the office of John Simmons, C.E., architect, Bank Chambers, Doncaster, to whom tenders must be delivered.

June 29. **LLANTWIT FARDRE (Pontypridd).**—Erection of two cottages at their cottage homes, Church Village, Llantwit Fardre, for the Pontypridd Guardians. Plans and specifications can be seen and bill of quantities obtained from the Clerk of the Works, John Richards, The Homes, Llwynypia, on deposit to him of £1 1s. Tenders to be sent to Wm. Spickett, Clerk, Union Offices, Pontypridd.

June 30. **NEW MALDEN.**—Erection of church schools at Kingston Road. Plans and specification can be seen at the offices of Vincent Davison and Nicol, architects, Coombe Chambers, New Malden. Tenders to be sent to J. T. Thompson, Queensmead, Thetford Road, New Malden.

July 1. **LONDON, N.**—Construction of underground conveniences in Finsbury Park, by the Finsbury Gate, Seven Sisters' Road, N. Drawings, condition, and specification may be seen, and forms of tender and bills of quantities obtained, on and after the 20th inst., upon application to the Borough Engineer, J. Patten, Barber, at the Town Hall, Upper Street, N., and deposit of £2 2s. Tenders must be sent to Wm. F. Dewey, Town Clerk, Town Hall, Upper Street, N.

July 2. **TREVISCOE (near St. Stephens, Cornwall).**—Erection and completion of proposed Wesleyan Methodist Church, Grampound Road, according to plans and specifications, which may be seen by appointment at the residence of Capt L. H. Dyer, Treviscoe, to whom tenders are to be sent. Plans and specifications may be seen and particulars relating to the work may be obtained at the office of Sampson Hill, architect, Green Lane, Redruth.

July 4. **FOOTSCRAY (Kent).**—Enlargement of Longlands Council School, for the Kent Education Committee. See advertisement in this issue for further particulars.

No date. **BRECON.**—Addition of chemical laboratory and lecture-room and two class-rooms, at the County school for girls. Send names to Best and Sons, Surveyors, etc., 3, Bulwark, Brecon, accompanied by particulars of work recently executed by them and two references as to the quality of the work done.

No date. **GALWAY (Ireland).**—Erection and completion of a new college at Galway, according to drawings and specification, which may be inspected at the office of W. A. Scott, A.R.I.B.A., M.S.A., Architect, 45, Mountjoy Square, Dublin. Bills of quantities have been prepared by James Mackey, 58, Dame Street, and may be obtained from him on deposit of £5 5s.

ENGINEERING.

June 20. **BIGGLESWADE.**—Supply and laying of 12,133 yards of cast-iron water main as follows, viz.:—490 yards of 6in., 5,926 yards of 4in., and 5,717 yards of 3in., including the supply and fixing of waste water meter, sluice valves, wash-out valves hydrants, bends, branches, surface boxes, etc., required in connection therewith, for the R.D.C. Plans may be inspected and specifications obtained at the office of Henry Chaundler, clerk, Biggleswade, Beds., on deposit of £2 2s. Tenders must be sent to the Clerk.

June 21. **LONDON (for India).**—Supply of:—Steelwork for roofing for circular engine shed, about 250 tons, for the South Indian Railway Co. Specifications and forms of tender may be obtained at the Company's Offices. Tenders, addressed to the Chairman and Directors of the South Indian Railway Company, Limited, marked "Roofing for Circular Engine Shed," must be left with Neville Priestley, Managing Director, Company's Offices, 91, York Street, Westminster. A charge, which will not be returned, will be made of £1 for each copy of the specification. Copies of the drawings may be obtained at the office of Robert White, M.I.C.E., Consulting Engineer to the Company, 3, Victoria Street, Westminster, on payment of 5s. per sheet.

June 22. **BRISTOL.**—(See "Building.")

June 22. **HOLMES CHAPEL (Cheshire).**—Carting, laying, and jointing of about 7,790 yards 2in. to 4in. cast-iron spigot and socket pipes, building meter chamber, etc., for the Congleton R.D.C. Plan and specification, bill of quantities and form of tender may be obtained from the Engineer, W. W. Wyatt, Whitchurch, Salop, on deposit of £1 1s. Tenders to be delivered at the office of H. Ferrand, Clerk to the Congleton Rural District Council, Sandbach, Cheshire.

June 23. **LONDON (for India).**—Supply of girder bridges, for the Bombay, Baroda and Central India Railway Directors. Tenders must be made on forms, copies of which, with specification, can be obtained from C. Crommelin, Secretary, Offices, Gloucester House, 2, 3, and 4, Bishopsgate Street Without, London, E.C., on payment of 21s. each (which will not be returned).

June 23. **IPSWICH.**—Sinking one 18in. diameter or, in the alternative, one 24in. diameter borehole, into the upper chalk, including the provision of temporary pumping plant, and the carrying out the pumping to test the yield of the bore-hole up to 500,000 gallons, or, in the alternative, 1,000,000 gallons per 24 hours, for the Corporation Waterworks Committee. Plans may be seen and the site inspected by appointment with C. W. S. Oldham, engineer, Waterworks Offices, Ipswich, from whom copies of specification, form of tender, and schedule of prices may be obtained on deposit of £1 1s. Tenders must be delivered at the Town Hall, Ipswich, addressed to the Waterworks Committee.

June 23. **RHONDDA (Wales).**—Works for the U.D.C.:—Construction of a supply main and intakes from the head of the Rhondda River at Gareg-Lwyd, on the rough mountain lands at the head of the Rhondda Valley, Glamorganshire, together with an armoured concrete aqueduct overhead of 24 yards long in two equal spans, a valve-house, tunnel bywash, tunnel outlet face, retaining walls, etc., in concrete or rubble masonry, a balancing tank, and other works supplementary to the existing supply of water. The pipes and ironwork are for the most part lying near the site, and further pipes, valves, and ironwork required must be supplied by the contractor. There is a tramway connecting the tunnel works with the Taff Vale Railway at Fernhill, which may be ejtended and used for the work by arrangement. The works are about two miles distant from Blaenrhondda Station, on the Rhondda and Swansea Bay Railway. Drawings may be seen, and a copy of specification and form of tender, with a schedule of quantities may be obtained at the office of Joseph Vevers, engineer, Waterworks Offices, Treherbert, Rhondda, upon production of a receipt signed by the Accountant of the Council for the required deposit of £3 3s. The contractor will be required to pay the current trade union rate of wage prevailing in the district. Tenders, addressed to the Chairman of the Waterworks Extension Committee, at the Council Offices, Pentre, Rhondda, must be delivered at the office of W. P. Nicholas, clerk, Council Offices, Pentre, Rhondda, Glam.

June 27. **PORTMADOC.**—Diverting the River Dwyryd from Aberia Point to join the River Glaslyn at a point opposite Messrs. Greaves' No. 2 wharf, between the Ballast Bank (Lewis's Island) and Trwyncae'rogo, for the Estuary Committee. Particulars may be obtained on application to Morgan Thomas, C.E., Town Hall, Portmadoc. Tenders must be sent to Jno. Jones, Secretary, Town Hall, Portmadoc.

June 27. **BOGNOR.**—New low pressure hot water heating installation, at the Bognor Council schools, for the West Sussex and Chichester Joint Education Committee. Plan and specification can be obtained on application to Haydn P. Roberts, A.R.I.B.A., County Education Architect, Horsham. The contractor whose tender is accepted may be required to enter into a contract with the West Sussex County Council, and to enter into a bond with two approved sureties, if required, for the due carrying out of the contract. Tenders to be delivered to Lionel Thompson, Secretary, Thurloe House, Worthing.

June 28. **DEVIZES (Wilts.).**—(See "Building.")

June 28. **LONDON, W.**—Reconstruction of a footbridge, etc., at Hammersmith Station, for the Joint Committee of the Great Western and Metropolitan railways. Plans and specification may be seen, and forms of tender and bills of quantities obtained, at the office of the Engineer at Paddington Station. Tenders must be addressed to H. Townsend, secretary to the Hammersmith and City Railway Joint Committee, Paddington Station, London.

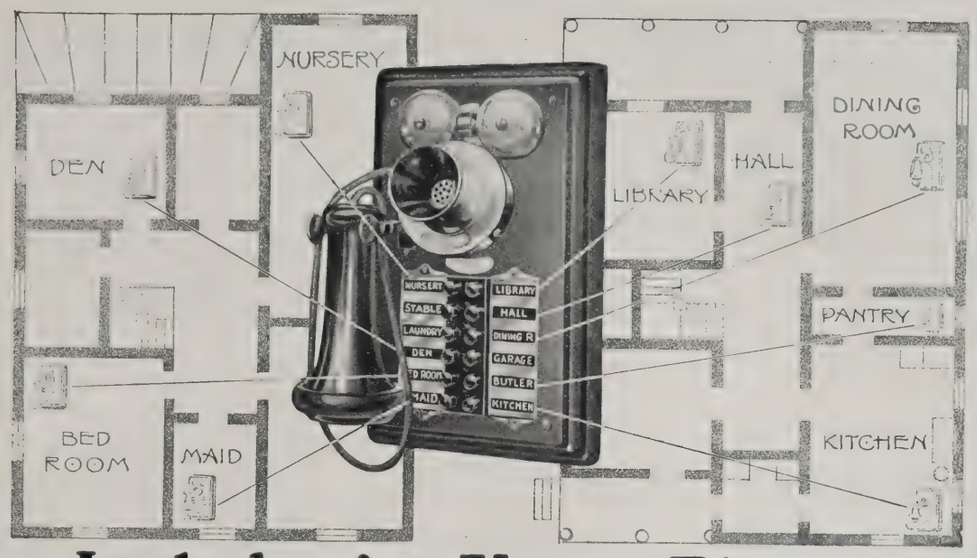
June 29. **SALTASH (Cornwall).**—Construction of a steam ferry bridge, to run on chains across the river Tamar at Saltash passage, for the Saltash Corporation. Plans and specifications of the bridge may be obtained from Fred Et. Cleverton, town clerk, Saltash. The bridge is to be delivered on chains at Saltash within twelve months of the signing of the contract. Tenders to be sent to the Town Clerk.

July 1. **MAYFIELDS (Staffs.).**—Sinking a borehole of about 6in. internal diameter to such depth as may be found necessary to obtain water at Slack Lane, Mayfield, near Ashbourne, and also for making a 14-days' continuous pumping test to ascertain the yield of water, for the R.D.C. A copy of specification may be obtained on application to Luther Adams, surveyor, Stanton, near Ashbourne. Tenders must be sent addressed to the Clerk, Mayfield R.D.C., Ashbourne.

July 4. **DUBLIN.**—Construction and erection of twin Scherzer rolling lift bridges across the entrance to the Royal Canal, North Wall Quay, Dublin, for the Port and Docks Board. Specification and drawings can be seen at the office of the Engineer of the Board, John P. Griffith, M.Inst.C.E., East Wall, Dublin, from whom any further information required can be obtained. If on examination of the specification and drawings, intending contractors should desire to obtain copies, these, together with the special printed form of tender, can be obtained on deposit of £5. Contractors are required to state whether they have constructed Scherzer rolling lift bridges, or other opening bridges, and to give full particulars of such works and the names of engineers under whom these were carried out, and to whom reference may be made. Tenders must be on the special form, and addressed to the Secretary, Port and Docks Office, Westmoreland Street, Dublin.

(Contracts continued on page xii.)

Write for List J4,002.



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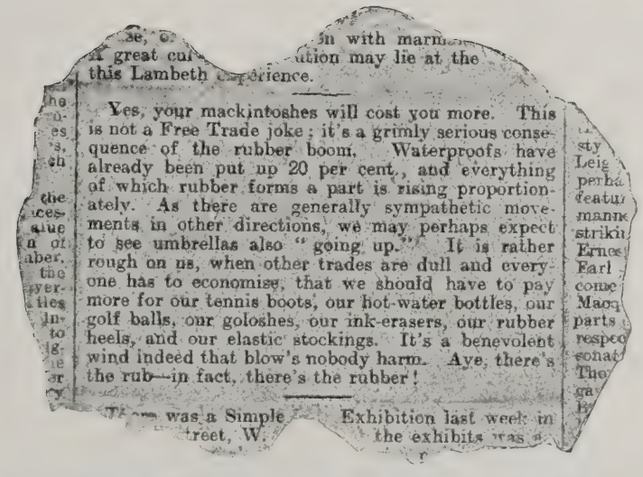
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...was a Simple ...treet, W. Exhibition last week in the exhibits was a

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July 16. **BURNLEY.**—Construction of an impounding reservoir, with catch-waters, aqueducts, meter houses, etc., at Hurstwood, near Burnley, for the Burnley Corporation. Plans may be seen, and specification, schedule of prices, form of tender, and all other particulars obtained on application to J. Diggle and Son, engineers, 14, Victoria Street, Westminster, S.W., and Hind Hill Street, Heywood, Lancashire, on deposit of £5. Tenders must be sent to Peregrine Thomas, town clerk, Town Hall, Burnley.

SANITARY ENGINEERING.

June 20. **CHELMSFORD.**—Extending the sewer in Trinity Road, for the T.C. Forms of tender, and full particulars may be obtained, and the plans and specification may be inspected, at the office of the Borough Surveyor, Cuthbert Brown, 16, London Road. Tenders must be delivered at the office of W. Smith, Town Clerk, Municipal Offices, Chelmsford.

June 20. **TEDDINGTON.**—Extending Wellington Road sewer, including the provision of a cast-iron syphon under the railway, for the U.D.C. Specification, form of tender, and other particulars may be obtained from Marshall Hainsworth, the Borough, Teddington. Tenders must be received by G. H. Salmon, Clerk, Elmfield House, Teddington.

June 20. **YSTRADGYNLAIS.**—Schemes and estimated cost for sewering the Parish of Ystradgynlais Lower, for the R.D.C., who will pay a sum of £20 for the scheme which they consider most suitable, and the decision of the Council must be accepted as final. Competitors to state their terms for full detailed plans and specifications, and for carrying out the scheme they submit. Particulars of the area to be drained and any other information may be obtained from T. Watkins, Surveyor to the Council, Ystradgynlais. Schemes to be sent in to D. L. Moses Evans, Clerk to the Council, Commercial Street, Ystalyfera.

June 20. **RUDDINGTON (near Nottingham).**—Sewerage works in the parish of Ruddington, near Nottingham, for the Basford R.D.C. The contract comprises about one mile of 9in. stoneware and iron pipé sewers, with manholes, flushing chambers, and other appurtenant works. Drawings may be seen at the office of S. Maylan, engineer and surveyor to the Council, at the Public Offices, Basford, by appointment, and copies of specification, conditions, bill of quantities, and form of tender may be obtained on deposit of £2 2s. Tenders to be delivered to Henry Stone, clerk, Public Offices, Nottingham Road, Basford, Nottingham.

June 21. **RICHMOND (Yorks.).**—(See "Building.")

June 21. **URMSTON (Lancs.).**—Laying and construction of about 500 lineal yards of surface water drainage in Higher Road, Urmston, for the U.D.C. Specifications and particulars can be seen and quantities and forms of tender obtained on application to James Heath, Council Offices, Urmston, upon deposit of £1 1s. Tenders must be forwarded to T. J. Rowland, clerk, Council Offices, Croft's Bank Road, Urmston.

June 21. **SOUTHWELL.**—Alteration and additions to sewage disposal works, for the R.D.C. The contract will comprise alterations to present tanks, new storm-water tanks, pumping tank, engine house, percolating filters, cottage, effluent outfall, and other appurtenant works. Plans may be seen at the office of the engineers (Sands and Walker, Milton Chambers, Nottingham), and copies of conditions, specification and quantities can be obtained on deposit of £3 3s. The successful contractor will be required to enter into a bond in the sum of £500, through an approved Guarantee Society, or with approved sureties for the due performance of his contract. Tenders to be sent to John Ellis, Clerk to the Council, Southwell, Notts.

June 22. **ATHERTON.**—Laying and construction of a 3ft. concrete tube sewer, from the old Glass House Tanks to a point opposite the cemetery gates in Leigh Road, Atherton, with all necessary manholes, etc., for the U.D.C. Plans may be seen and bill of quantities and specification obtained on application to F. H. Grimshaw, AssocM.I.C.E., Surveyor to the Council, Town Hall, Atherton, on deposit of £1 1s. Tenders, accompanied by priced quantities, to be sent to William Garnett, Clerk to the Council, Town Hall, Atherton.

June 25. **CHESHAM (Bucks.).**—Construction of about 960 lin. yards of 9in. cast-iron pipe sewers, together with manholes, lampholes, house connections, etc., in Bellingdon Road, Sunnyside Road, Amersham Road, Pednor Road, Missenden Road, and Church Street, Chesham, for the U.D.C. Plans, sections, and specifications may be seen upon application to Percy C. Dormer, engineer and surveyor, Council Offices, Chesham. The person whose tender is accepted will be required to enter into a contract and bond in an approved guarantee society as surety for the performance of contract, a copy of which may be seen at the office of W. J. Standring, clerk, High Street, Chesham. Tenders for the whole of the work to be delivered to the Engineer.

June 28. **LEYTON.**—(See "Building.")

June 30. **CROMPTON.**—Construction of extensions to their sewage works at New Hey, for the U.D.C., comprising the following:—Contract 1.—(a) 12 precipitation tanks, with channels, valve pipes, sluices, and other appurtenant works; (b) first and second contract bateria beds, about 1¼ acres in extent, with filter area for supernatant water, and all appurtenant works; (c) detritus tanks, screening chambers, storm-water overflow chamber, with necessary channels, etc; (d) valves, screens, penstocks, lime mixer, oil engines, and machinery, etc. Contract No. 2.—(a) Dynamos and electrical equipment for lighting new and present buildings, with motors for driving machinery, standards, wiring, lamps, etc., complete; (b) alterations to present buildings, with cast-iron overhead tank, and all requisite sewer diversions, channels, etc. Drawings, specifications and general conditions of contract may be seen, and bills of quantities obtained, on application to J. P. Wilkinson and Son, Civil Engineers, 301, Cathedral Street, Manchester, and on deposit of a crossed cheque, value £5 5s. Tenders to be addressed to the Clerk to the Council, Town Hall, Shaw, Oldham.

July 1. **LONDON, N.**—(See "Building.")

IRON AND STEEL.

June 22. **CLACTON-ON-SEA.**—Supply of about 785 lineal yards of wrought-iron fencing and six entrance gates, for the U.D.C. Full particulars can be obtained upon application to D. J. Bowe, surveyor, Town Hall, Clacton-on-Sea. Tenders to be delivered to Geo. T. Lewis, Clerk, Town Hall, Clacton-on-Sea.

July 4. **DUBLIN.**—(See "Engineering.")

PAINTING.

June 20. **REIGATE.**—Painting and distempering at the childre 's homes, No. 25 and 27, Hardwick Road, Meadvale, for the Guardians, in accordance with a specification, which may be inspected upon application to the Master of the Workhouse.

June 20. **BRISTOL.**—Painting, colouring, etc., of certain schools, for the Education Committee. Specifications and conditions of contract may be obtained from Peter Addie, Exchange, Corn Street, Bristol, on deposit of £1 1s. Each tender must be sent in a separate envelope, endorsed with the name of the school to which it refers, to Wm. Avery Adams, secretary, Guildhall, Bristol.

June 20. **GOODMAYES (Essex).**—Painting the exterior of the Asylum, Goodmayes, for the West Ham B.C. Specification, form of tender, and further particulars may be obtained at the office of John G. Morley, Borough Engineer, Town Hall, West Ham, E., upon deposit of £1. Tenders to be delivered at the office of the Town Clerk, Town Hall, West Ham, E., in the envelope supplied, by registered post. The contractor will be required to enter into a bond, with one surety, for the due performance of the contract, and no work will be ordered under the contract until such bond has been duly executed. The contractor whose tender is accepted, and with whom a contract is entered into, will be required to pay the whole of his workmen such rate of wages, and observe such hours of labour, as are recognised by the Workmen's Trade Unions, and in force at the time of signing the contract, and shall not assign, nor under-let, or make a sub-contract with any person or persons for the execution of any part of such work. In the event of any breach of such agreement the Council will enforce the penalty clause in its entirety.

June 22. **DARTFORD (Kent).**—Cleaning and painting works and repairs at the Darenth Asylum, near Dartford, Kent, for the Metropolitan Asylums Board, in accordance with conditions of contract and specification prepared by W. T. Hatch, M.I.C.E., M.I.M.E., Engineer-in-Chief. Conditions of contract, specification, and form of tender may be inspected at the Office of the Board, Embankment, E.C., and can be obtained upon deposit of £1. Tenders, addressed as noted on the form, must be delivered at the office of the Board.

June 21-28. **LEYTON.**—Cleansing, painting, repairs, and alterations at various schools, to be executed during the summer vacatio , for the U.D.C. Specifications, conditions, and forms of tender for either of the above may be obtained on written application, not later than June 21, to William Jacques, A.R.I.B.A., 2, Fen Court, Fenchurch Street, E.C. (the Committee's Architect), which must be accompanied by a deposit of £1 (cheques will not be accepted). Tenders must be delivered at the meeting of the Council to be held on June 28, at 7 o'clock p.m. The general conditions of the contract include a trades union clause, copy of which may be seen at the Architect's Office, or the Town Hall, Leyton.

June 22. **WEST HARTLEPOOL.**—Painting, etc., at certain schools, for the Education Committee. Form of tender, etc., can be obtained at the Education Office, Park Road.

June 22. **LONDON, N.E.**—Cleaning work at their infirmary, Whipps Cross Road, Leytonstone, N.E., for the West Ham Guardians. Form of tender, etc., and conditions of contract can be obtained from Thomas Smith, Clerk, Clerk's Office, Board-room, Union Road, Leytonstone, N.E.

June 22. **LONDON, S.W.**—Cleaning and painting works and repairs at the South Western Fever Hospital, Landor Road, Stockwell, S.W., for the Metropolitan Asylums Board, in accordance with conditions of contract and specification prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., Engineer-in-Chief. Conditions of contract, bills of quantities, specification, and form of tender may be inspected at the office of the Board, Embankment, E.C., and can be obtained upon deposit of £1. Tenders, addressed as noted on the form, must be delivered at the office of the Board.

June 23. **LONDON, W.**—(See Building.")

June 23. **HULL.**—Painting, colouring, whitewashing, etc., certain of their schools, for the Education Committee. Particulars and forms of tender can be obtained at the offices of J. T. Riley, Secretary of Education, Education Offices, Albion Street, Hull.

June 23. **LONDON, S.E.**—External painting and internal decorating (part of) the Workhouse at Ladywell Road, Lewisham, S.E., for the Bermondsey Guardians, according to the specification of A. H. Newman, F.R.I.B.A., etc., and quantities by W. T. Farthing and Son, of 46, Strand, W.C. (a) Forms of tender (which can only be received), (c) bills of quantities, and (d) specification, containing full particulars and conditions of contract, can be obtained at the office of E. Pitts Fenton, Clerk, No. 283, Tooley Street, S.E., between the hours of 10 a.m. and 12 noon daily, by depositing a £10 Bank of England note (cheques or cash will not be received). The amount deposited will be returned to persons sending in. Tenders, and other documents above referred to, must be delivered to the Clerk.

June 24. **EAST RIDING (Yorks).**—Painting and cleaning of certain schools in the Riding, such work to be carried out during the time the schools are closed for the summer holidays. A list of the schools intended to be painted or cleaned may be obtained on application to John Bickersteth, Clerk to the East Riding Education Authority, County Hall, Beverley. Specifications of the work may be seen and forms of tender obtained at each of the schools mentioned on the list, after June 9, and all tenders must be delivered at the same address.

No date. **LONDON, E.**—Distempering and painting works at their Children's Receiving Homes, Salmon's Lane, Ratcliff, E., for the Stepney Guardians. Specifications and forms of tender can be obtained at the office of T. G. Stacey, Clerk, Guardians' Offices, Barnes Street, Ratcliff, London, E.

ROADS AND CARTAGE.

June 20. **STOWMARKET.**—Supplying 700 tons of best hand-broken granite, size 2½in., also supply of 450 tons of broken flints, size 2½in., to be delivered at Stowmarket Station in such quantities as may from time to time be required, for the U.D.C. Tenders and samples to be sent to P. C. G. Hayward, Clerk to the Council, The Old Bank, Stowmarket. No forms of tender supplied.

June 20. **LONDON, S.W.**—Making-up and paving of Dungarvan Avenue, Putney, for the Wandsworth B.C. Specification and drawings may be seen, and forms of tender obtained, of the Borough Engineer, at the office of the New Streets Department, 56, East Hill, Wandsworth, S.W., upon deposit of £5 5s. Tenders must be delivered at the Council House, East Hill, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose. Fair wages clause. If required, the contractor must provide two sureties.

June 21. **BRENTFORD.**—Supply of 400 yards of blue Guernsey granite, hand-broken to a gauge of 2in., for the U.D.C. Forms of tender, together with specification and conditions, may be obtained on application to J. W. Croxford, the Surveyor, at Clifden House, Boston Road, Brentford. Tenders to be delivered at the Clerk's Office, Clifden House.

June 21. **BROMLEY.**—Sewering, levelling, paving, metalling, channelling, and making good Gilbert Road and Minster Road, for the B.C. Plans, sections, and specifications, may be seen, and bills of quantities obtained, at the office of the Borough Engineer, on deposit of 10s. at the office of Fred. H. Norman, Town Clerk, Municipal Offices, Bromley, Kent.

June 21. **GOSFORTH.**—Supply of carriageway and footway materials, cement, sanitary pipes, metal castings, brushes, shovels, enamelled name plates, etc., for twelve months, for the U.D.C. Particulars may be obtained on application to the engineer and surveyor, George Nelson, A.M.I.C.E., Council Chambers, High Street. Tenders to be sent to R. Sheriton Holmes, clerk, Council Offices, Gosforth.

June 21. **URMSTON (Lancs.).**—Paving, flagging, draining, and other improvement works in Westbourne Road, Grosvenor Road, and passages off Firwood Avenue, Urmston, for the U.D.C. Plans, sections, and specifications may be seen and quantities and forms of tender obtained from the surveyor, James Heath, Council Offices, Urmston, upon deposit of £1 1s. Tenders must be delivered to T. J. Rowland, clerk, Council Offices, Urmston.

June 22. **NORTHFIELD.**—Making good of Rochester Road, Northfield, for the U.D.C. Quantities and forms may be obtained, and plans, etc., may be seen, at the office of the Engineer and Surveyor to the Council, Ambrose W. Cross, A.M.I.C.E., No. 23, Valentine Road, King's Heath, on deposit of £1 1s.

June 23. **DORCHESTER.**—Supply of about 500 yards of broken flints, for the T.C. Further particulars and form of tender may be obtained upon application to the Borough Engineer. Tenders must be delivered at the office of A. G. Symonds, town clerk, Dorchester.

(Contracts continued on page xviii.)

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DRAWN WIRE FILAMENTS.



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50-80	10	1/6
100-130	16	2/-
50-130	**25**	**2/-**
60-130	32	2/-
100-130	50	2/-
200-250	**50**	**3/-**

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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, ARCHITECTS' AND BUILDERS' JOURNAL, *Caxton House, Westminster.*

Information from accredited sources should be sent to The Editor," at latest by noon on Saturday if intended or publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Argoed (Mon.). — For erection of 24 houses at Argoed, Mon., for the Argoed Workmen's Building Club. A. F. Webb, architect, Blackwood and Tredegar.

Radford and Greaves, Derby	£7,320
J. Charles, Newport	5,322
A. S. Morgan, Newport	5,280
H. J. Davies, Bargoed	5,250
W. and D. Thomas, Ynysddu	5,102
Podden and Lee, Bargoed	5,040
Davies and Williams, Blackwood	4,799
R. Bowditch, Argoed	4,710
G. Doldge,* Argoed	4,712

*Accepted.

Aspley Guise (Beds.). — For proposed country house and outbuildings, for A. L. McIntyre. W. B. Stonebridge, architect, Bedford and Woburn Sands.

J. Corby and Son	£1,750
W. T. Sharpe	1,709
W. Summerford	1,700
C. Sinfield and Sons	1,697
C. Negus, Bedford*	1,546
G. Wrycroft and Sons	1,537

*Provisionally accepted.

Bletchingley (Surrey).—For additions to Underhills, Bletchingley. Robert P. Oglesby, architect, 15, George Street, Hanover Square, W. Quantities by Hamilton H. Turner, 11, Dartmouth Street, Westminster.

Head Bros.	£5,346 9 8
Holloway Bros.	4,320 0 0
Higgs and Hill	4,194 0 0
Leslie and Co.	4,165 0 0
Longley and Co.	4,088 0 0
F. and H. F. Higgs	4,040 0 0
Strange	3,990 0 0
Allen and Co.*	3,925 0 0

*Accepted.

Blisworth (Northampton).—For erection of a new public elementary school for 208 scholars and teachers' house, for Northampton Education Committee. Brown and Mayor, architects, Northampton. Quantities by architects.

Plastered Walls.

W. M. Sharp	£4,545
W. Heap	4,067
H. Green	3,970
E. Green	3,884
H. Martin, Ltd.	3,865
W. Higgins	3,755
E. D. Sharman and Son	3,748
T. Hickman	3,729
W. W. Webster	3,673
G. J. Fisher, Northampton	3,562

Plain Bricks.

W. M. Sharp	£4,496
W. Heap	4,019
H. Green	3,935
E. Green	3,854
H. Martin, Ltd.	3,812
W. Higgins	3,710
E. D. Sharman and Son	3,699
T. Hickman	3,689
W. W. Webster	3,631
G. J. Fisher, *Northampton	3,532

*Accepted conditionally, certain work to be omitted, reducing the contract price to £3,360.

Bristol.—For erection of a factory at Staple Hill, for Castlelitho, Ltd. Fredk. Gardiner and Son, architects, Barton Street, Bath.

J. Long and Sons	£2,182
W. E. Blake	2,150
L. Simmons	2,072
W. Love	2,037
Amery	1,995
Marsh and Stone	1,990
W. Foster	1,944
A. J. Colborne	1,936
G. Watts	1,923
R. Wilkins and Sons	1,878
Adams and Jefferies	1,875
E. Walters and Sons,* St. Andrews Road, Montpelier	1,867

*Accepted.

Bromsgrove (Worcs.).—Accepted for erection of new secondary school, for the Worcestershire Education Committee.

Tilt Bros. £6,999

Cholsey (Berks.).—Accepted for the enlargement of Cholsey Council school, for the Berkshire County Council.

Bosher and Sons, £1,808 8s. 6d.

Coventry.—Recommended for acceptance for erection of Mile Lane school, for the Education Committee.

Executors of C. Garlick, Coventry, £16,850.

Crewe.—Erection and completion of the first portion of a new Ursuline Convent and School, at Nantwich Road, Crewe. Henry T. Sandy, architect, Stafford and Birmingham. Quantities by the architect.

	Estimate No. 1. Main Building.	Estimate No. 2. Cubicle Divisions, &c.	Estimate No. 3. Boundary Walls, Playgrounds, &c.
Micklewright & Sons, Crewe	7,145 15 0	154 15 6	688 10 0
Thornton & Sons, Liverpool	6,905 0 0	141 15 0	551 0 0
Gerrard and Sons, Manchester	6,708 0 0	126 0 0	580 0 0
Cleworth & Robinson, Manchester	6,466 0 0	123 0 0	573 0 0
E. Whittingham, Newport	6,430 0 0	125 0 0	520 0 0
Bowens and Sons, Birmingham	6,378 0 0	115 0 0	533 0 0
R. Carlyle, Manchester	6,295 0 0	110 0 0	506 0 0
T. Tildesley, Willenhall	6,176 0 0	125 0 0	513 0 0
Williams and Sons, Crewe	6,127 0 0	105 1 3	650 10 8
Dolan and Son, Warrington	6,100 0 0	95 0 0	455 0 0
T. Godwin, Hanley	6,029 0 0	95 0 0	506 0 0
Barnsley and Sons, Birmingham	5,988 0 0	114 0 0	475 0 0
Elvins and Sons, Birmingham	5,970 0 0	110 0 0	500 0 0
Gough and Sons, Wolverhampton	5,850 0 0	95 0 0	485 0 0
Cave and Sons, Wolverhampton	5,800 0 0	114 0 0	440 0 0
C. W. Davenport,* Warrington	5,650 12 3	91 1 8	392 10 5

*Accepted.

Dovercourt (Harwich).—For erection of new headquarters, sergt.-instructor's house, stores, etc., with alterations to drill hall, for the Essex and Suffolk Royal Garrison Artillery, at Dovercourt, Harwich.

C. Roper, Waterworks Street	£1,507 0 0
F. Bennett, New Street	1,385 0 0
A. Gayford, St. Clement's	1,324 0 0
Spencer, Santo and Co., Ltd., Victoria Street, Felixstowe	1,310 0 0
R. Beaumont, Lexden, Colchester	1,302 0 0
E. E. Newton, Main Road, Harwich	1,297 10 0
Fisher and Woods, Elmhurst Road, Dovercourt	1,295 0 0
G. A. Kenney, Burrell Road	1,243 0 0
E. Saunders,* Hill Crest Machinery Joinery Works, Dovercourt	1,198 0 0

Rest of Ipswich.

*Accepted.

Epsom.—Accepted for erection of a nurses' home and alterations to Middle House, for the Guardians. Pasterfield and English, Streatham, £2,027.

Framley (Surrey). — For erection of house on Station Road Estate, Bramley, Surrey, for Julian Jackson. Frederick J. Hodson, architect, 101, High Street, Guildford.

Swayne and Son	£400 0 0
Rutter and Gibson*	379 10 0
T. W. Reed	303 0 0

All of Guildford.

*Accepted.

Freshwater (Isle of Wight).—For re-erection of premises, for H. Dowty. J. W. Newman, surveyor, Station Road, Freshwater.

Ball and Son	£3,390 0 0
R. D. Medway	2,903 10 0
J. Meader, jun.	2,748 0 0
W. White	2,296 10 0
J. Twyman	2,250 0 0
A. P. Williams,* Newport, I.W.	2,000 10 0
E. Stock	1,794 0 0

*Accepted.

Guildford.—For alterations and additions to workhouse, and for the erection of a new house for the master and matron, for the Guardians.

Additions to Workhouse.

H. Brand	£649 0 0
Mitchell Bros., Shalford	625 0 0
J. Tanner, Southsea	620 0 0
C. Wallis, Woking	614 10 0
Rowland Bros., Horsham	584 0 0
Bunning and Fitton Adams, Godalming	569 0 0
Higlett and Hammond	560 0 0
Swayne and Co.*	558 0 0
R. Cook and Sons, Crawley	555 0 0
Martin, Wells and Co., Aldershot	549 0 0
R. Smith	549 0 0
F. and H. F. Higgs, Cobham	547 0 0
Drowley and Co., Woking	546 0 0
Goddard and Sons, Farnham	530 0 0
R. Love, Sunningdale	526 0 0
Tribe and Robinson	525 0 0
S. Ellis	518 0 0

Master and Matron's House.

Mitchell Bros., Shalford	£810 0 0
H. Brand	799 0 0
C. Wallis, Woking	768 0 0
R. Cook and Sons, Crawley	745 0 0
Bunning and Fitton Adams, Godalming	741 0 0
Martin, Wells and Co., Aldershot	740 0 0
Higlett and Hammond	735 0 0
R. Smith and Son	730 0 0
Goddard and Sons, Farnham	729 0 0
F. and H. F. Higgs, Cobham	729 0 0
J. Tanner, Southsea	728 0 0
Rowland Bros., Horsham	714 0 0
S. Ellis	710 0 0
Tribe and Robinson	698 0 0
R. Love, Sunningdale	668 0 0
Drowley and Co., Woking	650 0 0
Swayne and Co.*	597 0 0

Rest of Guildford.

*Accepted.

Guildford.—For erection of a house in Farnham Road, Guildford. Frederick J. Hodson, architect, 101, High Street, Guildford.

A. Johnson	£632
R. Smith	600
Rutter and Gibson*	520

All of Guildford.

*Accepted.

Guildford.—For alterations to Alexandra Laundry, Guildford, for F. P. Curtis. Frederick J. Hodson, architect, 101, High Street, Guildford.

H. Brand	£252
Rutter and Gibson	245
A. Johnson*	211

All of Guildford.

*Accepted.

Gillingham (Dorset).—Alteration and additions to Wyke Cottage, Gillingham, Dorset, for Miss E. M. Bell, of Trowbridge, Wilts. W. J. M. Morrish, architect, Gillingham, Dorset.

A. Barnes, Gillingham	£630
Cross Bros.,* Wincanton	600
S. Curtis, Stalbridge	575

**Accepted.

Ilford.—For the erection of centre block "Homes of Rest," South Park, Ilford, for the trustees of the Sons of Temperance (London Grand Division) Pension and Almshouse Fund. Arthur C. Russell, M.S.A., architect, 13, Basinghall Street, E.C.

G. J. Hoskin	£1,867
J. Ham	1,760
J. Shorter and Co.	1,600
J. Marsland and Sons	1,519
T. H. Kingerlee and Sons	1,467
Hammond and Miles	1,450
F. and A. Willmott	1,427
J. J. Richards	1,416
W. J. Stockings*	1,245

Architect's estimate, £1,445.
Add for Sub-Contracts, £200.

*Accepted.

Leeds.—For the demolition of the existing bridge and the construction and erection of a temporary timber bridge, together with other accommodation works, and the masons', bricklayers', excavators and ironfounders' works in connection with the construction and erection of a new 50ft. wide bridge, in three spans, across the River Aire at Kirkstall, Leeds, for the Corporation :—

Baldry, Yerburgh and Hutchinson, Ltd., Westminster S.W.	£23,600 0 0
G. Lawson and Son, Leigh	22,085 0 0
Cleveland Bridge and Engineering Co., Ltd., Darlington	20,588 0 9
W. Muirhead and Co., Ltd., London, E.C.	20,000 0 0
J. Cochrane and Sons, London, S.W.	19,828 4 6
J. D. Nowell and Son, Westminster, S.W.	18,759 6 9
A. Hyslop, Derby	18,393 13 1
A. Thorne and Sons, Westminster	18,387 13 11
Holme and King, Ltd., Leeds	17,263 12 8
Butterley Iron Co., Derby	16,742 18 4
Naylor Bros., Huddersfield	16,367 4 3
W. Craig, Manchester	16,238 0 0
J. Lant, Newcastle-on-Tynt	15,851 2 2
W. Nicholson and Son, Ltd., Leeds	15,896 16 11
G. Dougill and Son, Aysgarth	15,688 17 10
H. M. Nowel, Stockton-on-Tees	15,518 14 2
C. Bushby and Son, Leeds	15,500 0 0
J. Butler and Co., Ltd., Leeds	15,451 16 2
Yorks, Hennebique Contracting Co., Leeds	15,408 17 11
Tate and Gordon, Manchester	15,326 1 3
R. M. Parkinson, Bedford	15,232 0 0
J. Bentley and Co., Leicester	15,080 10 0
E. Bentley and Son, Leicester	14,591 7 9
A. Braithwaite and Co., Leeds	14,042 9 8
H. Arnold and Son, Leeds	13,976 0 0

London.—For erection of new villas, central bathroom, and additional staff quarters at the Epileptic Colony, for the L.C.C.

C. Wall, Ltd., Grays	£11,049
Leslie and Co., Ltd., Kensington Square, W.	10,736
Foster and Dicksee, Rugby	10,706
Holloway Bros., Ltd., Belvedere Road, S.E.	10,680
J. Greenwood, Ltd., Arthur Street, West, E.C.	10,373
W. Johnson and Co., Ltd., Wandsworth Common	9,990
G. Parker and Sons, Peckham	9,760
Patman and Fotheringham, Ltd., Theobalds Road, W.C.	9,743
J. Carmichael, Wandsworth Common	9,727
E. Lawrance and Sons, Ltd.,* Wharf Road, City Road, E.C.	9,224

*Accepted

(*Tenders continued on page xvi.*)

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(Signed) JAMES N. MONRO, F.R.I.B.A., I.A.

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(*Tenders continued from page xiv.*)

Leytonstone.—For erection of the County High School for 300 girls, on a site at Leytonstone, for Leyton Advisory Committee of the Essex County Council. William and J. H. Jacques, architects, 2, Fen Court, Fenchurch Street, E.C. Quantities by Stanger and Son:—

J. E. Whiter and Co.	£13,787
Spencer, Santo and Co.	13,622
E. Lawrence and Sons, Ltd.	13,344
T. Higgs	13,136
Shurmur and Sons, Ltd.	13,131
Brand, Pettit and Co.	12,979
Woolaston and Co.	12,751
J. Cracknell	12,736
Perry and Co.	12,691
H. J. Carter	12,567
A. N. Coles	12,351
H. C. Horswill	12,265
F. and G. Foster	12,186
B. E. Nightingale	12,185
R. Cook and Sons	12,152
J. Allen and Sons, Ltd.	12,030
W. J. Maddison	11,949
A. Monk	11,941
A. E. Symes	11,719
T. W. Moss	11,597
F. J. Coxhead	11,462
J. S. Hammond and Sons	11,325
Clark and Sons,* Cambridge	11,278

*Accepted.

Liverpool.—Accepted for erection of a reading room in Stanley Road, for the City Council.
J. and G. Chappell, 174-6, County Road, Walton, Liverpool, £1,984.

Liverpool.—For alterations and additions to the workhouse, Smithdown Road, Liverpool, for the Guardians of Toxteth Park. Walter W. Thomas, M.S.A., architect, 15, Lord Street, Liverpool.

C. W. Gree	£8,690
Jones and Sons	8,580
Brown and Backhouse	8,000
Morrison and Sons	7,950
W. Thornton and Sons	7,909
W. Tomkinson and Son	7,777
J. Henshaw and Sons	7,649
J. Dilworth	7,600
A. Lloyd	7,535
Rimmer Bros.	7,411
P. Tyson*	7,383

All of Liverpool.
*Accepted.

Laindon (Essex). — For re-building The Duke's Head, Laindon Common, for the Baddow Brewery Co., Ltd. Quantities by J. B. H. Low, Chelmsford.

Flaxman, Southend	£1,654
Burtwell, Brentwood	1,630
Weight, Chelmsford	1,600
Hammond and Son, Romford	1,500
Norden, Rochford	1,512
Rayner, East Hanningfield	1,448
J. Cowers,* Chelmsford	1,375

*Accepted.

London, N.W.—For erection of new premises for McCorquodale and Co., Ltd., at Cardington Street, N.W. S. Clifford Tee, Architect. Quantities by Herbert W. Gough.

W. Thornton and Sons	£18,333
Parnell and Son	15,990
A. J. Bateman	15,277
Ashby and Horner	14,966
Holliday and Greenwood	14,849
Todd and Newman	14,819
Howell J. Williams, Ltd.	14,627
Wm. Downs	14,577
Sheffield Bros.	14,493
Minter and Co.	14,455
Sabey and Son	14,450
Trollope and Colls	14,380

The lowest tender will probably be accepted.

London, N.—For new elementary school* at Hazalwood-lane, Palmer's Green, for the Middlesex C.C. H. G. Crothall, architect:—

J. Stewart	£6,696
E. Lawrence and Sons, Ltd.	6,683
A. Porter	6,655
G. Bollom	6,000
W. J. Renshaw	6,356
A. Fairhead and Son	6,289
A. Monk	6,275
Mattock Bros.	6,257
W. Lawrence and Son	6,172
H. Knight and Son	6,139
Brand, Pettitt and Co.	6,040
Treasure and Son, Ltd.*	5,991

*Recommended or acceptance.

Luton (Beds.).—Accepted for erection of school buildings for 350 children, Beech Hill, Dunstable Road, for the T.C. J. R. Brown and Sons, architects, Castle Street, Luton.
J. Saunders and Son, Duke Street, Luton, £4,488.

Merthyr Tydfil.—For rebuilding No. 148, High Street, Merthyr Tydfil. C. M. Davies, architect, 112, High Street, Merthyr Tydfil.

J. Jenkins, Canal Wharf, Merthyr Tydfil	£1,167 18 4
Jenkins Bros., Penydarren	1,150 0 0
J. James, Benydarren	1,132 0 0
N. Moss, Lower Mill Street, Merthyr Tydfil	1,035 0 0
W. Spratt,* Brookland Villa, Trealaw, Rhondda Valley	1,010 0 0
Warlow and Warlow, Merthyr Tydfil	950 0 0

*Accepted.

Newcastle-on-Tyne.—Recommended for acceptance for erection of a home for incurable children, for the T.C.
Elliott Bros., £6,490.

New Kirkham (Preston).—Accepted for erection of a new Grammar School, for the Governors.
Croft and Son, Preston, £8,000.

Orrell (Lancs.).—Accepted for erection of Primitive Methodist Sunday school. W. G. Smithson, architect, A.R.I.B.A., 13, Bond Street, Park Row, Leeds.
Clough and Gaskell, Wigan, £1,232 15s. 3d.

Pinner.—Accepted for erection of four houses, for the West End Park Estate Co. John E. Henderson, architect, West End Avenue, Pinner.
Milsom and Booth, Pinner, £2,210.

Pontefract.—Accepted for erection of a girls' high school in the Park, for the Governing Body, Pontefract Girls' High School. Tennant and Collins, Roper Gate, architects, Pontefract. Quantities by architects.
S. R. and T. Kelsey, Burlington Crescent, Goole, £11,311 18s.

Pontypridd.—For alterations, additions, and renovations to Tabernacle Chapel, Pontypridd, for the Trustees. A. O. Evans, Williams and Evans, Pontypridd, architects.

Knox and Wells, Cardiff	£2,970 0 0
D. Davies and Sons, Cardiff	2,850 0 0
M. Griffiths	2,805 3 7
G. Davies	2,731 5 8
Williams and James	2,686 13 6
M. Julian	2,647 0 0
E. D. W. Evans, Cardiff	2,616 18 10
A. J. Colbourne, Swindon	2,576 19 0
E. Turner and Sons, Cardiff	2,528 0 0
R. Jones*	2,500 0 0

Rest of Pontypridd.
*Accepted.

Pontypridd.—For carrying out alterations and additions to Trallwn Bakery, Trallwn, Pontypridd, for Hopkin Morgan. A. O. Evans, Williams and Evans, architects, Pontypridd.

M. Griffiths	£3,089 6 6
D. Davies and Sons, Cardiff	2,704 0 0
E. R. Evans and Bros., Cardiff	2,699 0 0
G. Davies	2,640 0 0
Jones Bros., Treharris	2,620 0 0
A. J. Colborne, Swindon	2,599 10 0
Williams and James	2,599 15 0
E. Jones and Son	2,587 0 0
M. Julian	2,468 0 0
W. H. Evans, Cardiff	2,578 0 0
R. Jones, Abertridwr	2,577 10 0
Niblett and Davies, Cardiff	2,410 0 0
Knox and Wells,* Cardiff	2,367 0 0

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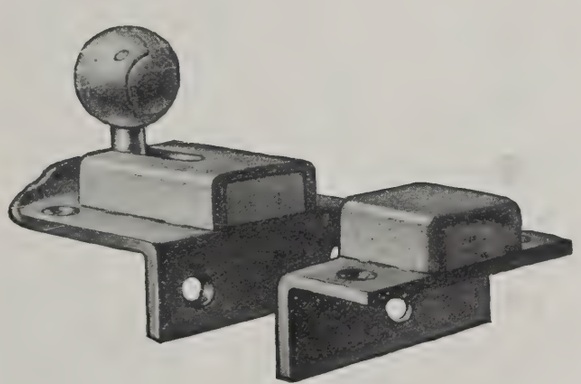
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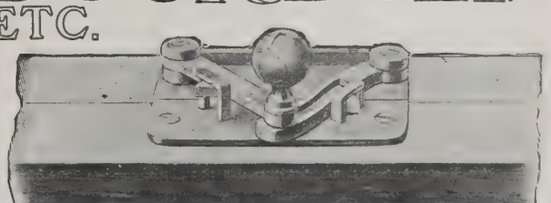
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BUILDING.

June 20. **SHEFFIELD.**—Erection of rubble stone retaining and fence walls on the East and West sides of Chesterfield Road, in Smith Wood, within the City, for the Improvement Committee of the City Council. Drawings may be seen, and conditions of contract, specification, and bill of quantities, form of tender, and other particulars obtained, on application to the City Engineer, Town Hall, Sheffield, upon deposit of 10s. Tenders to be enclosed and sealed in official envelope provided, and delivered at the City Engineer's Office. Any person or firm sending in a tender will be required to add a schedule to such tender, stating the names of the various classes of labour, which he or they intends or intend to employ, together with the places where such labour will be employed, and the rates of wages, hours of labour, and conditions of employment to be paid and observed in respect to each class of labour, and of which, as shown in the schedule, shall comply with the City Council's form of clauses respecting wages, hours, and conditions of labour, and prohibition against assigning or subletting, a copy of which, in the conditions of contract, may be obtained at my office upon application.

June 21. **CLAYTON (near Bradford).**—Alteration of the approach to the female infirmary, at the Workhouse. Drawings may be seen and bills of quantities obtained on application to the Architect to the Guardians, J. Harper Bakes, M.S.A., Calverley Chambers, Victoria Sq., Leeds. Tenders must be delivered to Wm. G. Cooper, Clerk to the Guardians, 4, Town Hall Street, Bradford.

June 21. **VENTNOR (I.O.W.).**—To Builders.—Constructing a quartermaster's store in the Artillery Drill Hall, I.W., for the Territorial Force Association for the County of Southampton. Plans and specifications can be seen at the office of the architect, Percy M. Du Feu, Ventnor, from whom copies of same and form of tender can be obtained on deposit of £1 1s. Tenders to be sent to the office of the Association, 32, Queen's Terrace, Southampton.

June 24. **WOMBWELL.**—Erection and completion of two houses in Hough Lane. Plans and specifications may be seen at Jos. Mattocks, 51, Bartholomew Street, Wombwell, from June 16 to June 24.

June 27. **STONE CHAIR (Shelf).**—Carpenters and joiners', plumbers' and glaziers', slaters' and plasterers' work, and materials required in connection with the alterations and additions to the Variety Club, Stone Chair, Shelf. Plans and specifications may be inspected from June 21 to June 27, on which last-named day tenders must be delivered to G. Reginald Oddy, Architect, Northowram, Halifax.

ENGINEERING.

June 29. **OLDHAM.**—Construction of a concrete gasholder tank, 212 feet diameter by 41 feet deep, adjoining their Hollinwood gas station, for the Corporation Gas Committee. Copies of specification and drawings can be obtained on application at the Gas Offices, Greaves Street, Oldham, on deposit of £2 2s.

June 29. **HOPE (Derbyshire).**—Construction of a concrete service reservoir and the providing, laying, and jointing of about 7,560 lineal yards of 4in. and 600 lineal yards of 3in. diameter, turned and bored spigot and socket cast-iron pipes, together with all necessary valves, hydrants, intake tank, and other works connected therewith at Hope, Derbyshire, for the Chapel-en-le-Frith R.D.C. Drawings may be seen, specification, bill of quantities, form of tender, key plan of the district, and other information can be obtained on application to Brady and Partington, engineers to the Council, Town Hall, Chapel-en-le-Frith, via Stockport, on deposit of £2 2s. Tenders to be delivered to J. B. Boycott, Clerk to the Council.

July 5. **MANCHESTER.**—Manufacture, delivery, and in some cases the transport and erection of the steelwork and ironwork required for nine bridges and one subway on the Aqueduct between Walkden and Audenshaw, the weight being about 700 tons, for the Corporation Waterworks Committee. Specification and form of tender may be obtained on application to G. H. Hill and Sons, civil engineers, Albert Chambers, Albert Square, Manchester, and 3, Victoria Street, Westminster, upon receipt of cheque for £2 2s. as deposit. Tenders, addressed to the Chairman of the Waterworks Committee, must be forwarded to the Secretary, Waterworks Offices, Town Hall, Manchester.

SANITARY ENGINEERING.

June 29. **PATELEY BRIDGE.**—Shaw Mills sewerage scheme.—Providing and laying about 840 lineal yards of 9in. and 6in. earthenware pipe sewers, together with the necessary manholes, etc., also for the construction of sewage disposal works, consisting of detritus tank, storm water tank, open septic tank, percolating filter, and all contingent works, for the R.D.C. Plans and specification may be inspected at the offices of the Engineers, Spinks, Pilling, and Rodwell, 20, Park Row, Leeds, from whom bills of quantities and form of tender may be obtained on deposit of £1 1s. Tenders must be delivered to W. Oddie, Clerk to the Council, Pateley Bridge.

July 1. **HANDFORTH.**—Construction of about 2,280 yards of earthenware pipe sewers, of 15in., 12in., and 9in. diameter, with manholes, flushing chambers, ventilators, etc., and also for the construction of sewage tanks, the laying-out and draining of certain land, etc., for the purposes of sewage disposal. Plans may be seen and copies of the specification and quantities obtained on application to Herbert Worsley, Clerk to the Council, 36, St. Petersgate, Stockport, on the deposit of £5 5s. Tenders must be sent to the above.

IRON AND STEEL.

July 5. **MANCHESTER.**—(See "Engineering.")

PAINTING.

June 22. **LEEDS.**—Painting and cleaning of schools during the midsummer vacation. Forward names to the Education Department (Architect's Section), Calverley Street, Leeds, when a list of schools and specifications will be forwarded. Tenders to be delivered to James Graham, Secretary for Education, Education Offices, Leeds.

June 23. **SALFORD.**—Decorating ward C. 2 at Ladywell sanatorium. Specification and form of tender may be obtained at the Borough Engineer's Office, Town Hall, Salford. Tenders must be delivered to L. C. Evans, Town Clerk, Salford.

June 23. **WIGAN.**—Painting, colouring, limewashing, etc., required at the following schools:—St. Andrew's, St. Joseph's, National and Blue Coat, Presbyterian, Wesleyan, St. Paul's, Goose Green. Also limewashing, etc., at other schools. A general specification and detailed particulars of the work required to be done may be obtained on application to Geo. H. Mockler, Director of Education, Education Offices, Wigan, to whom tenders must be sent.

No date. **WEST RIDING OF YORKSHIRE.**—Division 19.—Summer renovations and cleaning at the undermentioned schools. Specifications and forms of tender may be obtained from the Education Offices, Woodhouse. Handsworth Area.—Handsworth, Woodhouse, Woodhouse West, Birley, Intake and Gleadless schools; holidays commence August 5th. Aston Area.—Aston, Swallownest Old, Fence, Treeton, Catcliffe, Brinsworth and Tinsley Schools; holidays commence 22nd July. Whiston Area.—Thrybergh and Ulley schools; holidays commence on July 22nd. Kiveton Park Area.—Dinnington, Harthill, Anston and Kiveton schools; holidays commence on July 22.

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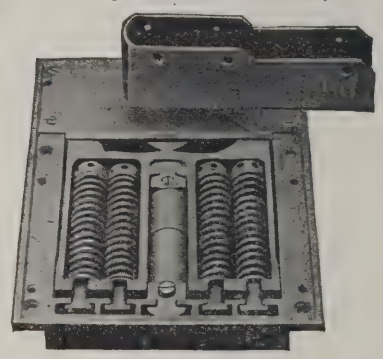
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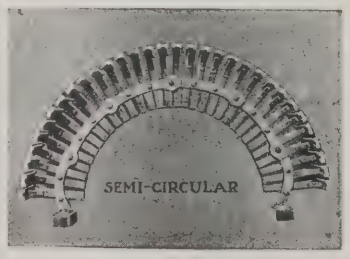
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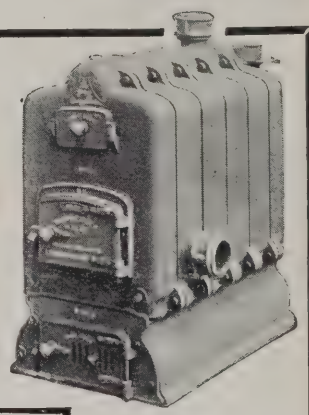
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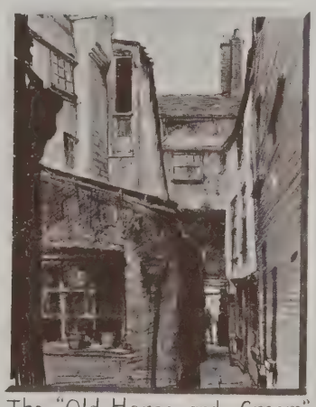
The Old Bell, Holborn



Holywell St.
from St. Clement Danes Church,
Strand. . . . .



Houses in Holborn



The "Old Horse and Groom"
back of Holborn-Above-Bars.



Booksellers Row,
Looking West.



Milford Lane,
Strand.



Davies Street.



Leather Lane, Holborn.



Fetter Lane, View from Holborn.



King St. Westminster.

The sketches are generally 9 in. by 6 in. wide. Any six pictures may be selected, and will be supplied at 5/- the set of six.

SHORT NOTES

On the Literary, Historical, and Architectural Interest of the Sketches.

1. **The Old Bell Inn, Holborn.**
   For two centuries, until 1879, a centre for coaches and carriers. It is mentioned by William Black in his "Strange Adventures of a Phaeton."

2. **Holywell Street, Strand.**
   (See also Nos. 5, 17, 18.) Holywell Street (Booksellers' Row) and Wych Street, Strand, which were swept away in carrying out the great Strand Improvement Scheme, contained, at their demolition, some fine old gabled houses. Holywell Street had then become the chief centre of the second-hand book trade, and was latterly known as Booksellers' Row.

3. **Old Houses in Holborn.**
   These quaint, half-timbered houses, which form the Holborn front of Staple Inn, are the last remaining reminiscence of Elizabethan street architecture in London.

4. **The Old Horse and Groom, Holborn.**
   This tavern was, at the time of its demolition, nearly 300 years old. One of its frequenters was the notorious thief-taker, Jonathan Wild.

5. **Booksellers' Row and Milford Lane.**
   For Booksellers' Row, see 2 above. Milford Lane gets its name from an old ford over the Thames, and a windmill that is shown in a contemporary print as standing near St. Mary's Church in the Strand, temp. James I. Sir Richard Baker, the chronicler, lived here, 1632-9.

6. **Davies Street, Oxford Street.**
   Here Lord Byron used to practise in the shooting gallery of the famous gunmaker, Joe Manton, who offended the poet by giving a blunt opinion on his marksmanship.

7. **Fetter Lane.**
   Fetter Lane was, in Stow's time, "built through on both sides with many fair houses"; those shown with gables in the sketch having probably come under his observation. "Praise God Barebones" and Mother Brownrigg have rendered the history of Fetter Lane notorious rather.

8. **Leather Lane, Holborn.**
   The date of the buildings in Leather Lane may be roughly inferred from a statement by Stow that it was "lately replenished with houses"; and Strype found in his time that "the east side of this lane is best built, having all brick houses." The chief building shown is apparently of the seventeenth century.

9. **King Street, Westminster.**
   This was, in the time of Henry VIII., the principal street of Westminster. Spenser is said to have died here "for lack of bread," and Cromwell lodged in this street when attending Parliament.

10. **Foubert's Place, Regent Street.**
    Commemorates the name of a French major who, in 1681, founded a riding school which became fashionable, and is mentioned in Evelyn's Diary.

11. **George Court, Strand.**
    One of the quaint old courts, on two levels, with steps and overbuilt passage, which were numerous in this district before clearances were made for the Law Courts.

12. **Rupert Street, W.**
    Formed in 1667, and named in compliment to the gallant Prince Rupert of the Rhine, son of King of Bohemia, and nephew to Charles I.

13. **Lincoln's Inn Fields.**
    Strongly reminiscent of the Father of the Renaissance in England, Inigo Jones, who drew the ground-plan and completed the west side. Here Lord William Russell was beheaded. Dickens, when a boy, was employed here in a solicitor's office; and his biographer, John Forster, lived here.

14. **Houses in the Strand.**
    The Strand is now almost completely modernised; and its character is so improvocative of sentiment that one marvels at the saying of Charles Lamb: "I often shed tears at the motley Strand, for fulness of joy at so much life."

15. **Archway, Portugal Street.**
    Portugal Street, Lincoln's Inn Fields, where was situated the alleged "Old Curiosity Shop," has within recent years suffered so many changes that Dickens, could he revisit it, would hardly recognise it.

16. **Exchange Court, Strand.**
    Recalls the "New Exchange" opened by James I., and a favourite scene with the dramatists of the reign of Charles II., when it had become a fashionable resort of the gallants.

17. **Booksellers' Row.**
    A later name for Holywell Street. (See 2.)

18. **Wych Street, Strand.**
    This picturesque but unsavoury narrow street (see 2) was demolished in the clearance for the Strand Improvements.

Please note that the two small sketches No. 5, are counted as one picture.

An Order Form is Printed on Page 4.



Fouberts Place, Regent St.



George Court, Strand



Rupert St. W.



Lincolns Inn Fields, South West Corner



Houses in the Strand



Archway, Portugal St, Lincolns Inn Fields



Exchange Court, Strand.



Booksellers Row, Looking East.



Wych St. Strand

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THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JUNE 22nd, 1910.

Volume XXXI. No. 803.



The large hall is the central feature of the house, the principal rooms opening from it. (*See also pp.* 634, 639, 641, 642, and 643.)

KNAPPE CROSS, EXMOUTH, DEVON: THE HALL. W. H. ANSELL, A.R.I.B.A., ARCHITECT.



This house has fine views over the estuary of the River Exe, and over the English Channel two miles away. The architectural motive was kept extremely simple, good proportions and materials being relied on for the effect. (*See also pp.* 633, 634, 639, 641, 642, and 643.)

KNAPPE CROSS, EXMOUTH, DEVON: ENTRANCE FRONT. W. H. ANSELL, A.R.I.B.A., ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

JUNE 22nd, 1910. *CAXTON HOUSE, WESTMINSTER.* VOLUME 31. No. 803.

Note: The List of Contents will be found on Page V of the front advertisements in this and subsequent issues.

The Japan-British Exhibition.

WE have already devoted some consideration to the subject of Japanese and English art, as far as represented in the contents of the art-pavilion at the Exhibition, where, however, except as regards sculpture, Japan was much better represented than Great Britain. Other sections of the Exhibition, especially of the Japanese exhibits, merit, however, more attention than they receive. The fact is that what is called the "White City" has become a place of dining-rooms, tea-rooms, and popular amusements, with some exhibition galleries thrown in. The latter are mostly nearly empty; the crowd pay no attention to them; there are no catalogues to be had, except of the Art Section; and the "Official Guide," as it is called, is only a popular pamphlet, and gives no real information. The place is a pleasure-garden for the masses, in fact; but the Japanese Government and the Japanese exhibitors seem to have taken it seriously, and their Textile Hall, as it is called (though it represents much besides textiles) contains a good deal of fine and characteristic work.

We may notice first, however, the great Japanese pavilion built up in the entrance hall from Wood Lane Station. This is said to be an exact reproduction of the sacred gateway of Nara, the former capital of Japan; as a full-size piece of indigenous Japanese architecture it is of considerable interest. It is, of course, a timber erection, profusely decorated in colour, a brilliant red forming the main mass of colour; the large cylindrical columns are topped, not with any kind of capital, but with a flat ornament looking like a silver inlay. The roof construction, in which a lower set of rafters crops out from under the upper roof, looks very confused and unscientific, like the perfunctory carrying out of a rude traditional method of construction, and there is something almost humorous in the projection of all the loose ends, as we may call them, of the bracket-framing, and the curious turn-up of the hips of the roof, reminding one of the pictures on the Chinese willow-pattern plates. And the secondary cornice, above the columns, carries a couple of rails above it at the angles, not because rails are wanted there, but they are part of the composition. The whole thing is barbaric, unmeaning; it is not even good or scientific timber construction; but it is undeniably picturesque. Is it possible for a country so bent on taking place and power with European nations to keep up this style of architecture? Come into the Japanese Government pavilion and we shall see. There is the perspective drawing of the headquarters of the Japanese Red Cross Society; a commonplace "brick and stone dressings" building, such as we may see half a dozen of among the inferior things at the Royal Academy; and there is the large model of a Japanese "Second-class Post-Office," a square brick building with round-arched windows, stripes of different-coloured bricks, and a modillion cornice running all round it. As far as Government is concerned there is evidently an end of indigenous Japanese architecture; how could it be otherwise, alongside of those models of ultra-modern battleships, and that model of a native class of ship, which the Government fifty years ago forbade the construction of (except for small vessels), in order to encourage the building of an efficient navy?

"The old order changeth, yielding place to new."

Japanese orientalism is, officially at least, at an end; we are perhaps seeing in this very exhibition the last of it.

The history of Japanese costume and habits of life is well illustrated in the galleries to the left of the vestibule, by groups of wax figures in the costumes and avocations of successive periods, from somewhere about the eleventh century down to the final scene of "the present day," in which a good many of the figures, those of naval and military officers especially, might belong to any European country. The exhibition is an interesting one, and as, in the older periods, the heads given to the figures are distinctly national in physiognomy, one can realise how exceedingly well the native ladies' costume goes with the native face and figure; though one would not be surprised to find that the Japanese lady who has money to spend on her dress now goes to Worth, or some other famous European costumier, who will never make her look so well as in her Japan-made dress. But this series of historical tableaux, illustrative of different periods in manners and dress, is far more sensible and interesting than the absurd display which fills a long gallery on the English side of the exhibition, of wax groups of figures in the dresses appropriate to different social functions of to-day—a wedding, an "at home," a cricket match, a boating party, etc. A series of historic costumes, like that in the Japanese gallery, would have been of some value, and would have taught people something; the present show is calculated only to provoke laughter, and suggests the idea of a series of fashion-plates in the round.

The best Japanese display, after that in the Art Pavilion, is in the Textile Hall before referred to, where, however, the first thing we come to is not textiles but furniture—Takamatsu's carved furniture in dark wood; very ponderous and richly carved chairs and settees in which dragons play a great part; effective and costly work, which somehow suggests the idea of being made for the European market, for people who wish to have something that looks "Oriental" in their homes. Osawa and Co.'s simpler square-lined furniture, with some black inlay and light-coloured upholstery, a little higher up, suggests Paris rather than Japan, except in the practical way in which the feet are spread slightly to form a good base for the furniture; an incident of structure to be noticed also in some old furniture illustrated in the retrospective exhibition. A little higher up is an important exhibition with no exhibitor's name attached to it (as is the case with a good many of the Japanese exhibits); a screen with a richly carved open-work frieze enclosing a collection of magnificent gilt and lacquered cabinets, with folding doors and drawers with open-work panels, and interiors with a profusion of little shelves, columns, drawers, forming a kind of miniature architectural interior. This is very rich and splendid work, though it must be admitted that it has the stamp of modernity about

it, and is wanting in the delicacy and refinement of style and execution which characterises ancient Japanese work of the same type of object. There are other objects of great richness of effect which seem rather at variance with one's ideas of Japanese decorative art; a screen, for instance, with a heavy and effective frame of wood-carving *à jour*, and on the centre flying birds and foliage built up in high relief in thicknesses of various metals; this is undoubtedly sumptuous (that is the word) in effect, but there is a touch of Parisian taste about it that rather jars upon one. Nor can one applaud the design of an embroidered silk screen, representing the bars of a bamboo cage, with large birds behind the railing or putting their heads through it. Is it possible that these things are made with a special eye to the English market? There is, however, much really beautiful textile work scattered about, which it would be difficult to surpass either for beauty of design or thoroughness of handmade work.

The great built-up kiosk half-way up the gallery, with a raised platform in front of it, and to which we could find no exhibitor's name attached, is one of the most effective things in the exhibition. It displays great red columns, with white bases of a reversed curve, concave above and convex below, crossed at the top by two large beams covered with a greyish diaper which harmonises admirably with the prevailing red. How do they obtain that peculiarly fine red colour, brilliant and yet not garish? We seem to see no red like it in English colouring. The one false note is the heated colour of the diapered curtains, draped behind the columns, which is out of harmony with the general colour scheme. Some fine furniture and bronzes are to be seen in the interior of this erection. Another important special exhibit is that of Kyoto-Kan, enclosed in a screen decorated with a great deal of very bold and clever wood-carving of grotesque lions and other animals in high relief; whether or not they are intended to be grotesque it would be hard to say. With all its cleverness of execution, this is somewhat barbaric art, and perhaps the most thoroughly satisfactory things in this compartment are the settees, of which the seat is formed of a very fine woven basket-work, with a decorative edging formed by a narrow strip of printed silk all round. In a simple way these are excellent pieces of furniture, and thoroughly well made.

In the pavilion devoted to Japanese educational work, arts and crafts, etc., is an exceedingly fine model of a mausoleum, a building in the native Japanese style, in a large courtyard surrounded by an artistically designed open-work fence, surmounted by a penthouse top. In this department are examples of the work of students of the Tokio School of Art and the College of Engineering. The City of Tokio has its own exhibition, which includes a large relief model of the city, and similar models of the Tokio waterworks and settling tanks, which seem to differ in no respect from what we are familiar with in England, and may, in fact, have been carried out by English engineers. The exhibit of the Imperial Earthquake Investigation Committee contains two of Omori's beautiful and delicate instruments for the automatic recording of earth tremors, the construction and action of which can here be studied; it could not be intelligently described without diagrams, but they are very beautiful and delicate instruments, of Japanese design and manufacture.

The British Transportation exhibit, in a gallery adjoining the last-named, contains among other things a full-size section of the Central London Tube railway, with a carriage standing in it, which may enable those of the public who may pay any attention to it to understand the construction of the tube, but hardly anyone seems to trouble the vast solitudes of these practical departments of the exhibition. A saloon railway carriage built for Queen Adelaide in 1843 is a reminder of the days when railway carriages proclaimed their descent from the old stage-coach by being designed as if they consisted of three stage-coaches adhering together; a form of design which was carried on to a period within the memory of many persons still living; a curious instance of the difficulty there is in getting rid of a precedent and evolving a new form of design for a new type of vehicle. It took railway engineers the best part of half a century to realise that as a long railway carriage was a structure complete in itself, there was no need to divide off each section of it by a curved framing recalling the shape of a stage-coach. We are in the same confusion of mind at present with the taxi-cabs, the design of which still follows the lines of carriages built to have a horse in front of them; and the very same conservatism in regard to form is hampering our ideas as to the architectural treatment of reinforced concrete buildings. An interesting example of progress in one detail of railway construction is afforded by the placing together of a portion of the permanent way of the Liverpool and Manchester railway of 1830 with a permanent way as now constructed. The 1830 rail is what seems now a very light cast-iron section with no bottom flange, the object being that the thin web should fit close into the jaws of the iron chair; the device of making the chair wide enough to receive the lower flange, and tightening up the rail with a hardwood wedge, not having then occurred to anyone. Each chair rests on the centre of a square block of stone, the packing consisting merely of waste cinder refuse. Even with the moderate speeds of that day, it must have been a noisy and shaky railway to travel on, the stone blocks not having the elasticity of the wooden sleeper.

The British Mechanical and Engineering Pavilion contains a quantity of splendid exhibits in the way of models of ships, great and small guns, etc.; matters which hardly come within our province. The idea of a specially representative exhibition of English sanitary engineering, talked of last year, seems to have fallen through; possibly the firms who were invited foresaw that the White City was too much of a playground to promise much attention to exhibits of this class. Among the few exhibits of the kind we noticed Maignen's Germ Proof Filter, the principle of which is not explained, but which has received excellent testimony from analysts; and Prior's adjustable barless grate, which can be canted at three different angles, so as to ensure either a large fire, a moderate fire, or (when the grate is canted upward and backward as far as it will go), a smouldering fire which will keep alight for a long time without wasting much heat. In summer the whole fire-box can be easily lifted out and leave the grate-opening as a flower-stand. The same exhibitor shows another type of grate, the "Venetian," in which the same adjustability as to the size and the slow or quick burning of the fire is provided for in another manner. Both grates seem worth attention.

The Japanese garden, which has been constructed at the back of their Textiles Hall, under the poetic title, "The Garden of Peace," is a very pretty and successful bit of scenic effect, though it is a pity that something was not done to conceal or decorate the unsightly back wall of the Hall which forms one boundary of the garden. In this garden is a small example of the ordinary Japanese dwelling-house, with its beautifully made light sliding screens by which rooms are separated or united at pleasure. It is a type of house that would be impossible either for European climates or European habits of life; but from the Japanese point of view one can imagine that it is just about the perfection of dwelling-house construction.

The Artist's "Liberty to Lie."

AN exhibition of photographs in the oil process by M. Robert Demachy, of Paris, was opened at the house of the Royal Photographic Society last week, and in a lecture before the society M. Demachy pleaded that fidelity to artistic truth did not compel the photographer to render a literal transcript of what he saw before him. It was only necessary that in his exercise of "control" he should be consistent. "An artist was quite at liberty to lie, but he must not contradict himself." M. Demachy's dictum must not revolt us because it is so bluntly put; nor must we allow ourselves to fall into the error of supposing that, in art as in ethics, a lie which is only half a lie is the worst form of untruth. The use of the ugly word lie in such a connection is rather

unfortunate. If "beauty is truth, truth beauty," then conversely a lie is ugliness, and ugliness is a lie. The artist does not lie; he merely selects his facts; and if he is sometimes guilty of a *suppressio veri*, he is not therefore necessarily guilty of falsehood. He brings into prominence that which is most worthy of attention, and suppresses or reduces what is trivial or unessential. M. Demachy's system of making his photographic picture visible by the addition of a specially prepared oil pigment, thus affording great scope for personal interpretation of the subject, is in effect a revolt and a protest against the embarrassing and crude fidelity of the camera lens, as well as a correction of its aberrations. Mechanical accuracy has no place in the domain of art, art being mainly, if not exclusively, a matter of temperament and the emotions. That the intellect, however, is by no means ruled out seems to be recognised in M. Demachy's observation that the artist "must not contradict himself." Because he is human, and because art is a human thing, he may be occasionally inconsistent, but he must not be altogether wayward and capricious. It is demanded of him that he shall have ideals and remain faithful to them; principles, and remain demonstrably loyal to them; but within these limitations he may, and must, be allowed considerable latitude and control; otherwise he is less an artist than a craftsman, and, in the case of the architect, less a designer than a copyist. M. Demachy's emphasis of this point in his mitigation of the literalness of photography is the more welcome for its character as a sort of flank movement or indirect approach to the main issue—that art is a human emanation.

Bradford Corporation Contracts.

BRADFORD Master Builders' Association have made certain representations to Bradford Corporation with respect to the conditions of the corporation building contracts. The questions raised are not set forth in the source from which our information is derived, but their tenor may be inferred from the recorded decisions. It has been decided "that an arbitration clause be inserted in all corporation building contracts." That is possibly a point gained. Its value, however, remains to be seen; for it is added that the clause shall be "in such form as the town clerk shall determine." Upon the town clerk, therefore, devolves a delicate responsibility, and it would perhaps be impertinent to intrude upon his heart-searchings with an insinuation that the R.I.B.A. contract form is ready to his hand, and would possibly save him much furious thinking. This simple solution of the difficulty has probably been already suggested by the Master Builders' Association; for, generally speaking, the adoption of that form is bound to be sufficiently satisfactory to restore confidence if not to secure absolute contentment on both sides. The next decision is, "That the application of the Association for payment of one-half of the retention money at the end of three months, and the balance at the end of six months after completion of the contract be not entertained." That frigid and calculated, curt and uncompromising clause, "be not entertained," seems to suggest that the builders had hazarded a very daring departure from custom and precedent. So much the worse for custom; and, indeed, it is notorious how much too far in the opposite direction corporations are in the habit of letting themselves go. Between the two extremes there is only too much room for equitable reform. In the next item the corporation dally with the same seductive phrase, but mitigate its severity with a rider: "That the application of the Association for 'a fixed sum of, say, 5 per cent. on all prime cost sums to cover builders' liability' be not entertained, but that the present clause in the contract conditions as to prime cost sums be altered so as to give the contractor an opportunity to include in his tender a sum to cover him in respect of his liabilities for prime cost items." This concession is not very gratifying to the builder, who, it has been alleged, is usually afraid to take advantage of it, because the items are then made competitive. If the Bradford builders, however, have taken little or nothing by their action, they have at least got the corporation to move, if only in a circle; and that in itself represents some sort of a moral gain, if it does no more than demonstrate that corporations are not wholly inert bodies, nor builders' associations at all somnolent ones.

The Shakespeare Memorial Theatre.

IN order to obtain subscriptions to the fund for a Shakespeare Memorial Theatre, district committees are being formed. Such a committee was inaugurated recently, when Mr. and Mrs. Godfrey Baring kindly placed their drawing-room at Queen's Gate at the disposal of the movement. Sir John Hare, who presided, reminded his hearers that we possess the finest dramatic literature in the world, and have produced the greatest dramatist, to whose genius and immortal fame, however, we had as a nation paid no homage. "France had her house of Molière. Where was our house of Shakespeare? All the great cities of Europe possessed national theatres, and was it not a scandal that London, the richest city in the world, should be conspicuous—he would almost say, ridiculous—in being without one?" Mr. Forbes Robertson, fresh from artistic triumphs in America, pointed to the example of that country in building the New Theatre, which, he said, was the most beautiful theatre he had ever seen. He desired to see in London a national theatre which should be a fitting monument to Shakespeare as well. "It was," he said, "a question of art, and we must see to it that the drama is as well protected as are music and painting by their respective academies." Mr. Forbes Robertson was here referring more directly to the dramatic art, of which he is perhaps our most accomplished living exponent; but, as the son of a painter, and as being himself, if we are not mistaken, a deft wielder of the brush, and most certainly the possessor of a super dainty artistic temperament, may be supposed to have a sym pathetic regard for the interests of architecture. It is therefore reassuring to find him taking so active a share in the movement, and imparting to it the right artistic touch and tone. If this spirit is sustained, the right kind of fabric may yet be reared.

The Proposed India Museum.

THE proposal to build an India Museum on a site near the new London County Hall, as a memorial to the late King, is a very spirited one, and we wish that it might be carried out on public grounds, apart from any question of regarding it as a memorial. As we have already said, the best and most suitable memorial to King Edward VII. would be the erection of a new façade to Buckingham Palace, thus making a worthy climax to the Victoria Memorial; and we believe the funds for that scheme could be raised by public subscription without difficulty. It would be otherwise with the proposed India Museum, the cost of which would be very great, and would probably have to be provided mainly by the English Government, though the Indian Government might contribute a portion. It would undoubtedly be a most fitting thing to have an adequate India Museum in London, embodying full illustration of the history and the arts of India; but it is a question whether a building of the size of the design which Mr. Chisholm is working out, 370ft. in length by 210 in width, would be large enough for the purpose. The general feeling at the meeting of the East India Association seems to have been that the question of cost would be prohibitive, as in this country we fear it would be; though we feel no doubt that if France had the interests in India that we have, an India Museum would certainly be established in Paris. We believe there is something of the kind already in Berlin. We are desirous, however, to see Mr. Chisholm's design for the proposed building, which will at all events be of interest.

NOTES AND NEWS.

Garden Cities, Suburbs, and Villages.

Mr. Ebenezer Howard writes to us to say that the terms given above are often loosely used by our public press, thus confusing some vital issues. A "Garden City," he explains, is a self-contained town, industrial, agricultural, residential, planned as a whole, and occupying land sufficient to provide garden-surrounded homes for at least 30,000 persons, as well as a wide belt of open fields. It combines the advantages of town and country, and prepares the way for a national movement, stemming the tide of the population now leaving the countryside and sweeping into our overcrowded cities. A "Garden Suburb" provides that the normal growth of existing cities shall be on healthy lines; and, when such cities are not already too large, such suburbs are most useful, and even in the case of overgrown London they may be, though on the other hand they tend to drive the country yet further afield, and do not deal with the root evil—rural depopulation. "Garden Villages," such as Bournville and Port Sunlight, are Garden Cities in miniature, but depend upon some neighbouring city for water, light, and drainage; have not the valuable provision of a protective belt, and are usually the centre of one great industry only. He asks us "in the interest of accuracy and of social progress to assist in keeping these distinctions clear."

Mr. Aldridge on German Cities.

Mr. H. R. Aldridge, Secretary of the Housing Reform Council, has given a summing up of his impressions during his Council's recent Continental tour to the Berlin correspondent of the "Daily News." He says:—

"England has nothing to learn from Germany about housing, but she has everything to learn about town-planning. Germans determine to make their towns beautiful. They have a sense of civic patriotism which we have yet to learn. They make great mistakes, however. After seeing what we have seen, nine-tenths of our party would probably be against the flat system. The Germans have also adopted the system of block buildings, which is by far the most expensive, and is raising the value of sites for workmen's buildings to £16,000 an acre. English town-planners must take the cottage as the basis of their schemes. If you like to put it drastically, you can say that in England we try to house the people; in Germany they warehouse them. But international criticisms are always risky, and I do not want to be dragged into politics. The wisest thing that I have ever heard said was a remark by a Swiss in Paris, who said that 'there is no hundred-per-cent. nation under the sun.'"

Croydon Palace.

The former palace of the Archbishops of Canterbury at Croydon, which is being carefully restored—or, perhaps, since that word seems to have acquired a sinister significance, it would be less provocative to say repaired—under the superintendence of Mr. Banister Fletcher, was, it appears, built of soft Godstone or Merstham stone, which, under the advice of Sir Arthur Church, is being treated with his favourite preparation of baryta water. In many instances, however, especially with respect to the window mouldings, it has been found necessary to employ new stone, but wherever possible the old work has been retained. The buttresses, and much of the stonework generally, were found to be covered with plaster; and in removing the plaster a window was discovered in the room over the north porch. In front of this porch, which is one of the oldest parts of the building, a retaining wall has been built under ground. The banqueting hall has a fine old oak roof. Its east wall, along which ran a music gallery, fell into the street about 1830. On the south side a beautiful doorway was found under some inches of plaster, and it is believed that if the funds allowed of extended investigations further interesting discoveries would be made. About £1,000 is immediately required for urgent works of preservation. Mr. D. Waller is the contractor.

The Life of Metallic Filament Lamps.

Some interesting figures regarding the life of tungsten lamps have been given by Mr. J. P. Jones, of the Citizens' Gas and Electric Company, to the Iowa Electrical Association. The results were adduced from the behaviour of 282 lamps which were under observation from July, 1908, to April, 1910. The average life of lamps burned out in use was 843 hours; 40 per cent. burned for less than 500 hours; 21 per cent. burned from 500 to 1,000 hours; 25 per cent. from 1,000 to 2,000 hours; 11 per cent. from 2,000 to 3,000 hours, and 1½ per cent. burned over 3,000 hours. At the conclusion of the investigation in April, 1910, there were 223 lamps in use, and the average burning was 991 hours; 12 per cent. had burned over 3,000 hours; 30 per cent. from 1,000 to 2,000 hours; 19 per cent. from 500 to 1,000 hours; and 14 per cent. had not been 500 hours in actual use.

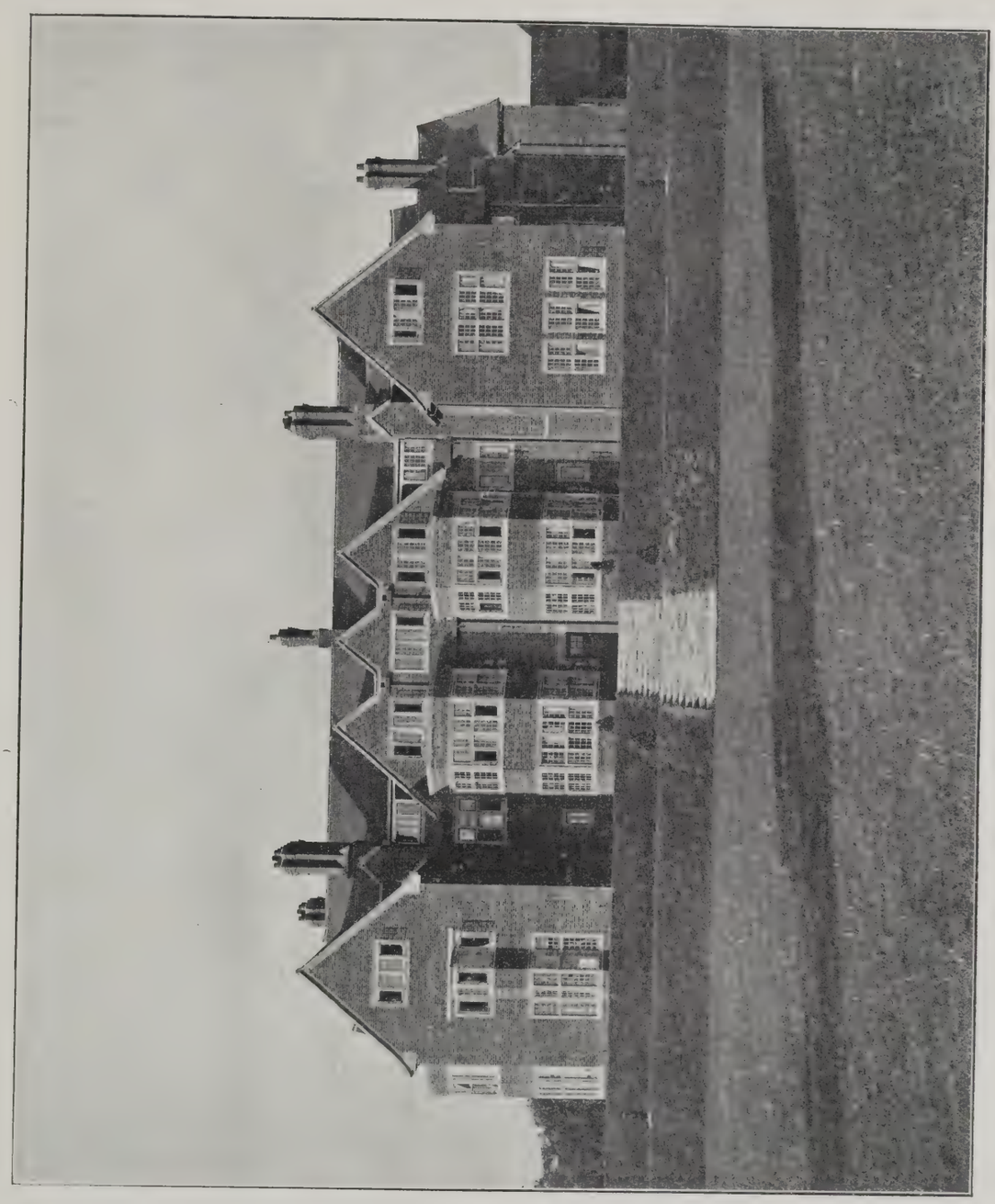
Employers' Parliamentary Council.

The Employers' Parliamentary Council, upon which the Federated Master Builders are very ably represented, exists for the purpose of taking action "with respect to any Bills, introduced into either House of Parliament, affecting the interests of trade, of free contract, and of labour, or with respect to the action of Imperial or local authorities affecting in any way the said interests." Among the Bills to which the Council has recently given attention are the following: Railways (Eight Hours), to which the objection was that such legislation would interfere with the liberty of adult males to work for such period as they choose. The Bill has been dropped. Road Traffic, to prevent a driver having charge of more than one cart. The Bill is down for second reading on Friday, July 29th. Engines and Boilers (Persons in Charge), to prevent any person from taking charge of an engine or boiler of five-horse power unless he possesses a certificate under the Act. It was objected that this Bill was wholly unnecessary, and that, as a Select Committee reported in 1901, great care was exercised in the selection of capable, trustworthy, and qualified persons to take charge of engines and boilers, and any interference on the part of the State would tend to induce carelessness in employers. The Bill was dropped. Shop Clubs, to make it an offence on the part of an employer who made it a condition of employment that any workman should discontinue his membership or not become a member of any trade union or of any industrial and provident society. The Bill was dropped. Trade Union Law Amendment (No. 2), to override the judgment of the House of Lords in the Osborne case by allowing trade unions to pay the election expenses and the cost of maintenance of members of Parliament. The second reading was down for June 14th. Character Note, to make the giving of character notes compulsory. The second reading was dropped. Highways, to compel employers to provide an additional driver if a driver is employed for more than twelve hours, and to be responsible for penalties incurred for offences brought about by overwork. The second reading is set down for July 29th. From this list it is evident that the Council is doing excellent and very necessary work in protecting the interests of their class from the constant aggression of the militant members of the Labour Party, who, in their enforced obligation to keep moving, might become infinitely more mischievous than they actually are if it were not for such wholesome checks as those that are promptly applied by the Council, who realise that "eternal vigilance is the price of liberty."

Knappe Cross, Exmouth, Devon.

(*See also pages 633, 634.*)

This house has been built from the designs of Mr. W. H. Ansell, A.R.I.B.A., of London, on a site with a south-west aspect, and has fine views over the estuary of the River Exe, and over the English Channel, two miles away. As the situation is somewhat exposed, the walls were built hollow, being bonded with Jennings's stoneware cranked ties. The architectural motive was kept extremely simple, projecting mouldings being avoided, and good material and proportions relied



The situation being somewhat exposed, the house is built with a hollow space in the walls and bonded with stoneware cranked bricks. Ham Hill stone was used for the window mullions and dressings. (*See also pp.* 633, 634.)

KNAPPE CROSS, EXMOUTH, DEVON: THE GARDEN FRONT. W. H. ANSELL, A.R.I.B.A., ARCHITECT.

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on for effect. The garden front is symmetrical, and when the two terrace walls are built will form a complete and well-balanced whole. In planning, the large hall was taken as the central point of the daily life of the house. The principal rooms open from it, and can be reached without passing through any corridors. The central rooms on the first floor were planned as day and night nurseries for the children, with their bathroom attached. All these rooms communicate, so that access by the nurse is easy. The house contains four bathrooms. All the principal chimneypieces were designed by the architect. An entrance-lodge, stables, and electric engine-house and accumulator-rooms are also included in the work. The general contractors were Dart and Francis, of Crediton, Devon. The bricks from Basingstoke and the hand-made roofing-tiles were supplied by Ames and Hunter, and the fireproof floors were all constructed on the "Kleine" system. Polyphant stone and other Devonshire marbles were used for the chimneypieces. The grates were supplied by the Well Fire Co., the Carron Co., Thos. Elsley, Ltd., and the Teale Co. The casements, fittings, stained-glass and leaded lights, were made by Henry Hope and Sons; the special art metal-work came from Thos. Elsley, Ltd., while the door furniture, etc., was made by James Gibbons. The special English oak doors and staircases were made by the general contractors, and they also laid the oak and pitch-pine flooring. Morrison and Ingram supplied all the sanitary ware and fittings, and Miller and Co. the electric-light fittings. The modelled plaster-work in the hall and dining-room was executed by G. P. Bankart, and that in the drawing-room by Aumonier and Son. Wippell Bros. and Row carried out the heating and ventilating work. Paripan was used for the drawing-room decorations. A tube well, 300ft. deep, was sunk on the estate by Alfred Williams, of Bow, London.

L.C.C. Housing and Street Improvement Policy.

At the meeting of the London County Council last week, Major Boscawen brought up the annual estimates of the Housing of the Working Classes Committee, which showed that £125,000 was required on the capital account, the bulk of which is apportioned for the provision of new dwellings, and the sum of £78,395 is included in the revenue account, chiefly for maintenance and management. He pointed out that his committee was largely composed of new members of the Council, who, before putting forward anything in the nature of a new policy, thought it their duty to get thoroughly into touch with the Council's business. The work of his committee, he said, fell under three heads: (1) Management of the Council's large estates; (2) development of estates not yet fully built upon; and (3) treatment of slum areas. He was convinced that the Council had done a good work in setting up a standard of excellence in their housing policy. It was sometimes said that the Council's housing schemes did not pay, but he thought it fairer to state that the losses were due to the undeveloped portion of the Council's estates, for the buildings completed showed a surplus of £3,484. He thought that the one estate which the Council could not make a paying



KNAPPE CROSS, EXMOUTH, DEVON: DETAIL OF CENTRE PORTION OF GARDEN FRONT. W. H. ANSELL, A.R.I.B.A., ARCHITECT.

property was the White Hart property at Tottenham, consisting of 825 acres, and he was afraid that it would be disastrous to develop the whole of that land as the residences wholly of the poor. Mr. Evan Spicer moved, and Mr. J. D. Gilbert seconded, that there should be a supplementary estimate of £10,000 for the clearance of the Tabard Street area, Southwark. Mr. Harold Cox remarked that, private enterprise being unable to cope with slum areas, public authorities must necessarily do the work. Mr. Evan Spicer's motion was accepted. The estimates amounted to £800,710, of which £250,000 was for street improvements under general powers, whilst the remainder was for specified tramway schemes, which necessitated road widenings.

The Late Mr. T. J. Bailey, F.R.I.B.A.

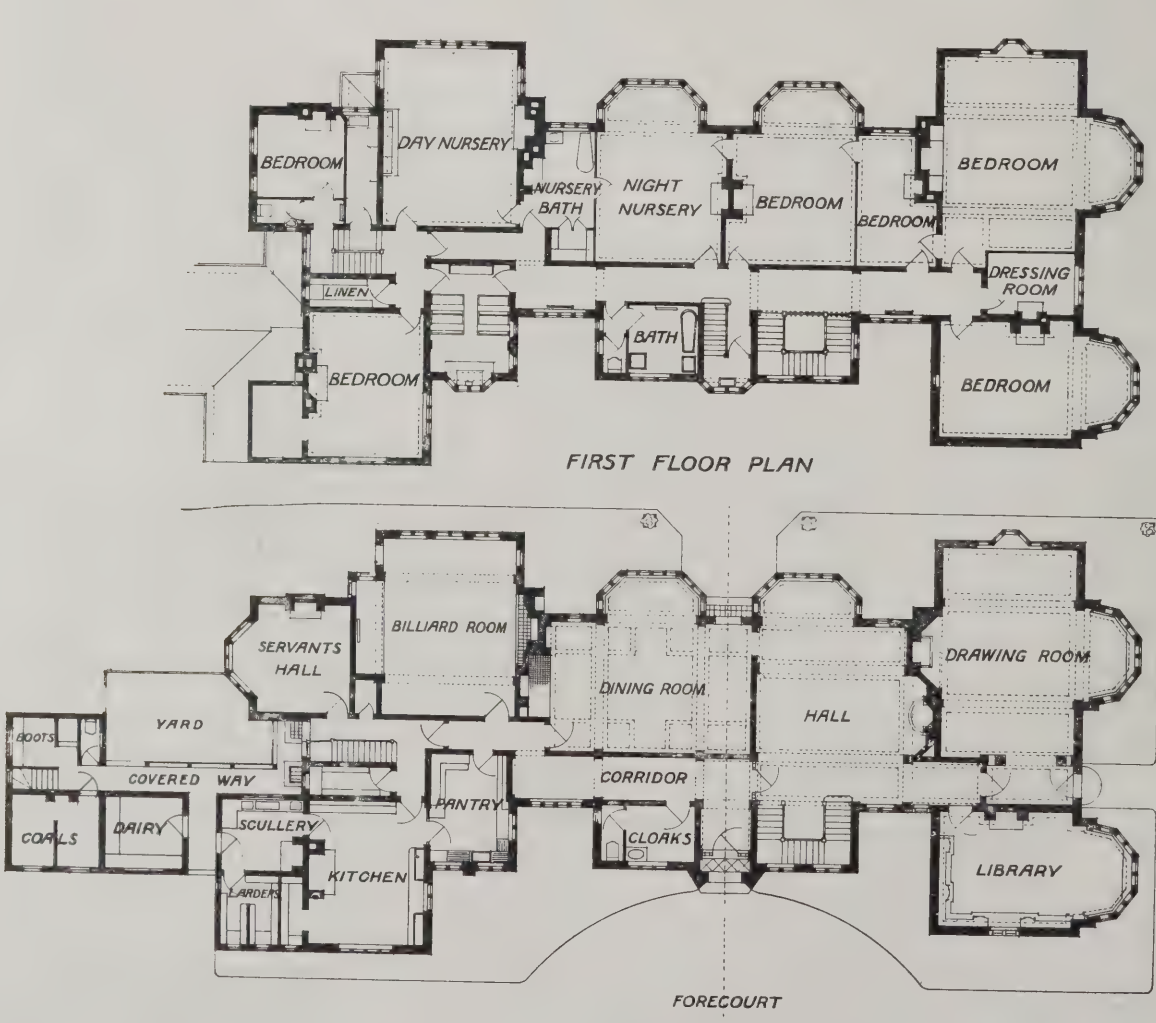
The death of Mr. T. J. Bailey is announced. Mr. Bailey as architect to the late London School Board, and more recently as Education Architect to the London County Council, had charge of the design and erection of the Elementary Schools of London for a long period. His work became so well known that he was regarded as one of the foremost English authorities on this class of building. His connection with the London County Council was severed at the end of last year, when he retired on a pension, and when the architectural and educational work he had done was referred to in terms of high praise by those who were best able to appreciate its value. At the meeting of the Education Committee last week the chairman referred in sympathetic terms to the death of Mr. T. J. Bailey. They all knew, he said, how hard Mr. Bailey had worked, and the great personal interest he had taken in all that related to his department, and it was to be feared that devotion to duty had tended to prevent him from enjoying his retirement.

Greenock's Grievance.

The disdain of the Woolwich workmen for the housing conditions at Greenock has naturally provoked indignation on the part of the authorities and inhabitants of that town. Greenock has a lady assistant whose special duty it is to visit the houses in the lower localities and report upon their condition. During February of this year Miss Anderson—the official referred to—visited 211 houses. Of these 7 were found in a dirty state, and were placed in charge of the sanitary authorities for immediate cleansing. In March the houses visited were 186, and the dirty numbered 4. In April the figures were 82, and 4 were found dirty, and in May no fewer than 466 houses were under visitation and only 12 were in a dirty condition, and these were put right without delay.

In the view of Greenock people, the allegations issuing from Woolwich are all the more regrettable as well as painful to the community in view of the special efforts made by the Corporation in the interests of public health during the past three or four decades. Through the agency of the Improvement Trust the worst portions of the central lower town were almost entirely razed to the ground, and commodious tenements suited to the working classes erected. At the present moment the Corporation is proprietor of about 500 houses in this very neighbourhood, and these houses are under the strict surveillance not only of the factor but of officials of the Sanitary and Public Health Departments.

There has been a curious sequel to the Woolwich protest. A poll has been taken of the employees in the torpedo factory of the Royal Arsenal at Woolwich on the proposal as to whether or not, if the Admiralty did not agree that their transfers to the new torpedo factory at Greenock should never exceed the housing accommodation reported by the men's local committee to be available, the men should *en masse* refuse to



KNAPPE CROSS, EXMOUTH, DEVON: PLANS. W. H. ANSELL, A.R.I.B.A., ARCHITECT.



The large hall is the central feature of the house, the principal rooms opening from it.

KNAPPE CROSS, EXMOUTH, DEVON: THE STAIRCASE. W. H. ANSELL, A.R.I.B.A., ARCHITECT.

be transferred. The voting resulted as follows:—For the proposal, 69; against, 155. Some 300 men refused to vote at all.

Mr. Lowe, the men's secretary, interviewed by a press representative, said he could not account for the apathy of many of the workers unless it was that they feared dismissal from Government service by defiance, for it was being stated that if any workers refused to go north the Admiralty would engage other hands in Scotland at a lower rate of wages than those to be paid to the mechanics who will be transferred. Another factor which probably told against a solid vote against transference was the refusal of the various men's societies to support them in their agitation, because they were being paid above the standard rate of wages.

Aberdeen Statuary.

The argumentativeness of the Scots has found fresh fuel to feed its undying flame. A discussion as to the most suitable site for the Usher Hall went on for years, and for aught we know is still going on. It gave Edinburgh an interminable topic. It is now the turn of Aberdeen. Already there has been a considerable amount of correspondence with reference to the proposed statue to King Edward. All are agreed as to the desirability of the statue, but a dispute has already arisen as to where it should be put. One correspondent suggests that, Aberdeen being badly in need of a quiet street, such a street should be formed in order to accommodate the statue; which is irresistibly reminiscent of the alleged Scottish feat of building a barrel to fit a bung. The same correspondent, further, and perhaps more feasibly, advises that it would be a pity to spend £1,500 to £2,000 on a statue placed so high that nobody could see it without an effort that few would care to make. "The statue of Wallace," he writes, "presents itself against the sky, and people do look at it; but as for the other statues in Aberdeen, not one in a thousand looks at them, because the heads are so far above the ordinary human eye. If the statue is to be seen and admired," he contends, "it must not exceed 8ft. in height above the ground." Another correspondent would like to see all the statues put together in one spot—Union Terrace. A third correspondent suggests four suitable sites for the one statue; which seems to complicate the controversy. If this discussion is to be protracted as long as that referring to Usher Hall, the Aberdeen editors would be wise to insist on the rule of one man one site. The contention that the statue is to be of local granite will probably meet with inconsiderable opposition.

Art and Building.

Mr. C. B. Barber, Chairman of the West Yorkshire Branch of the Association of Teachers in Technical Institutes, speaking at the Batley Technical School, expressed the view that in the various building courses arranged at the different technical schools in the country, art for recent years had been sadly neglected. The result was that building students of all kinds received a good training in the constructive and mathematical sides of the subject, but acquired little or no knowledge of the artistic side. He urged that this was a serious defect in the courses of instruction, and one that ought to be remedied. In the discussion which followed, Messrs. T. Leadley (Bradford), H. Hodgson, A.R.I.B.A. (Bradford), H. Rogers (Leeds), F. E. Drury (Halifax), J. Horsman, and R. B. Hall (Batley) took part, and the opinions generally expressed were favourable to the idea that art should have a more prominent place in building studies than at present. So say we, also. It is one of the drawbacks of the technical college building education that art has little or no place in its curriculum. Architecture is not "decorated construction," but is a fundamental art underlying the whole planning and conception of a building.

The Illumination of Interiors.

Some striking statistics were given by Professor J. T. Morris in his first lecture on the "Illumination of Interiors," at the East London College (University of London). Advancing as an axiom that it was desirable that a light should

be so placed that, while invisible itself, it illuminated the object to be seen, he passed to the question of fluctuations in daylight, and by means of figures and curves showed how the intensity of illumination varied during the afternoon and evening of an average bright day, June 7th being taken as an example. While the intensity was 3,500 candle ft. at 1.30 p.m., and after fluctuating was still 3,000 candle ft. at 4.30, yet the passing of a cloud at this time reduced it to 1,100. After sunset figures dropped as low as 0.02 candle ft., but the lighting of the arc lamps only brought the illumination up to 0.10 candle ft. As to the question how much of the light entered a room, an average figure was 0.002 of the external intensity. Figures ascertained by Mr. P. J. Waldram were quoted giving the ratio for several well-known buildings. It varied from about 0.002 to 0.008 on the desks of an elementary school down to 0.0001 in the booking hall of Charing Cross Station. The figures of course depended on the ratio of window area to floor area, and on such points as wall decoration, etc. The first of these was fixed by the London Building Act of 1904 at a minimum of one-tenth of the floor area, while the Board of Education considered one-fifth as the minimum for a class room. The failure of the eye to note the wide variations was due in part to the contraction and expansion of the area of the pupil of the eye. This point was explained and illustrated by experiments which had been carried out at the East London College.

CRITICS AND PROFESSOR LETHABY.

A correspondent has kindly forwarded a comment received by him concerning Professor Lethaby's recent paper at the R.I.B.A. on "The Architecture of Adventure," which has also attracted attention in America. This runs as follows:—

I think Lethaby is sound throughout, and as much so for all the Arts as for Architecture. I am sure, at any rate, that "the pursuit of flavours" accounts for the prevalence of second-rate poetry, and for the failure of poets apparently once first rate. I believe, too, that most poetry-lovers never get beyond an appreciation of flavours. I think, though, that Lethaby is too one-sided in his argument, and that Pite's and Statham's speeches were needed to keep things right, otherwise the doctrine would be hard and unfruitful. Anyhow, it is too rigid a doctrine to trust anyone with, save a poet at least. In the course of time it will be accepted, and used fruitfully; that will produce a generation of pedants and mathematicians who will tabulate all inspirations in formulæ and rules. I know it must be so; an age of ardour must always be succeeded by an age of law, to keep the foundations sure. We are declining through an age of small things, like the Stuart era after the Elizabethan, until we shall eventually be in for another eighteenth century again. All kinds of things show the tendency—even so admirable and adorable a book as Moore's "Art and Life," laying down doctrines often akin to Lethaby's, will in the end become the pedant's authority for imposing mechanical standards of perfection on all kinds of writing; they will construe Moore's standards of reason into a need for universal common sense.

It is hard to see the great Romantic time slipping away from us, and to foresee the man of the world coming to his own again. But these things must be: they are the oscillations that make for the stability of the eternal balance. One can endure even the thought of another eighteenth century, when one thinks of the heavenly "bust-up" that will follow it. . . My only grief is that I shall not be there, when that time comes, to play all the big drums and the cymbals.

Our correspondent adds that "the broad outlook which this extract suggests may be taken as an illustration of the value of the continuance, which you recently advocated, of the Essay Prize, as such, by the Royal Institute of British Architects."

Professor Lethaby (says the "American Architect") expresses the opinion that the greatest need of the present generation of architects is a thoroughly scientific frame of mind. It is only by the repeated application of scientific knowledge, he contends, in experimenting with their current problems that real architecture can be created and form and structure reunited as of old. Progress in architecture, he further maintains, is the result of experiment, as in the experimental sciences — an interesting way of regarding the art of building, though one with which architects, we surmise, would fail generally to agree unless the qualification were made that the experiments be always made with the ultimate end in view, namely, to create a work of art. There is, of course, always this essential difference between experimenting as a scientist understands the term, that is seeking for truth, and the meaning which the artist would gather therefrom, a seeking for expression, unity, beauty. In science there is but one solution for a given set of conditions, the correct solution, while in art there are many, and it is in the choice of that one which offers the most advantages and presents the fewest drawbacks that we recognise the great artist. No doubt Professor Lethaby assumes the habit of experimenting which he advises architects to cultivate in their work to be from the standpoint of the artist and not from that of the seeker after exact knowledge. That being so, we can see a peculiar significance in his attitude for much current architectural endeavour. Writers in the English press have of late remarked the effect on their architecture of the wave of French influence from the Paris Ecole des Beaux-Arts. This influence has unquestionably produced in England a number of architects whose supposedly logical view of architecture has a very insecure foundation in fact. The work of these men may be logical draughtsmanship, but it is not architecture. Such a conclusion, of course, in no way affects the world-renowned French school of art, to which even America owes much. Imitation is the sincerest form of flattery, but imitation is often blind, mistaking the shadow for the substance, the external aspect for the essence. As a counterbalancing influence to such an extreme view of the art of building usefully and beautifully, Professor Lethaby's views should be of the greatest value to the profession.

The celebrated French authority on matters architectural, Auguste Choisy, who recently died, gives us a clue in the conclusion of his history of architecture. He presents therein an idea very closely related to the suggestions of the English professor referred to above. M. Choisy, in concluding his text, which he carries to the beginning of the nineteenth century, mentions very prominently the introduction of cast and wrought iron into the art of building, and goes on to remark that he conceives his work as an historian to end at that point where the introduction of new materials has called into use æsthetic elements of the art hitherto unknown. Here we have an example of experimenting in architecture, and doubtless M. Choisy took the stand that the work of adventure in the new materials was yet so unformed that he had no just basis on which to form an estimate of its accomplishments.

Current architectural practice is teeming with new problems for experimentation of the right sort, but it is so much easier to take inspiration from some work on which time has placed the seal of approval that these experiments are unfortunately too seldom made. In adopting such an attitude towards their problems designers are neglecting the opportunity to achieve that artistic success for which the prototype is admired. Architecture cannot be made so; if our architecture is to be vital and enduring we must learn from the past all we can, but the problems of the present must be approached in a free, and, if one chooses so to call it, an experimental frame of mind.

It is only by a well-considered compromise between structure and form, with the fullest understanding of the conditions of their problems and a thorough knowledge of the characteristics and constitution of the materials used as a vehicle of artistic expression, that modern architects will achieve meritorious results. It is of little use to argue whether form should follow structure or structure form; the effect is the paramount issue in every art.

NEWS IN BRIEF.

The Old Bell Inn, in Pall Mall, which is about to be demolished, is old enough to be associated, more or less apocryphally, no doubt, with legends of Nell Gwynn.

* * *

Garrick's Villa, Hampton-on-Thames, was put up for auction last week, but bought in at £10,000. The island, called Garrick's Eyot, facing the riverside lawn of the house, forms part of the property, which extends to 11 acres. Garrick bought the property in 1754, and the house was altered and improved by Robert Adam. Among the treasures are marble mantelpieces, and classical medallions by Bentley and Wedgwood have often been described.

* * *

Mr. M. H. Holding, A.R.I.B.A., died at Northampton recently in his 63rd year. Mr. Holding was articled to Mr. Buckridge, and on that gentleman's death, to the late John L. Pearson. It is not surprising therefore that the bulk of his practice, commenced at Northampton in 1877, was in ecclesiastical work. Among the large number of churches designed by him may be mentioned St. Crispin's, St. Mary's (Far Cotton), St. Paul's, St. Matthew's, Christ Church, and Holy Trinity. In addition, he restored or enlarged, amongst others, the following churches:—Great Brington, for Lord Spencer; Wicken, for Lord Penrhyn; Ecton, for General Sotheby; Weston Favel, Harpole, Marston Trussell, the chantry of Blisworth Church, Gayton Church and tower, Bugbrooke, Boughton, Farnborough (Hants), Quinton, Helidon, Mears Ashby, Kingsthorpe, Shutlanger, Christ Church (Lichfield), St. Edmund's (Northampton), Upton, Abington, Brixworth, St. James's (Northampton), and Olney. Mr. Holding was architect for the addition to the Northampton Town Hall, the older portion of which is a fine treatment of French Gothic.

* * *

At the annual meeting of the governors of the Royal National Sanatorium, held at the Westminster Palace Hotel last week, the most important business before the meeting was the consideration of a proposal by the committee to remove the institution to a new and larger site. It was estimated that the erection of a new sanatorium on a sufficiently commodious site would cost at least £30,000. This would include land on which patients could be set to agricultural labour, as well as workshops for indoor employment.

* * *

The current issue of the "Journal of the Royal Institute of British Architects" publishes the names of the first batch of "Licentiates R.I.B.A." elected under the new charter and by-laws. There are 67 altogether, and they include such names as Felix Clay, architect to the Board of Education; J.D. Coleridge; Allan George, son of the President R.I.B.A.; C. H. and E. G. Heathcote, of Manchester; and G. B. Robertson, President of the New South Wales Institute of Architects, etc.

* * *

The twenty-ninth annual meeting of the Sanitary Assurance Association was held on June 10th, when the annual report was adopted, and Mr. Walter Butler, M.Inst. C.E., re-elected President. Reference was made to the late Professor George Aitchison, a member of the original Executive Council of the Association, whose death was recorded with regret. Up to his death Professor Aitchison remained a member of the Honorary Council. The Association has accepted an invitation to be represented at the International Congress of Social Insurances, to be held at the Hague in September next.

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The municipal authorities at Savona, Italy, have decided to expend £312,000 in improving the port. The improvements will consist chiefly of a new breakwater 1,575ft. long and a new quay for the landing of general merchandise.

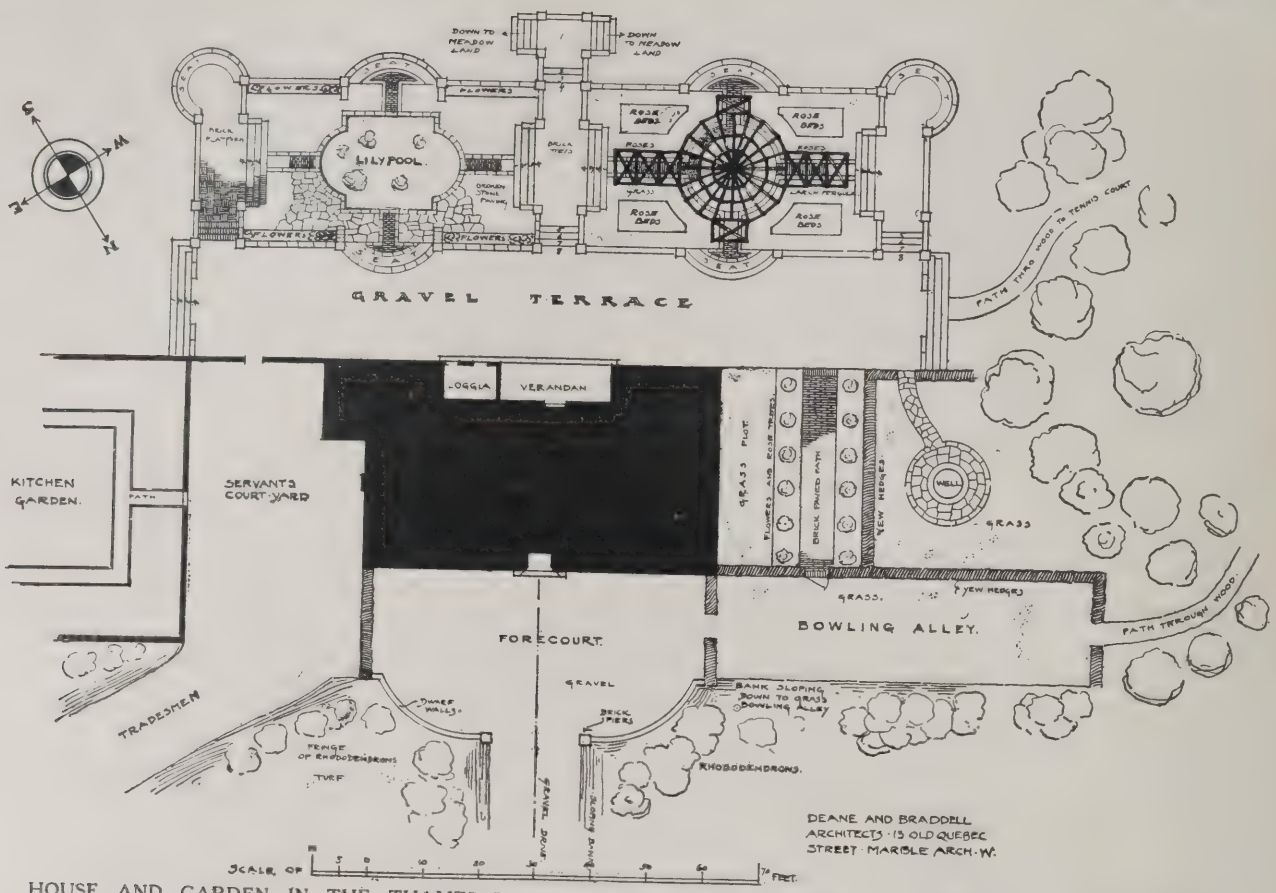
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The L.G.B. has just held or is about to hold enquiries into proposed expenditure by public bodies as follows:—Water Supply: Accrington District Gas and Water Board, £8,226 (June 21st). Electricity Undertaking: Norwich City Council, £17,783 (June 21st). Street Improvements, etc.: Runcorn Urban District Council, £3,500 (June 23rd); Southgate Urban District Council, £2,530 (June 27th); Hendon Urban District Council, £2,003 (June 24th); Ipswich Borough Council, £1,500 (June 21st). Sewerage, etc.: Kempton Urban District Council, £16,200 (June 21st); Epping Rural District Council, for North Weald Bassett sewerage and sewage disposal, no amount stated (June 23rd); Hendon Urban District Council, £9,443 (June 24th); Basingstoke Borough Council, £2,200 for refuse destructor (June 30th); Deptford Borough Council, £2,803 (June 23rd); Accrington and Church Outfall Sewerage Board, £28,000 (June 23rd); Wakefield City Council, £1,772 (June 21st). Various: Berkshire



HOUSE AND GARDEN IN THE THAMES VALLEY. DEANE AND BRADDELL, ARCHITECTS.

This house is designed for a retired civil servant, and two rooms on the first floor are set aside for the use of his sister. The house is to be situated on the summit of a hill which gently slopes away from the south front. The roof is to be covered with hand-made sand-faced tiles of a dark brown tone. The bricks used are to be 9 in. by 2 in. Dutch bricks.



HOUSE AND GARDEN IN THE THAMES VALLEY; BLOCK PLAN. DEANE AND BRADDELL, ARCHITECTS.

The billiard-room is panelled in oak, and has a painted wood ceiling, and a large red brick fireplace in the ingle. In addition to the accommodation shown, there are three bedrooms and a studio in the attics. The garden was also designed by the architects.

County Council, £19,276 for Council offices (June 21st); Halifax Borough Council, £2,045 for police station (June 21st); Leyton Urban District Council, for underground convenience, £1,725 (June 21st).

* * *

The designs of Mr. J. W. Winter, architect, of St. Peter's Close, Sheffield, for the erection of a new church and schools for the trustees of the Primitive Methodist Church at South Elmsall, near Doncaster, have been accepted. His designs for a school church at Kinsley were also adopted.

* * *

The Church of St. Nicholas, Deptford, has been condemned as unsafe, and an effort is to be made to raise £5,000 to carry out the needful repairs to the fabric. The church dates back to 1180, but the present structure was built about 1697. The tower has been restored within recent years. Sir Francis Drake was a worshipper at St. Nicholas.

* * *

At the recent meeting of the Palestine Exploration Fund it was announced by Mr. J. D. Crace, the hon. secretary, that the Turkish Government had issued the official permit to excavate at Ain-es-Shems, the site of "Beth-Shemesh" of the Bible. Beth-Shemesh occupied an important strategical position, commanding the valley—the Vale of Sorek—which formed the highway then, as it did now the railway route, from the coast to Jerusalem. The work of excavation had been entrusted to Dr. Duncan Mackenzie, who regarded the site as a very promising one for examination.

* * *

The Corporation of Torquay has accepted the tender of Messrs. R. Wilkins and Sons, of Bristol, at £28,869, for the erection of a new Town Hall and Municipal offices, subject to a loan being sanctioned.

An enquiry has been held by the Local Government Board into an application of the Normanton U.D. Council for a loan of £8,250, to build houses for the working classes.

* * *

A preliminary circular has been sent out by Bishop Ellis with a view to elicit support to a proposal to build a cathedral church at Aberdeen, for the diocese of Aberdeen and Orkney. When Liverpool Cathedral is opened, the Aberdeen and Orkney diocese will be the only one in the British Isles without a cathedral.

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Recently work has been going on at Balmerino Abbey for the preservation of the existing ruins. The work has been carried out by the Earl of Moray, on the advice and under the superintendence of Mr. F. W. Deas, architect, Edinburgh.

* * *

Messrs. Hayward and Maynard, the architects of the Little Theatre, have written to a daily paper complaining that the published details of this new venture have given no credit to them, as architects, for the design and decoration, or to their client, Mr. G. J. Drummond, who is the freeholder of the premises, and is paying for the work. Messrs. Hayward and Maynard also correct the report that there were any Adam chimneypieces or other antiques in the old building. Any that will be found there when the building is opened will form part of the architects' scheme of decoration. To which we might add that it is by no means unusual, however, for the daily Press to ignore entirely the architects of buildings to which they devote lengthy and appreciative criticisms.

* * *

At a special meeting of the Worcestershire County Council it was unanimously decided to oppose the Bill for carrying into effect the scheme sanctioned by the Local Government Board for the extension of the boundaries of Birmingham by including large areas in Worcestershire.

* * *

In the House of Commons last week, Mr. Gibbs asked the Prime Minister whether it was the intention of the Government to include the Unemployed Workmen Act, 1905, in the Expiring Laws Continuance Act this Session. Mr. Asquith replied: I am not as yet in a position to say whether the Bill referred to in the question will or will not be included in the Expiring Laws Continuance Act.

* * *

The crooked spire of St. John's Church, Gloucester, has been examined by Mr. W. Larkins, a London steeplejack, and found to be unsafe. Accordingly it is to be repaired, about 20ft. being removed and the spire left truncated.

* * *

The growth of Montreal during the past few years has been most remarkable, and "The Daily Star" of that city publishes an article prophesying a population of a million people within a period of ten years. Naturally this has led to a great building and real estate boom, which is the occasion of much rejoicing by our Canadian contemporary.

* * *

A considerable number of Temperance Billiard Halls have been and are to be started in the London suburbs. These are very popular. In some cases existing buildings are being acquired, but halls are to be built at Lewisham and Battersea on a scale not hitherto attempted, both as regards size and accommodation.

* * *

The arrangements for utilising the famous "island site" of the Strand for a French Palace of Arts and Industries are now complete, and building operations will be commenced shortly. The contract for the upholstering and furnishing has

been given to an English firm, Messrs. A. R. Dean and Sons, of Birmingham. Mme. Réjane will probably be the first tenant of the French theatre which will be a feature of the plan.

* * *

The restoration of the tower of St. Philip's, the cathedral church of Birmingham, has raised the question whether the edifice is not altogether inadequate to the needs of the diocese. "The Guardian" refers to the want of accommodation on numerous occasions of corporate worship.

* * *

The Edinburgh School Management Committee has come to the conclusion that schoolrooms for more than sixty children are too large, and have decided to make that figure the maximum in future; and they have also agreed that the sewing-room and the sewing mistress are no longer to be continued in the accommodation and staffing of the schools. A census of accommodation shows that there are 286 class-rooms for over 60, and 488 of 60 and under. It is proposed to expend about £6,000 in partitioning off or otherwise altering the large rooms to bring the accommodation within the new limit.

* * *

The Austrian Government has voted £250,000 a year for 10 years to create a fund for aiding local authorities and building associations to erect cheap and sanitary dwellings for wage earners, as a first step towards reducing the high rents payable by poor people for inadequate accommodation.

* * *

Mr. A. A. Hudson, acting as Board of Trade arbitrator in the dispute between the Nottingham Master Builders' Association and the Builders' Labourers' Society as to certain alterations in working conditions which had been demanded by the latter, issued his award on June 13th, in which it is determined that the rate of wages shall be 6½d. per hour; that the working hours shall be 51½ hours from March to October, 41½ from October to January, and 44 from January to March. It is provided that "labourers shall carry 9 common bricks, 8 facings, and 8 blues all round until the walls of any building are 30ft. from the ground level, and one brick less above that height. The labourer, when working on chimney shafts when they exceed 50ft. from the ground level, repairs to boiler seatings and flues, and to bakehouse ovens and bridge foundations and culverts when working on water, shall receive ½d. per hour extra." Doubtless this is all quite clear to the parties concerned, but the wording, especially that of the first sentence (which could be easily perverted to a rather ludicrous meaning) is somewhat turbid, probably as the result of being disturbed by several hands.

* * *

At the annual dinner of the International Society of Sculptors, Painters, and Gravers on Wednesday last, which was held at the Grafton Galleries, a portfolio of the members' work was presented to Mr. William Webb, the hon. solicitor and treasurer, as a mark of esteem for his counsel and help for many years.

* * *

In preaching at St. Margaret's, Lothbury, to business men on behalf of the building fund of St. Jude-on-the-Hill at the Hampstead Garden Suburb, Canon Scott-Holland said that the suburbs of London had been built up with ugly, shapeless, and meaningless blocks of buildings, and all because we never conceived the idea that society should be organic in thought and association. There was a sickening blight on the repetition of houses, alike in form and on a gridiron plan, which rose up in London suburbs with never a thought of drawing the people together. Monotony, instead of variety, was all round. Contrast it with a little town in the Cotswolds. There each house was of separate form, and in it were separate lives, but all the varied activities of the rich and poor contributed to the common stock of the community's life.

* * *

A petroleum syndicate are proposing to erect petrol tanks by the riverside in Townmead Road, Sands End. The syndicate previously proposed to erect tanks for 250,000 gallons in the neighbourhood of the Bishops Park, but the ground landlords —the Ecclesiastical Commissioners—refused to grant a lease. The Borough Council are not opposed to the second proposal, owing to the neighbourhood not being densely populated, and the scheme bringing another industry into the district.

* * *

It is proposed to commemorate the battle of Largs in 1267 by the erection of a suitable monument on the site of the battlefield. A local commitee has been formed under the presidency of the Earl of Glasgow to obtain funds for the purpose.

* * *

With regard to the proposed memorial at Birmingham, Mr. James A. Swan, architect, 56, Newhall Street, Birmingham, writes to the "Daily Post" to the effect that it would be hard to imagine a worse site than the balcony of the Council House, which has been suggested as a suitable site. The statue, he says, would require to be of colossal size in order to be seen, and the weight, if placed centrally, would be thrown on the weakest parts of the structure, which was never intended. A better proposal, he suggests, would be to remodel Victoria Square and find more suitable positions and setting for the present statues, now so badly placed, and also provide for future additions. The Victorian memorial should be the central feature of the square so named. The approach to the square, Mr. Swan thinks, should be the King Edward Memorial in the form of a triumphal arch entered from Colmore Row; it might form part of a general scheme for the improvement of the centre of the city. "The want of a far-sighted policy in these matters is the cause of such unsatisfactory results being attained. Future generations may have cause to thank the promoters of town planning, whose duty it should be to foster the artistic as well as the utilitarian spirit. Why is it that these committees do not appoint more men to advise them who have made a study of the subjects involved?"

* * *

At the meeting of the Concrete Institute at the Royal United Service Institute, Whitehall, on May 26th, when Mr. H. Kempton Dyson read the paper which is summarised in another portion of the present issue, the following were elected members: J. P. Nicoll (New Zealand), J. Landreth Smith (British West Indies), and W. E. R. Randall, jun. (Chatham).

* * *

The Institution of Gas Engineers has concluded its annual meeting (in London). The election of officers and members of the Council resulted as follows: President, Mr. Alexander Wilson, Glasgow; vice-president, Mr. J. Ferguson, Derby; members of the Council, Messrs. F. J. Bywater (Birmingham), F. W. Goodenough (Westminster), W. R. Herring (Edinburgh), and H. Lees (Hexham).

* * *

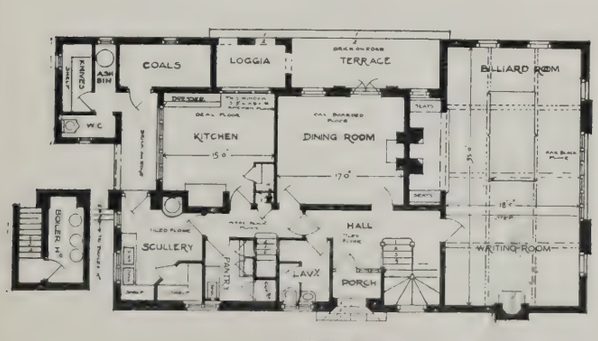
A bust of the late King, the gift of the English colony in Berlin, is to be placed in the vestibule of the Rathhaus, Prof. O. A. Young being the sculptor.—At Bombay a committee has been appointed to collect subscriptions and consider what form the memorial shall take.

* * *

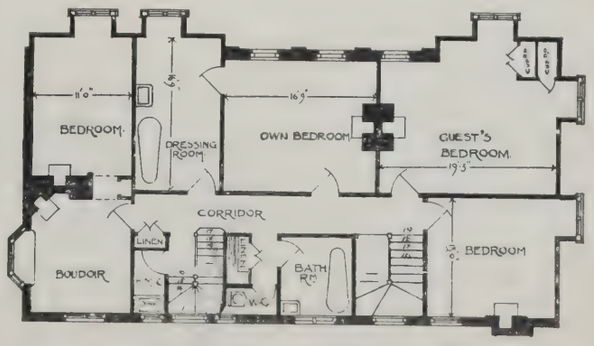
The Mayoress of Bournemouth has formally opened the new promenade constructed by the Corporation on the west side of the pier at Bournemouth, at a cost of over £6,000. Alderman H. Robson (chairman of the Beach Committee) stated that in recent years the Corporation had spent nearly £47,000 on improving the sea front.

* * *

The Chamber of Deputies has passed, with one slight modification, the proposal of the Parliamentary Commission for the



GROUND-PLAN



BEDROOM-PLAN

HOUSE IN THE THAMES VALLEY. DEANE AND BRADDELL, ARCHITECTS.

excavation of the area comprised within the Zona Monumentale. The Bill will be forthwith submitted to the Senate, and may be expected to become law next month. Thus archæologists will no longer have to fear the permanent burial of the important remains in that district.

* * *

The Committee of the House of Commons which deals with unopposed measures considered last Thursday the London County Council Money Bill, which Mr. Haward, comptroller to the Council, stated would give further borrowing powers totalling £2,378,398, the corresponding figure for last year being £3,473,000. One of the items of expenditure was £500,000 for the provision of schools under the Education Act. The Bill was allowed to proceed.

* * *

The members of the London County Council who will in August visit Stockholm as the guests of the Municipality, have been invited by the President of the Gothenberg Town Council to visit that city also. The Chairman of the Council has accepted the invitation.

* * *

Messrs. Dargue, Griffiths, and Co., Limited, have removed their London office to larger premises at 34, Queen Anne's Chambers, Westminster, and have appointed Mr. Wilson Aldwinckle their London representative.

OBITER DICTA.

Hard or Soft ?

The latest boom is in timber. A scarcity of wood is predicted, and many foolish persons, it is said, will shortly be losing their heads in this new form of speculation.—"*Punch.*"

"Savage Ruskin."

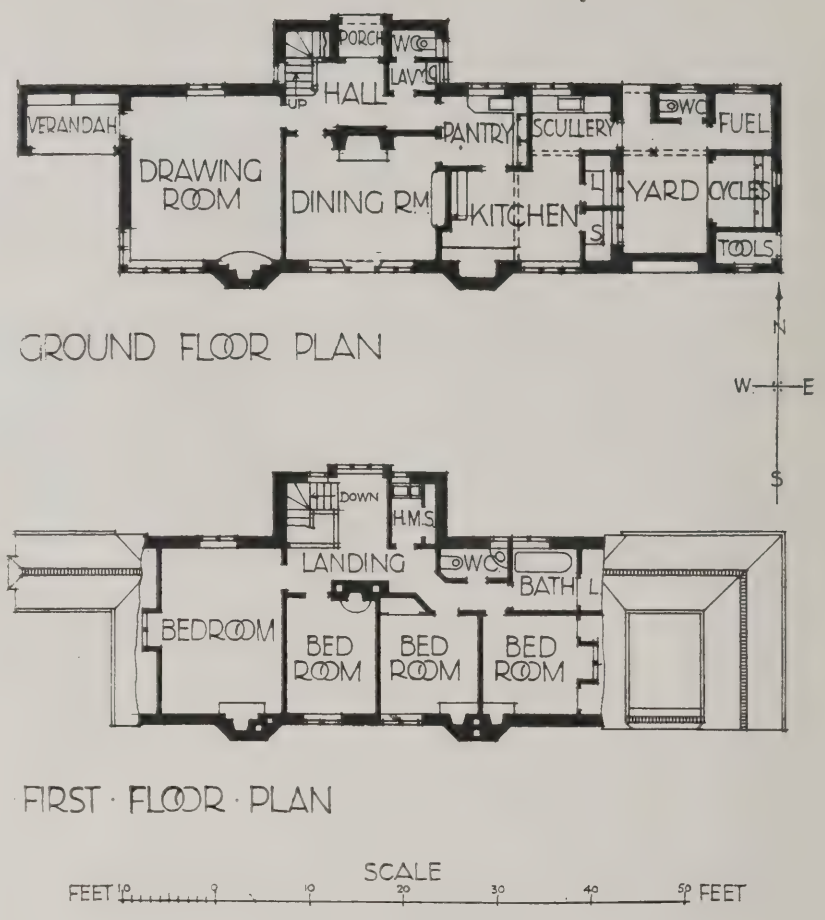
Ruskin was a great critic; he was looked upon in his day as a sort of—he was going to say a sort of god almighty—and alluding to this a writer in "Punch" once said:—

"We paint and paint, and no complaint,
And sell before it's dry.
Then savage Ruskin sticks his tusk in
And nobody will buy."

Great critics were scarce in those days, but now they read criticisms in every local paper, sometimes severe, sometimes complimentary, and all he hoped was that the artists would struggle against all the adverse criticisms of their works.—*Lord Tredegar at the opening of the annual exhibition of the South Wales Art Society, Cardiff.*

"Stains of Incense."

I would point out that a Japanese Uffizi is now on view at the White City, whose treasures are being shown in relays, the space being too small for a single comprehensive show. The name of Kanaoka has been added to the series of great names; to his master of the ninth century is ascribed an influence as great in his country as that of Giotto in Italy. Two lovely kakemonos of his school show the descent of a heavenly host bearing flowers and musical instruments, painted in gold, upon a background of the same rich intricacy of design. Let us forget for a moment the dimpled forms, the strange wreathed smiles of these exotic figures, and note the sinuous charm of the contours, the profound delicacy of thought and workmanship which characterise these paintings, now dim with age and the stains of incense.—*C. Ricketts in the "Morning Post."*



This house has been designed for a small square site of about half an acre, with the main road on the north running east and west. The grounds are level except for a slight fall to the south, the main rooms overlooking a small tennis lawn and formal garden, with pergola in front of the dining-room windows. Externally the house is to be built of white-washed brick with old hand-made tiles on the roof with half-round ridge tiling and bonnet-shaped hips. The upper part of the two chimney-stacks on south front to be of 2 in. dark-red hand-made bricks with ½ in. mortar joints. The exterior timber work is all to be in oak with construction pegs left projecting ⅜ in. The casements are to have plain stout wood bars filled in with crown glass.

PROPOSED SMALL HOUSE AT FARNHAM. B. W. BILLINGE, ARCHITECT.

A Vanishing Varnish.

"To cure damp walls, make a varnish of one part of shellac to two parts of naphtha, and cover the damp part thoroughly with it. This varnish has a disagreeable smell, but it soon wears off."—"*Leek Times.*" So that it comes rather expensive in the end.—"*Punch.*"

The Plague of Chaos.

The modern haphazard city is an eruption of brick and stone rather than the abiding place of a commonwealth. The plague of chaos is as strong abroad as here. The streets of a German or French suburb may possess a greater outward show of decency; but mechanical depression is stamped upon them, and behind the plaster and the paint there are too often overcrowding and insanitary conditions such as we in this country could not easily parallel. If one may judge from the movement of things in the cities and from the deliberations of the Congress, Continental opinion is following with regard to both the cottage dwelling and town planning along the lines which this country was the first to sketch. Indeed, they may very possibly outstrip us very soon, for Britain is a prolific exporter of ideas, the value of which other peoples appreciate more justly. It is a rivalry, of course, which can bring only good to the world. Wholesome houses and sanely built cities mean so much misery blotted out of the diary of humanity. But we should take care that it is a rivalry in which we maintain our place as pioneers and teachers.—"*Daily News*" *Leading Article.*

Popularization of Art.

The days are gone by when art was regarded as the luxury of the few. It has become a factor in democratic culture, and the democratisation of art has advanced by long strides in recent years. Time was when public art galleries were regarded merely as a means of giving the ordinary person the casual pleasure of gazing upon fine pictures, with the limited and uncertain hope that the process of gazing would tend to refinement and elevation. But we have gone beyond that stage. Education and business enterprise have made fine art ubiquitous; one cannot, if he would, escape it. It is true that the business enterprise which with one hand tries to popularise fine art, with the other hand palms off upon the public the base currency of the false and the tawdry, but with the gradual elevation of popular taste it may be hoped that these will in time lose their vogue. Art is part of the daily curriculum in the schools, and infants are taught to use the brush before they can handle the pen.—"*Western Mail.*"

Hiding Poor Architecture.

Badly designed houses can always be improved in appearance by a covering of vines. It is a matter of regret that the work of the turning lathe and fret-saw still holds its place in many American houses; but as long as we continue to decorate our dwellings with jigamarigs and porch-posts turned and carved into ugly, fantastic shapes, those who can discern their ugliness must content themselves by hiding it with the leaves and flowers of clinging vines.—"*The American Carpenter and Builder.*"

CORRESPONDENCE.

[The Editor declines responsibility for the statements made or opinions expressed by correspondents.]

Builders' Grievances.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Your article is doubtless an honest attempt at impartial treatment of a series of knotty questions. If I do not agree that you have been entirely successful in achieving impartiality, it is not a complete answer to say that I am biassed. There are none of us capable of changing at will our accustomed point of view; or, as Chesterton puts it, the most impartial of us are biassed. It must be so.

The "possible rather than the probable" grievances are, or have been, to every contractor real and actual. Not that they (all of them or, in fact, any of them) are suffered at the hands of all architects. There are architects against whom no reasonable contractor has ever been able to allege a grievance; but that fact makes it the more desirable to eliminate as far as possible the opportunity for their occurrence. When a builder is suffering from a manifest case of injustice at the hands of an architect who has not the courage to admit that he has made a mistake, it is small satisfaction to him to read in the (late) "Builders' Journal" that some of his grievances are "possible rather than probable." A grievance which has taken shape and is causing loss, perhaps ruin, may come upon a builder suddenly; it is almost always one that is "possible rather than probable." If it had been probable he would have been able to keep clear of it.

The question of the self-appointed architect arbitrator is just such a grievance. Differences or disputes between employer and contractor are more mythical than real. Under almost every building contract, in practice, the whole of the dealings are between contractor and architect; and a dispute or difference, though technically with the employer, is, as a matter of fact, in nine cases out of ten with the architect. It may be as to insufficient description in the quantities or specification, and consequent inadequate pricing—a very easy pitfall. How can the architect arbitrate on such a question where his own work is concerned, and his opinion formed before hearing the builder's argument? (See judgment of Justice Buckley.) But it seems to be hopeless to think of convincing even a reasonable opponent when we find you saying that an architect of the best type of ability and character would be justified in considering it an insult to suggest that his own opinion of his own work might be mistaken.

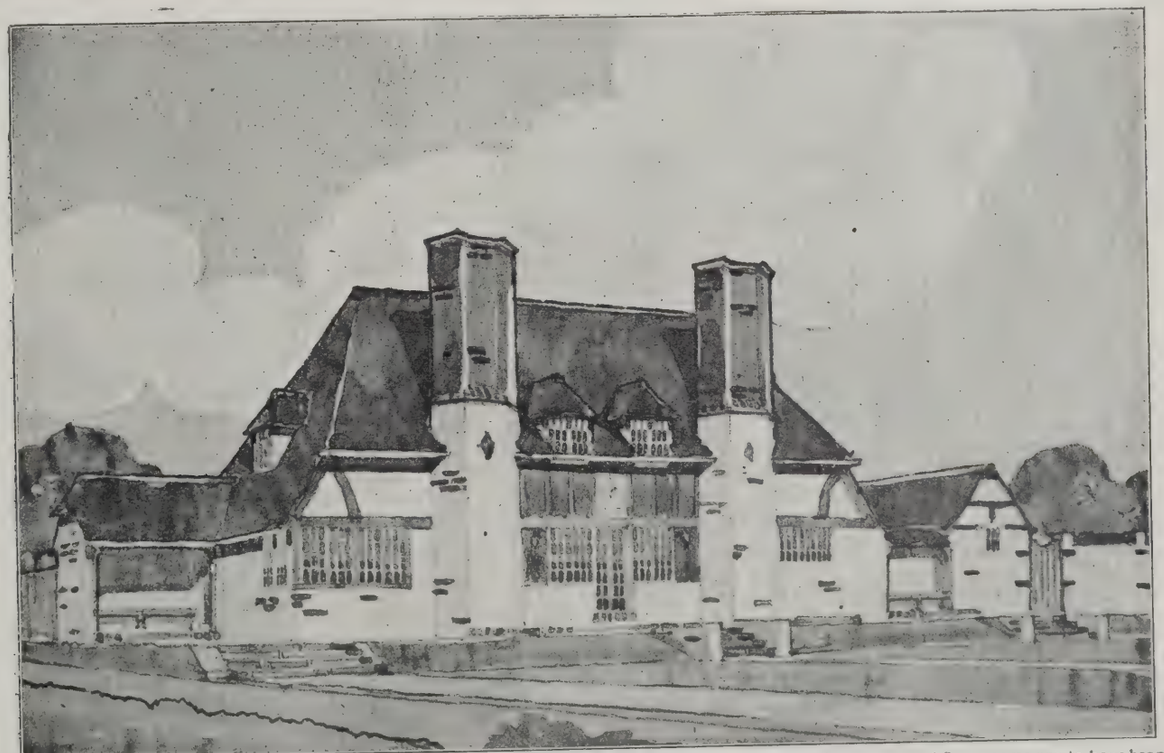
Whether reference to an arbitrator, who may take your view, is likely to be satisfactory, is a question open to difference of opinion. It may be that a more satisfactory solution would be the elimination of the arbitration clause, leaving free access to his Majesty's Courts of Law within the right even of a building contractor. But that is another story.

In my own experience, on only one or two occasions have I had reason to consider the "possible rather than probable" grievance which had already become actual. Almost all the architects for whom I have carried out work have been of the high-minded and capable type to which you have referred; but if, at any time, I have reason to ask that an opinion of theirs should be reviewed by one of their fellow-architects, because of the serious nature of the question in dispute, I trust that they will not consider my action in self-defence as an undeserved insult.

There are other points in your admirable article to which I should like to refer if space permitted, but I fear I have already too far trespassed to permit of insertion of this letter in your journal.

Blundellsands. R. ARTHUR COSTAIN.

SIR,—It is always interesting to read an independent criticism of our grievances, complaints, foibles, and fancies, if only because it enables us to "see ourselves as others see us," whether the poet's conclusion follows or not. I was therefore pleased to read your article of the 10th inst. on the above subject. Your remarks on the scarcity of good workmen in consequence of the decline of apprenticeship are no doubt generally true. But isn't it a satire on our political system to reflect that the same force which is used for limiting apprentices in the building trade is applied for exacting money from the ratepayers to support technical schools for the purpose of teaching youths a trade at which they may not be allowed to work? As to by-laws, you say builders are interested parties; therefore, their opinions, if taken, would not have the same weight as with those who are acting solely in the public interest. But I would remind you that by-laws are framed chiefly by officials, and while it is true that builders, by reason of their trade, are interested parties, it does not follow that they are less keenly alive to the public welfare than public officials. Builders contribute largely to the development and extension of our towns and cities. It is in consequence of this development and extension that by-laws require reconsideration and amendment from time to time, and it seems to me that representatives of the Building Trades Employers' Federation, not only on account of their trade, but for their experience and general knowledge of the requirements of the town in which they carry on their business—a business which is peculiarly adapted for affording such knowledge and experience



Internally the decoration is to be extremely simple. All the joinery being oak left the natural colour. The ceilings to ground-floor rooms are to have beams and 5 in. by 4 in. joists, all left rough and showing but plaster between. The floors are to be of narrow oak boards. All the rooms are to be white throughout (except the dining-room and hall) with picture rails level with the top of architraves of doors. The dining-room and hall are to be panelled up to height of doors, and all above left white. The fireplaces are to have "Heaped" fire interiors with specially designed brick tile surrounds to the architect's drawings. The outbuildings and larder, &c., are to have paving of 9 in. by 9 in. red quarries while the pergola and paths generally are to be York stone paving slabs. The eaves are to have plastered soffits, whitened. The guttering is to be painted green and all down pipes white.

PROPOSED SMALL HOUSE AT FARNHAM. B. W. BILLINGE, ARCHITECT.

—might with advantage be consulted by public bodies when reconsidering their by-laws. If the Government were proposing new Press laws, I presume you would not consider a committee, say of builders, could give them better assistance in framing such laws in the public interest than the same number of representatives of the Press. Your remarks on contract conditions are very plausibly written, but they scarcely confirm your claim to impartiality. The conclusion I draw from them is that you consider, apart from public officials, the "high-minded" architect may safely be trusted by both the builder and building owner to act justly and impartially in all matters that may arise between them and himself, and that, therefore, he would object to, and would resent, the introduction of an arbitration clause in his contracts—the Institute form notwithstanding. Why should he object, and resent? Would it offend his dignity? It surely would cast no suspicion on his integrity, *i.e.*, if by "high-minded" you mean "nobility of character," and not "haughty, arrogant in disposition." I should have thought the high-minded—in the best sense—architect would not resent an equitable agreement, but that he would rather welcome it. Laws for enforcing righteous dealing have no terrors for the just and upright man. "Against such there is no law." This subject ought not to be argued on personal considerations, but as a business transaction, and on that ground I fail to see a reasonable argument against the insertion of an arbitration clause in all contracts. Suppose you went to Tokenhouse Yard for the purpose of buying a property you were anxious to secure adjoining your business premises, and the auctioneer announced that the vendor's solicitor would interpret and determine all rights, easements, and every other question that might arise in connection with the transfer of the property, and that his decision would be final and without appeal, would you consider that a fair and businesslike condition? I think not. Yet you would be in a position similar to that in which many builders have found themselves under their contracts. Perhaps the most acute grievance touched upon in your article is that of builders' locked-up capital. You have previously done the trade some service under this heading. It is no uncommon experience to have a 15 per cent. or 20 per cent. balance left for twelve or eighteen months, or even longer in some cases. Exceptional circumstances may occasionally arise to delay settlements; but the practice is far too common to be thus accounted for. Surely it is only a reasonable business proposition to ask that after, say six months, all such balances should carry 5 per cent. interest. Competition in the building trade is exceedingly keen, and profits consequently so small that where large balances are outstanding so long, all the profits are swallowed in interest. It would be no injustice to the building owner, for he has the use of the money. It is a real injustice to the builder to keep him out of his money so long, and not infrequently results—as you have previously pointed out—in ruin to his business. In agitating for the removal of these grievances, the Federation are seeking no specially advantageous conditions. They are asking for no privileges. All they require are such fair and businesslike conditions and agreements from architects and engineers as they have reason to believe would be required of them if their positions were reversed.

JAS. WRIGHT.

Nottingham.

Swansea Cottage Exhibition.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In your issue of the 8th inst. there is a paragraph referring to an article in "The Cambrian" on the Swansea Cottage Exhibition, and as I have built cottages for the Exhibition I should be much obliged if you would grant me the opportunity to reply. It is suggested that considering the Corporation have spent £600 to £700 on preliminary expenses, and £4,000 in laying out roads, an exhibition of 27 cottages will be a very poor return. In the first place, this expenditure is not merely for the 27 cottages, but opens up land for a far greater number. In the second place, if £225 be taken as a low average of cost per cottage, the outlay represented by exhibitors is £6,075. There is no reason to suppose that 27 cottages will be the total extent of the exhibition, but it requires encouragement, and not the cold water of your informant.

GEORGE L. PEPLER.

Pall Mall East,
London, S.W.

Licentiate R.I.B.A.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I have read with surprise and regret the several letters by Associates of the R.I.B.A. in connection with the Institute's action in creating Licentiate members. I think I am right in believing that a very great proportion of the men the Council will admit will be architects of proved ability, and whose one object in becoming Licentiates will be to further the public interest in supporting the Institute and the profession in a way they are unable to do at present. At a time when reform in the architectural profession is so badly needed, it is surprising to find members who see fit to put stumbling-blocks in the way of the Council's action. The discussion as to whether Licentiates will place "Licentiate R.I.B.A." after their names is unworthy of Associates of the Royal Institute of British Architects. If the Council make a judicious selection (which I fully believe they will), they will secure men who do honour to an honourable profession, and secure also able coadjutors in their pre-eminent desire that architecture should convey its message to the minds of the people, and be a concrete monument to our day and generation, and be the educational factor which it ought to be. All ideas of personal advertisement and private gain, or petty jealousy, ought by Associates and members of the Institute to be subordinated to the greatest good.

A. N. W. HODGSON.

Windermere.

The Society of Architects' Travelling Studentship Design.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In the current issue of your paper you give a reproduction of the design for a golf club house which has been placed first in the competition promoted by the Society of Architects.

Any architect who plays golf will naturally take a great interest in the design and will study it critically with a view of seeing if it meets all the requirements of present-day golfers. As one who professes to golf a little, I should like to offer my opinion on the plan.

The lounge hall is ridiculously large for a club of this size, also badly lighted; it would be draughty and cold in winter, and golf is largely a winter game. The ladies' room should not connect directly with the gentlemen's lounge. The bar opening into a lounge is objectionable, and no first-class modern club should have this arrangement. The lavatory accommodation is poor: there are no urinals, nor is there a shower bath. The drying room should be separately heated by a stove, as the room is often wanted in summer to dry clothes, when the heating apparatus is not working. These are points which might be remedied in carrying out the work; but the worst feature is the dressing-room, which is far too small; at most 65 to 70 lockers could be arranged, unless placed in two tiers, which is most inconvenient. The one thing necessary in a good golf club house is a commodious dressing-room.

The plan looks very well on paper, but I fear that it would be found when erected to be a very inconvenient building.

I trust that my comments will be accepted in the spirit in which they are given.

T. TALIESIN REES.

Bath Street, Bath.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Admirers of old Bath will be glad to hear that so far the colonnades in Bath Street have not been touched. Whether they are to be allowed to remain permanently as they are we cannot tell; but as the contract is in Messrs. Waring's hands, it does not seem likely, judging from their buildings in Oxford Street, that, for no reason so far adduced, they will destroy so interesting or picturesque a feature of Bath. I am writing from Bath in the second half of June.

W. J. L.

LEGAL MATTERS.

Responsibility for Dry Rot.

The Court of Appeal, composed of Lords Justices Vaughan Williams, Fletcher Moulton, and Buckley, have had before them the case of the Guardians of the Poor for the parish of Leicester v. Trollope. The plaintiffs appealed from an order of Mr. Justice Bucknill in chambers directing that the action be referred to an official referee, and refusing to order that the question of the liability of the defendant in the action be heard first, and all other questions be reserved. There was also a cross notice of appeal by the defendants asking, in the event of the appeal succeeding, that the venue should be changed from Leicester Assizes to London.—Mr. Hugo Young, K.C., and Mr. A. Neilson appeared for the plaintiffs, and Mr. Ernest Pollock, K.C., and Mr. Ricketts for the defendant.—Mr. Hugo Young said that the question on appeal was the mode of trial, and also as to the place of trial. His submission was that the question of liability should be decided first, inasmuch as it was a case in which the question of damages (which might never have to be tried) could easily be separated from the question of liability. He submitted that the plaintiffs had the right to have the question of liability determined before a judge and jury first.—The nature of the action was this: On November 20th, 1900, a contract was entered into by the Leicester Guardians with a firm of architects, Messrs. Giles, Gough, and Trollope (of which the defendant is the only surviving partner), for the purpose of preparing plans for and supervising the erection of an infirmary at North Evington, and giving certificates in the ordinary way. In 1902 another contract was entered into with a firm of builders to carry out the work. The building was completed in 1905, and the architect gave the builders his final certificate. In 1908 it was discovered that dry

rot had developed in the flooring and skirting boards, and the consequence had been that the whole of the floors had to be taken up and a large amount of work done. The defendant did not dispute that dry rot had set in, but he said that the cause of it was that the builders, instead of laying concrete under the floors in the manner provided, had departed from the specification, and for their own convenience had put in wood pegs, struck down through the concrete, which pegs had been the means of bringing up damp, and causing dry rot to set in.—Mr. Pollock said he did not think the architect went as far as that.—Mr. Hugo Young referred to a letter written by the defendant, in which he declared his willingness to "join forces with the Board and its expert for the benefit of the Institution," and alleged that the damage had arisen in consequence of certain departures from the specification, in the method of laying the floors.—Lord Justice Vaughan Williams said that, judging from that letter, the dry rot was due to the action of the builders in not following out the specification, and prima facie the architect was responsible for not having seen that the builders did follow the specifications.—Mr. Hugo Young said that the position which the architect took up was this: He said that for the action of the clerk of the works he was not responsible. On the other hand, the plaintiffs said that the clerk of the works had no power to give any orders, and that the architect was responsible for supervising the work and seeing that the clerk of the works did his duty, and, further, for giving a final certificate without satisfying himself that the work was properly completed. What happened (said Mr. Young) was this: After the defects were discovered, the architect started to replace the flooring at his own cost; but he found it was an expensive matter, and he gave it up. Then he wanted the plaintiffs to bring an action against the builders, but this the plaintiffs declined to do, having regard to the fact that so long a time had elapsed, and that the builders were in possession of the architect's final certificate. It was in these circumstances that the plaintiffs brought the present action against the architect. Continuing, Mr. Hugo Young said that the defendant, when the matter was before Mr. Justice Bucknill, did not appear to oppose the question of liability being decided first. All he was anxious about was that the venue should be changed to London. He thought that he would be prejudiced by a trial at the Leicester Assizes, because the matter had been talked about a great deal locally, and had been the subject of comment in the newspapers. Lord Justice Vaughan Williams said it appeared to him that the architect might have a remedy over against the builders. If the question of liability was tried first, probably none of those details would be gone into which would give an answer or a probable answer to the question as to the architect's remedy over against the builder.—Mr. Hugo Young said he did not think that question arose in this case. There had been no third party notice given, and the pleadings had gone on.—Lord Justice Vaughan Williams observed that third party notice was only an alternative method.—Mr. Hugo Young submitted that the question of liability and the question of damages were two separate things, and that the plaintiffs, in order to try the first, ought not to be put to the expense of preparing evidence in the second. Furthermore, the work was not yet finished at the infirmary, but the action had to be brought owing to the Statute of Limitations.—Mr. Pollock, in reply to Lord Justice Moulton, said that he was there to support the order of the judge referring the whole case to the official referee. The defendant was counter-claiming against the Guardians in respect of the position of the clerk of the works, who was their servant.—Mr. Hugo Young said he was not disputing that there was a serious question to be tried—whether the architect or the clerk of the works was responsible—but he submitted that the question of liability ought to be decided first.—Lord Justice Vaughan Williams said that the question of liability might depend on what took place in the course of the contract.—Mr. Hugo Young said that he did not want to shut anything out from consideration that was necessary to decide the question of liability.—Lord Justice Moulton suggested that the parties should come to some arrangement, and after consultation between counsel, Mr. Hugo Young announced that they had agreed to the following order: "By consent the case to be tried before a judge alone in London; no question of amount to be tried in the first instance, and that to be tried in such way as the judge may direct; the costs of the summonses and this appeal to be costs in the case."—The Lords Justices intimated that they were of opinion that the parties had adopted the proper course.

Waiting for Wages.

In Glasgow Sheriff Small Debt Court, Sheriff Glegg heard an action for damages at the instance of James Adair and Arthur Gill, bricklayers, against Messrs. Dewar and Elliott, builders. Pursuers were in the employment of defenders, and on April 14th they were told there was no work ready for them to do. They obtained work elsewhere, and returned to get their wages. Having requested payment from a member of defenders' firm, they were told to get the usual line from the foreman on the job, which they did. They were then instructed to return on Saturday for payment, which having to do they thereby lost an hour's work at their new job, which was the sum sued for, 9d. each. Pursuers averred breach of trade practice and of the implied contract of service. Defenders' agent objected to the relevancy of pursuers' averments, on the ground that these averments only disclosed a few days' delay in paying the debt, and the only damage known to law for delay in payment was interest. Sheriff Glegg sustained this contention, and dismissed both actions.

A Costly Arbitration.

The claim of Messrs. S. E. Moss and Co., of Norwood, against the Lambeth Guardians, for £3,300 in respect of alterations at the Home for Aged Poor, Norwood, has at last been settled. The arbitrator, Mr. J. W. Stevens, architect, of New Bridge Street, held seventy sittings at the Green Dragon Hotel, Fleet Street. In his award, Mr. Stevens grants Messrs. Moss £1,221 7s. 3d. with costs against the guardians, which it is anticipated will be over £3,000. The arbitrator's fees amount to £745 10s. The case has lasted over three years.

Lincoln's Inn Fields Improvements.

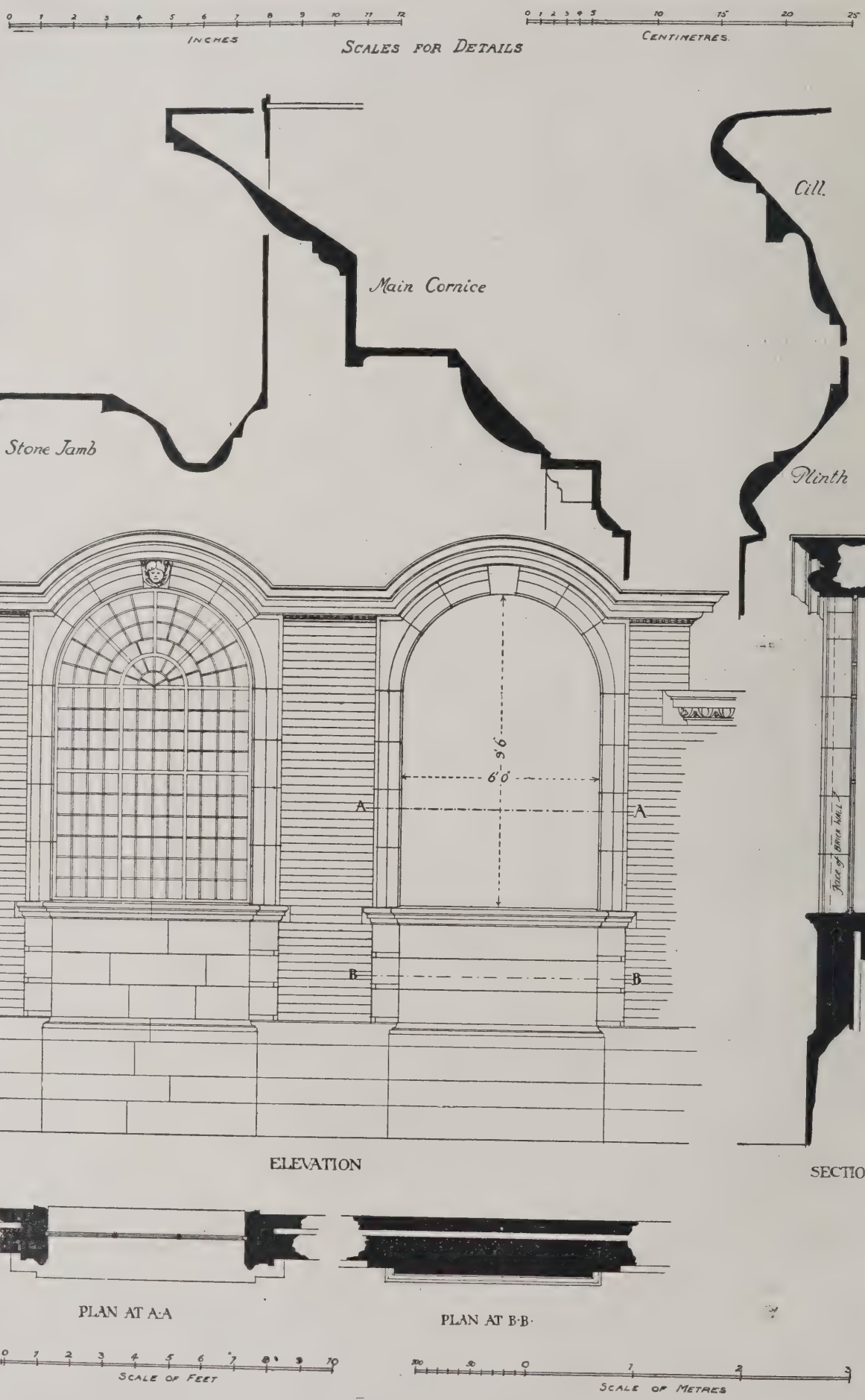
Before the House of Commons Committee, last week, considering the L.C.C. General Powers Bill, Sir F. Leyland-Barratt presiding, the Hon. J. G. Fitzgerald, K.C. (for the London County Council) dealt with an approved clause asking for powers to acquire certain premises in Lincoln's Inn Fields for street improvements. The Chairman of the Committee announced that it had been decided to grant the powers sought by four votes to one.

TOWN PLANNING.

R.I.B.A. Town-Planning Conference. The R.I.B.A. Town-Planning Conference which, on account of the death of his late Majesty, King Edward VII., has been postponed, will be held in October next, from the 10th to the 15th. The detailed programme will be issued as soon as possible.

The Board of Trade Watches Developments. It is understood that the Board of Trade is watching with considerable interest the development of town-planning in the provinces. Nottingham and Birmingham are believed to be the most advanced of the provincial boroughs so far as information in the possession of the Department goes. In the former town it is proposed that a new department under the supervision of the medical officer of health shall be established for dealing with town-planning. In Birmingham a scheme is already on foot, though it has not yet reached the stage at which it can be put before the Local Government Board. One of the schemes already submitted to the Board shows how desirable it is that the plans which are evolved shall deal with land under the control of one local authority. A scheme connected with the Knebworth Estate has only been dealt with because the landowner has carried through careful negotiations with the various local authorities. There are four or five of them concerned with different parts of the estate, and they never could have been satisfactorily dealt with had it not been the landowner's desire to facilitate matters. Birmingham has only been able to evolve its scheme because of recent extensions.

Workmen's Housing. A conference convened by the Workmen's National Housing Council was held on June 11th, at Essex Hall, Strand, London, to consider what benefits could be secured out of the Housing and Town Planning Act, 1909. Mr. Will Thorne, M.P., who presided, said that the housing problem, which was first tackled in 1851, was as deep-rooted as ever. One-fourth to one-fifth of the wages of the working classes went in house rent. Many were badly housed, and defective drains caused much sickness. It was estimated by sanitary authorities that if the people were properly housed something like 200,000 lives could be saved every year. Councillor Devenay (West Ham) proposed a resolution pledging the delegates to secure the formation of local committees for the purpose of putting the Housing Acts to the most effective use by (a) Securing that where the tenant of a house let after December 3rd, 1909, suffers injury owing to the house not being in a condition reasonably fit for human habitation, legal action shall be taken for damages. (b) Where unfit houses exist, compelling the landlords to put them into proper repair, or the local authority to close or demolish them at the landlord's expense. (c) Inducing the local authority, where necessary, to build additional houses (to be let at cost rents), or, where opportunity offers, to buy existing houses. (d) Watching the development of new building areas, so as to prevent the creation of new slums. One speaker complained of the way the working-classes were being turned out of districts, especially in Chelsea, where palatial buildings were being erected as the old leases of property expired. They were going to have districts for the rich and districts for the poor



DETAILS OF WINDOWS TO NEWS-ROOM, PUBLIC LIBRARY, KINGSTON-ON-THAMES, ALFRED COX, F.R.I.B.A., ARCHITECT.



These are two of the windows to the news-room. The dressings are of Portland stone, the roof over being covered with lead, the main roof with red tiles. The walls are faced with red Bracknell bricks. The window frames are of wrought iron, with leaded panes.

WINDOWS TO NEWS-ROOM, PUBLIC LIBRARY, KINGSTON-ON-THAMES. ALFRED COX, F.R.I.B.A., ARCHITECT.

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CONCRETE AND STEEL SECTION

(MONTHLY.)

Proportioning Concrete. There seems to be a good deal of uncertainty about the shrinkage in the bulk of the ingredients of Portland cement concrete on their being wetted, mixed, and rammed, although this is one of the first things one would think the practical constructor would investigate. There are certain rules in vogue among contractors for the determination of this shrinkage, while some go so far as to deny the existence of any in their practice. One favourite rule is to take the volume of the larger aggregate (the broken stones or gravel) and add one-sixth or one-seventh for increase in bulk due to the presence of the sand and the cement. Now, though this is somewhere near, it is not at all accurate. Those contractors who do not allow anything for shrinkage on the total volume of the aggregate are often quite right also, for their practice is with a certain aggregate, namely, Thames ballast, which has really too much sand in it to give the strongest concrete.

Shrinkage. Surprise is sometimes expressed by those who have heard of shrinkage in properly proportioned concrete at what to them seems the absurdly low figure at which London general building contractors estimate for such work, and at which they actually make profits; but if we work up the price as they do, we can quite see how it is done. Thus, for a mixture of 6 to 1 concrete we have, say :—

6 yards Thames ballast at 5s. = 30s.
1 ton Portland cement at 20s. = 20s.

Total 50s.

Dividing by 6 we obtain 8s. 4d. per yard for the concrete, add 2s. for labour and 10 per cent. for profit, we get the price out at 11s. 4d. per yard. If the aggregate is cheaper, then the price may be even less. On the other hand, better-quality concrete, in which the sand and stones are supplied separately, having been sifted, not only costs more for labour, but the materials are more expensive in first cost, and a certain proportion of their bulk is lost in the finished concrete by shrinkage.

Taylor and Thompson's Rule. We may now give the most approved rule for determining the bulk of the ingredients entering into concrete, namely, that of Messrs. Frederick W. Taylor, M.E., and Sanford E. Thompson, S.B., Assoc.M.Am.Soc. C.E., which is the result of comparing numerous tests with various admixtures and different materials. First it should be explained that the cement, sand, and stones will contain voids filled with air or water. These are variables, and must be eliminated from the formula; consequently we require to know the volume of each material exclusive of voids, which is called the absolute volume, and is obtained from dividing the total weight by the specific gravity of the material. Now, Taylor and Thompson's rule is as follows :

$$V = (1 + r)(c + s) + (1 + p)g$$

in which C, S, and G are the absolute volumes of cement, sand, and stone respectively, R the ratio of the absolute volume of the water plus the air entrained in the gauging to the absolute volume of cement plus sand, and P the ratio of the absolute volume of the stone particles plus the air voids due to imperfect mixing to the absolute volume of stone.

This rule may be again simplified for practical work by substituting average values for R and P, when we get

$$V = 1{\cdot}34\,(c+s) + 1{\cdot}08\,g.$$

Again substituting for C the number of pounds of cement divided by its specific gravity (which may be taken as 3.1) times the weight of a cubic foot of water (62.3 lbs.), we obtain the cement expressed in lbs.

Likewise we can express the sand and stone in measured volumes by substituting for the absolute volume the measured volume multiplied by the proportion of solid material contained in it. Thus, if C = the weight of the cement in lbs., SrG = volumes of loose sand and stone, per cubic yard of concrete, and V_1 V_2 = the absolute voids in the sand and stone we obtain.

Quantity of concrete made with C lbs. cement, S cubic yards of sand, and G cubic yards of stone or gravel =

$$\frac{1{\cdot}34}{3{\cdot}1 \times 62{\cdot}3}C + 13{\cdot}4\,(1 - v_1)S + 1{\cdot}08\,(1 = v_2)G$$

Again, assuming that 1 cubic foot of average loose moist sand contains 89 lbs. of dry sand, and its specific gravity dry is 2.65, we get by substitution :

$$\text{Quantity of Concrete} = {\cdot}00694C + 733S + 1{\cdot}08\,(1 - v_2)G$$

Percentage of Voids. The percentage of absolute voids for the stone can be obtained by merely taking a large pail, weighing it, pouring in 31 lbs. 2 ozs. of water, and marking the level of the surface which determines that up to this mark it contains ½ cubic foot of any material. Then (1) weigh the measure, (2) fill it to the mark with the material in the slate in which the percentage of voids is required, (3) weigh and deduct weight of measure calling nett weight of a cubic foot of the material M., (4) correct for contained moisture by taking an exact weight (about 10 lbs.), drying in an oven at 212 degs. F. at least, and calculating the percentage of moisture in terms of the weight of the original moist stone expressing the percentage as a decimal, p, (5) select the weight of a cubic foot of absolutely solid rock or stone from one of the aid-books of engineering formulæ, and call it R.

With this we can calculate the percentage of absolute voids from the formula :

$$\left(1 - \frac{M - Mp}{R}\right)100$$

We can still further simplify the formula if we like by taking the average voids in gravel as 40 per cent., and in broken stone as 45 per cent.

The foregoing affords an easy but very exact method of determining the exact amount of shrinkage, and having obtained the exact quantities of each material entering into a cubic yard of concrete we can easily estimate the cost. The labour requires to be estimated accordingly as a constant from experience, and in reference to the rates of wages in the locality and the difficulties of the work. A basis for determining this is that an average quantity of concrete mixed, wheeled 50 ft., and rammed, per man per day of 10 hours will be 2.2 cubic feet., but with a large quantity this may be increased to 3 cubic feet. For reinforced concrete allowance must be made for extra labour beyond the foregoing for difficulties, and more care required in ramming.

Alkali and Concrete. The "Proceedings of the American Society of Civil Engineers" contains a paper by Mr. George Gray Anderson on the effect of alkali on concrete. The author quotes Prof. Headden, who said : "I am convinced that the only question of alkali that we have resolves itself into one of drainage, and beyond this there is no alkali question for us," and then goes on to say that it would be too much to hope that the drainage around structures would as effectually solve the difficulty of alkali in contact with concrete, but it will aid in resisting the action of the agencies at operation. It is not possible, however, in all cases to provide such drainage as would be effective, and beyond all that—beyond the external application and the possible incorporation of an impervious coating in the mass itself—it seems to the writer that there must be added to it or in it, in some form, agencies which will counteract the effect of these apparently well-recognised chemical elements which bring destruction; and that must be left to the chemist.

The Multifarious uses of Cement. Cement is applied to a multitude of small uses nowadays; indeed, it is the small users who consume the greatest quantity of cement manufactured. All sorts of articles are now made of concrete—its uses in the country, on the farm and elsewhere, are multifarious, and it is at the same time applied to such strange uses as the construction of boats and coffins and telegraph poles. It is doubtful if we realize even now its vast possibilities. The lay user, if he may be so called, is chiefly responsible for discovering these new applications; for when he comes across any difficulty, he seems to fall back on Portland cement as a cure-all. One peculiar application in this way is the use of concrete for the repair of decayed tree trunks. The whole of the decayed wood is first removed from the cavity, then nails are driven in the sound wood to aid in getting a good bond, and concrete is poured in to fill the hole. If this hole is large, reinforcements of steel rods are introduced, so as to stiffen and support the trunk. In this way the entrance of moisture into the hole (and consequent decay) is prevented. If the hole is a small one, the bark usually grows over it in a short time, and no one would know from outward appearance that the tree had a core in part of concrete. Of course, this and other applications are merely those which follow from the first principle that Portland cement is a cheap and permanent matrix, but perhaps the most important and interesting features from our point of view are the applications in which certain properties peculiar to the material are responsible for such use. For instance, the properties of impermeability, protection of steel against corrosion, weakness in tension, and equality of

coefficients of expansion of steel and concrete, which lead to the construction of barges, punts, water pipes and sewers, tanks and watering troughs of reinforced concrete. Such may be deemed but variants on one or two fundamental principles long established, but at least they are interesting, for only of recent years have such principles been generally understood and recognised, and attention directed sufficiently to the subject by a number of people who out of their wider activities have evolved these newer applications.

A Novel Cement House. A house recently built in America has the entire exterior of cement, the mixing of the component parts being undertaken after a long study of the subject. The inside of the house was finished first. This done, the whole outside was clothed with wire screen stuff, such as is used for fencing chicken pens. This was firmly fastened. The studding was close, and when the wire was on it gave a rigid surface on sides, ends, and the slopes of the roof. Over this layer of wire was spread a first coat of cement. It was well pressed on, so that it oozed through the meshes of the wire for clinching hold. When this first coating was thoroughly set another and heavier one was spread over the surface. Shingle effects were fashioned on the gables, and on the roof the cement was shaped and lined, to give an appearance of slating. Then over the whole outside was laid a finishing veneer of cement paint. The house is impervious to heat or cold, or leak of rain; and, as its foundation is a solid ledge, it can defy the frost to wrestle with it. The cost of building is said to have been about the same as wooden construction would have been, but with cost of maintenance and repairs eliminated.

Concrete Bridges on Estate. In the matter of cost a concrete bridge stands somewhere between the wooden structure and the stone arch. The manifest advantages of concrete-steel arch bridges over other types is rapidly becoming recognised by engineers, especially on public works. Such bridges combine in a measure the strength and graceful lines of stone structure with the economy of the steel bridge. When once in place the cost of maintenance is practically nothing. There are no replacements of rusted parts and no painting. Their life is practically that of stone. They can be built to give as much water-way or head room as a steel bridge, and to stand as firm as a rock against freshets. They grow stronger with age. Home labour and home materials may be used in their construction, and withal a concrete bridge is a thing of beauty. The old way to bridge streams and gullies was with wooden structures—possibly a rustic affair of cedar or birch. High water frequently carried them away. The planting became rotten and unsafe. The whole structure needed replacement at least once in a dozen years, and for half of this time such a bridge was an unsightly blot on the landscape. The concrete-steel arch bridge is not for a decade, it is for a century. The man who builds it builds for his grandchildren as well as himself, just as he plants the oak tree.

Repairing a Concrete Chimney. The foundations of a chimney at a small arms factory at New Haven, U.S.A., formed part of a power house building, and rose to a height of 80ft. above the foundation. The greater part of the intermediate length was cylindrical, with walls 4in. thick. The chimney had developed longitudinal cracks of such a size as to allow the smoke to escape, while at other times air entered in such quantities as to render the draught insufficient. To remedy this a 5in. jacket of concrete, reinforced by 32 steel rods enclosed by horizontal hoops 6in. apart, has been placed over the chimney above the foundation, and this was accomplished on the cylindrical portion of the chimney by means of a form consisting of a cylinder of 16 gauge iron braced with angle iron. This cylinder was 5ft. high with an inside diameter of 5ft. 8in., and was composed of three sections divided vertically. A platform was also provided at the top of each section. The sections were then placed round the chimney and bolted together, and the complete form was suspended by ropes and blocks from the overhang of the chimney. A length of 5ft. of the chimney was then wrapped with asbestos felt to act as an expansion joint between the old and the new work, and concrete was filled into the space between the form and the chimney and closely tamped about the reinforcement. The following day the steel and asbestos were extended, and the form was taken apart and reassembled 4ft. 10in. higher up, leaving a lap of 2in. This process was repeated until the whole chimney had been repaired.

Earthquake Shock. We have often referred to the wonderful resistance shown by reinforced concrete structures to earthquake shock. The latest recorded instance is from Mexico City. A reinforced concrete building was in course of erection when it was subjected to the earthquake shock of June 30th, 1909. The second floor was less than two days old when the shock occurred. The projecting rods at the column points and in the outside wall swayed violently, as noted by the architect and the superintendent of construction, who were on the building when the second of two rather heavy shocks occurred. Similar to a number of structures built in Mexico City during the past few years, the entire building is carried on a heavy reinforced concrete raft, which reduced the pressure on the soil to about 800lbs. per sq. ft. Examination of the building after the shocks failed to disclose any cracks even in the green concrete.

RAPID BUILDING IN REINFORCED CONCRETE.

The facilities offered by reinforced concrete for expeditious and economical building construction are well illustrated by the tobacco manufactory nearing completion in City Road for the firm of Carreras and Marcianus Cigarettes, Ltd.

Although having a frontage to the main road of only about 90ft., the building extends back for the distance of from 200ft. to 250ft., being about 55ft. wide and having two wings, bringing the total width at each end up to about 70ft. The building covers an area of 11,395 sq. ft., or rather more than a quarter of an acre.

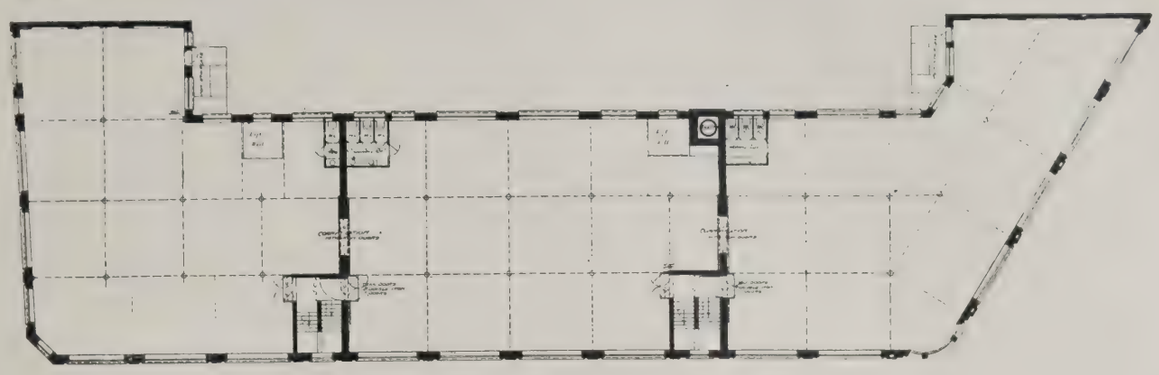
In addition to the basement, the structure includes four floors, and is covered by a flat roof protected by parapets and available for storage purposes or for use as a floor in case of future upward extensions. With the exception of the enclosing walls, the work is entirely of reinforced concrete, which has been applied to the construction of the floors and roof, all columns from basement upwards, all stairways and landings, two suspended van roads over the basement, and a flat roof over the boiler house.

After considering alternative projects, one representing ordinary steel and concrete construction, and the other reinforced concrete construction, the proprietors decided upon the latter in accordance with the recommendation of their architects, one reason being the lower cost of reinforced concrete, and another (of equal importance) the shorter time necessary for completion. Other incidental advantages carried by this decision are the superior rigidity of the building, its absolute resistance to fire, and the avoidance of frequent painting and maintenance charges inseparable from ordinary steelwork.

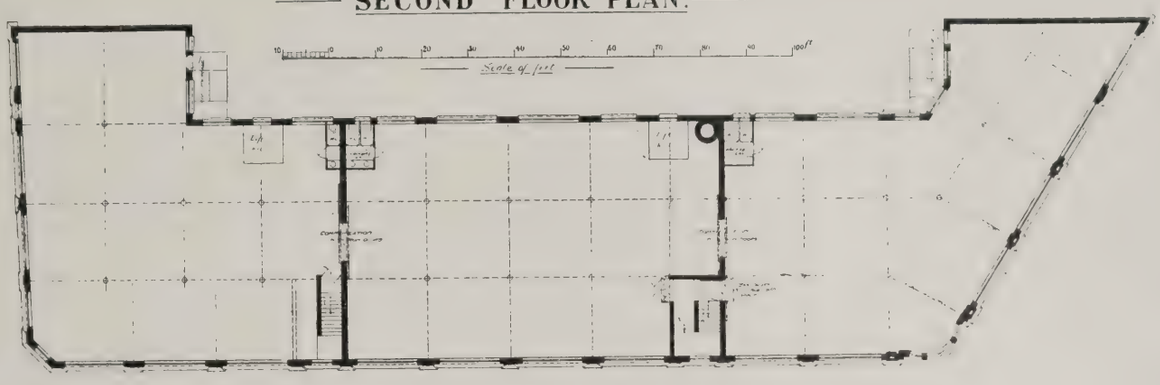
The party wall doors throughout the building were supplied by the Checkfire Door Co., and are their patent composite fire-resisting doors of steel and asbestos. In connection with this it is interesting to note that the fire insurance company allowed the openings in the party walls to be of greater area than usual, as these doors were to be used.



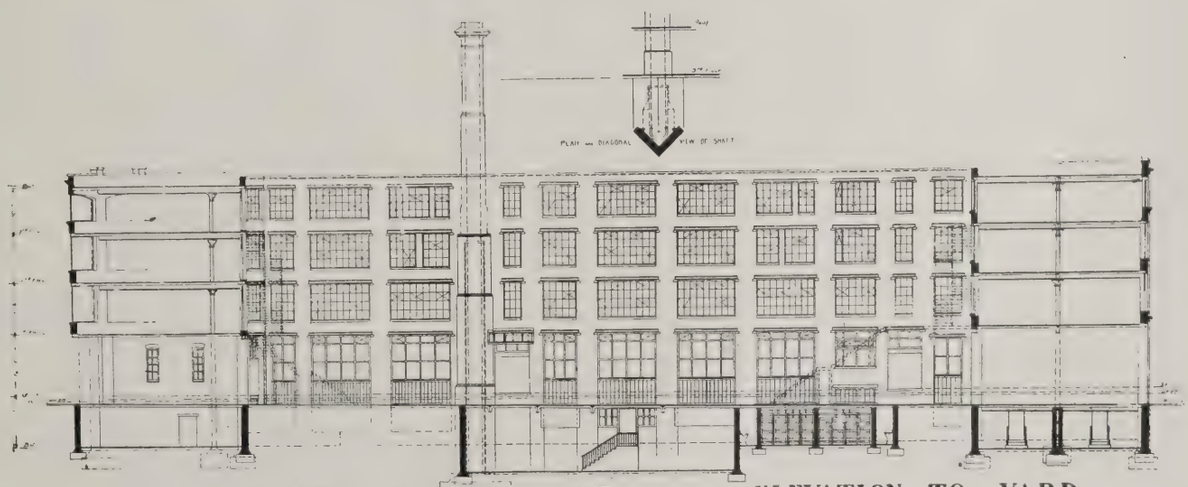
TOBACCO FACTORY IN REINFORCED CONCRETE, CITY ROAD, LONDON.
HOBDEN & PORRI, ARCHITECTS.



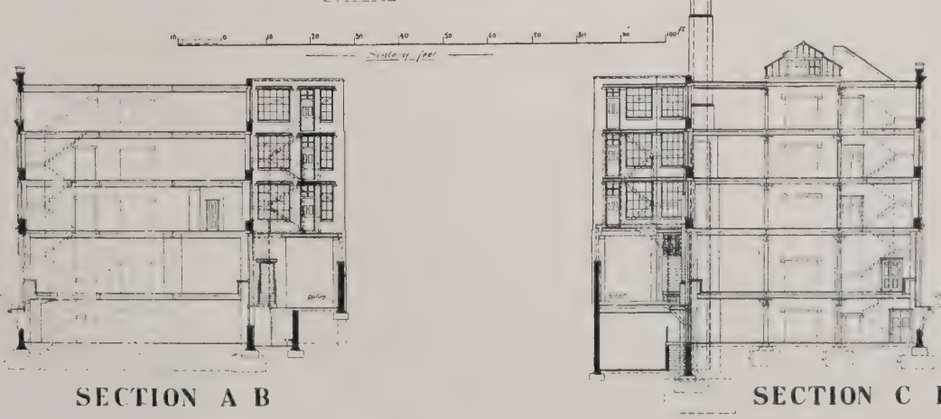
SECOND FLOOR PLAN.



THIRD FLOOR PLAN.



SECTION E F AND ELEVATION - TO - YARD.



SECTION A B SECTION C D

TOBACCO FACTORY IN REINFORCED CONCRETE, CITY ROAD, LONDON. HOBDEN AND PORRI, ARCHITECTS.

A good idea of the expeditious progress made by the contractors may be gathered from the statement that the timber moulds and centering for the basement columns and ground floor were commenced on January 3rd last, and that by March 15th the roof was completely finished.

As each storey includes about 11,200 sq. ft. of reinforced concrete flooring, in addition to twenty-one interior columns, two staircases, and two lift wells, the amount of work is very considerable, and its execution at the rate of 14 days per storey deserves special notice by architects and others interested in building operations.

The architects were Messrs. Hobden and Porri, of Finsbury Square, E.C.; the general building work having been executed by Mr. H. Kent, of Lewisham; and the reinforced concrete construction by Messrs. Holloway Bros. (London), Ltd.

WALLS AND ROOFS IN REINFORCED CONCRETE.

By FREDERICK RINGS, M.S.A.

Reinforced concrete walls offer many advantages. They are fire-resisting, burglar-proof, and easily and quickly erected, besides being light and considerably thinner than brick walls. Consequently, they offer a larger floor space. Furthermore, they are strong, and can be constructed to carry any load required, and they dispense with bressummers as they are self-supporting between piers or columns as the case may be—that is, they require a deep foundation at intervals only.

Where the appearance is to be studied, the concrete can be treated in many ways, to give a smooth or rough surface; or stone, tiles, or almost any other finish may be adopted. Door and window openings can be formed with wooden frames or channel irons, and it is advisable to fix the reinforcing rods securely to these frames.

Sound-proof and Weather-proof.

Where sound-proofing, or protection against heat and cold, is particularly required, it is usual to adopt two independent walls with a space between them. This space may remain hollow, or may be filled with cork, hot sand, or, where a single wall is adopted, a lining of some special felting can be used.

Reinforcement for Walls.

The ordinary reinforcement for walls consists of round or square rods, spaced horizontally and vertically some 1ft. 6ins. to 2ft. apart. Where only one set of rods is used, they are usually placed in the centre of the wall. If special bending moments, caused by earth or wind pressure, are to be dealt with, it is advisable to arrange for two sets of rods, one of them being placed as near the outer edge of the section as possible.

As regards thickness, 3in. is usually sufficient for ordinary purposes, and if the wall is plastered both sides in addition. For hollow walling a thickness of 2ins. for the inner and 3ins. for the outer wall is recommended, with a space of 3 to 6ins. between them; care being taken to tie the rods of the two walls together at intervals in both planes.

If the concrete walling butts on to a brick wall, a good joint is effected by letting the horizontal rods run into the brickwork for a distance of about 6ins., and in this case the horizontal rods are most economically arranged so as to occur in a line with the joints of the brickwork.

If it is desirable to relieve foundations between the supports or over openings or beams, the horizontal rods are often bent up at an inclination of about one-eighth of the span, and this method considerably increases the strength of the wall.

Special moments at particular points are easily resisted by the insertion of extra rods.

Boundary and Garden Walls.

For boundary and garden walls, reinforced concrete is also highly suitable. Walls in this material last longer than brick walls. The expense of repairs, such as pointing, etc., is done away with, while, given proper construction, settlements and settling over on one side are impossible. To resist wind pressure, I irons are spaced some 10 or 12ft. apart, and securely fixed in blocks of concrete. The stanchions receive narrow concrete casings as a protection against rust. The intervening spaces are then filled in with concrete walling made between shuttering or in large slabs, some 3in. thick, the reinforcement being placed in the centre, and the panels supporting themselves on the foundations of the stanchions.

Retaining Walls

must necessarily be calculated in every instance to resist the earth, water, or whatever other pressure is to be dealt with. The panels between the piers or ribs are considered as slabs and calculated accordingly, the earth-pressure taking the place of the floor-load, as in the case of an ordinary ceiling slab.

The accompanying drawings and details illustrate some open-shed buildings designed and executed by a well-known Continental firm. The dimensions have been translated into English measurement for better understanding, and the rods selected as near to English stock sizes as possible. It is particularly interesting to note the means adopted of tying the stanchions and roof principals together.

Reinforced Concrete Roofs.

Roofs in reinforced concrete have the great advantage of being fireproof. In many Continental countries roofs of timber are not allowed over workrooms of any description—a very wise precaution, which might with advantage be adopted in this country. Quite apart from the protection against fire, timber has not a great resistance, and can easily be destroyed by fungus, dry-rot, or damp.

Existing timber roofs may be protected against fire by forming concrete ceilings below. Iron roofs are very dangerous in case of fire. The various members of the trusses bend and lose their resistance and collapse, destroying everything below them. Reinforced concrete roofs are doubtless somewhat more expensive, but they offer more roof space, requiring supports at greater intervals only, and are certainly more sanitary. Particularly desirable are hollow roofs, the hollow space ensuring uniformity of temperature.

Outer Finish.

An important consideration is the outer finish. Climatic influences and constant change of temperature cause the concrete to crack; and although the material, if properly mixed, may be perfectly waterproof, this cannot be relied on, and the rooms may be very uncomfortable in consequence. To prevent surface cracks is admittedly very difficult, but as the cracks occur almost always immediately above the reinforcement, it seems advisable to choose a reinforcement of such small sectional area as to divide up the whole area to the greatest possible extent. Wire meshing or similar small pattern material should prove most satisfactory for the purpose, as the temperature cracks are likely to be so small in this case that they are barely visible, and are not large enough to let water through.

Protection Against Temperature.

To counteract the influence of temperature, the insertion of a thin layer of cork has proved very satisfactory. The cork is placed immediately on the concrete and covered with tiles or roofing felt. As aggregate for the concrete, coke breeze recommends itself, as it prevents condensation caused by heating the rooms in the roof during cold and frosty weather. It is highly advisable to form small holes directly below the roof surface to allow of constant ventilation and change of air, and thus prevent condensation. Roofing felt saturated with tar or asphalt is suitable for steep roofs. For mansard roofs, slates are often used. They may be nailed direct to the concrete within about eight days after construction. Metal of any description is unsuitable unless some special insulating material is placed between same and the concrete. Metal is a good conductor of heat, and consequently creates temperature stresses in the concrete, and cracks follow. Copper is the least objectionable metal, while zinc must never be used directly touching concrete, as the latter will quickly destroy it. A method very much in use for flat roofs on the Continent is to cover the whole surface with three layers of paper with a flexible watertight substance in between. The layers are separated from the concrete by the insertion of roofing felt. The whole is finally covered with sand or fine gravel, 3 or 4ins. thick. If the roof is very steep the concrete itself may be mixed sufficiently rich to be waterproof.

Calculations for Roofs.

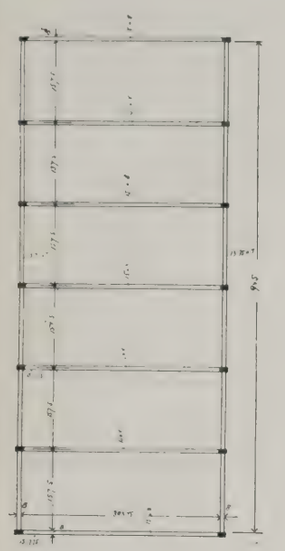
In calculating roofs it is usual to adopt the following loads: For inclinations from 0° to 15° the roof is considered as a horizontal slab exposed to a live load of 50 to 60lbs. per ft. super. For inclinations from 15° to 50° a vertical load is assumed for wind pressure, snow, etc., of 30 to 40lbs. per ft. super. For inclinations of 60° and more, the wind pressure should be taken at 20lbs. per ft. super.

CONCRETE ROOFS AS FIRE BARRIERS.

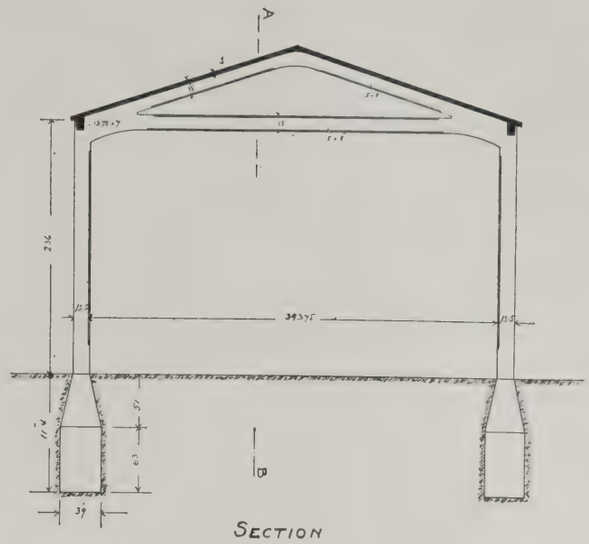
Combustible roofs are a menace to the safety of any community. Any roof that will not resist fire is about as desirable as a powder magazine. Insurance underwriters claim that the list of conflagrations annually credited to combustible roofs is almost as long as that of general fires due to unprotected window openings.

In this day of fireproof materials, the question of protecting the building and its contents by a substantial roof should not present any insurmountable difficulties. Flimsy roofs are menaces in at least three particulars: They allow a fire in the building to burst forth, giving it plenty of draught to complete the destruction of the building and contents; they present the weak spots in every city block, for they catch flying sparks and embers and ultimately burst into flame, while the original fire may have started blocks away; they offer no resistance to the falling walls of adjacent buildings.

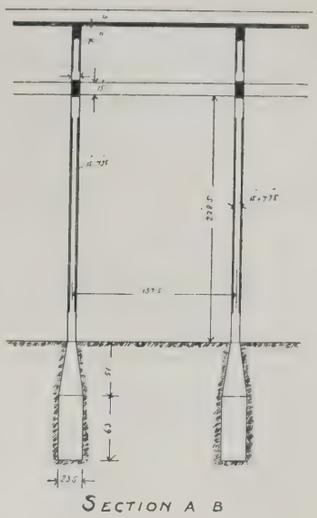
Roofs properly constructed and covered with concrete shingles or tile offer protection from outside fire risks. Reinforced concrete roofs imprison a fire in the building so roofed, protect the building from outside fires, and offer strong resistance to falling débris.



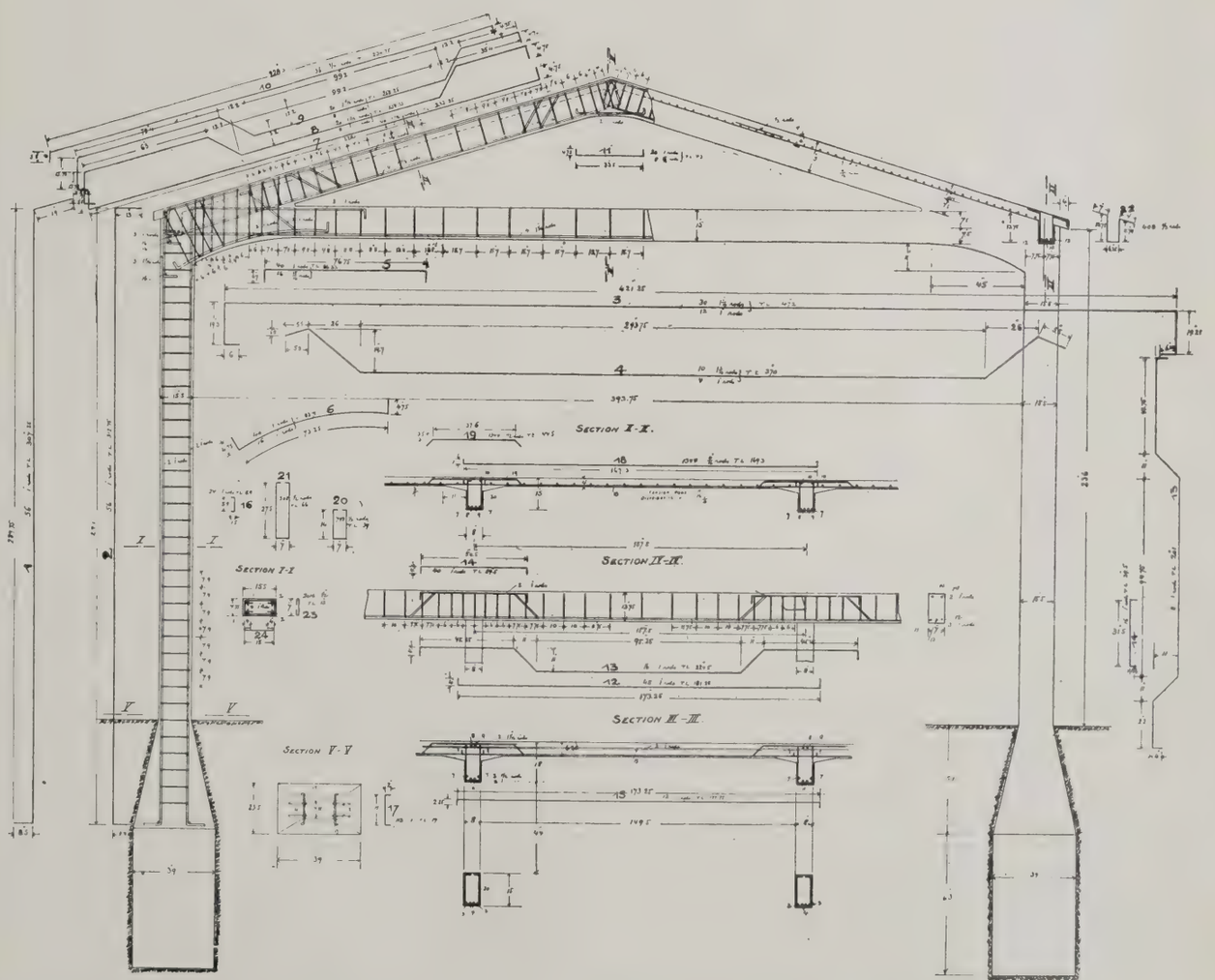
PLAN



SECTION



SECTION A B



WALLS AND ROOFS IN REINFORCED CONCRETE. BY FREDERICK RINGS, M.S.A.

REINFORCED CONCRETE BINS.

By H. KEMPTON DYSON (Secretary, Concrete Institute).

[*At the tenth ordinary meeting of the Concrete Institute, which was held at the Royal United Service Institution, Whitehall, on May 26th, Prof. Henry Adams in the chair, Mr. H. Kempton Dyson, secretary of the Institute, read a paper on "Reinforced Concrete Bins," in which this adaptation of the material was usefully described; formulæ for various types of bins being stated, and a classification of the different forms being attempted. The author contended that for these uses the material is more economical than steel, the first cost being no more, while there is an important saving in the cost of upkeep.*]

The chairman said that the subject of the paper that evening was a very useful one. It was particularly interesting from the difficulty that surrounded the determination of the stresses, and, of course, upon the determination of the stresses the design must ultimately depend, so that they would all listen with considerable pleasure to the paper.

Mr. H. Kempton Dyson, Secretary of the Concrete Institute, then read his paper, of which we give a summary below:

Among the varied uses to which reinforced concrete is now put, the construction of bins for the storage of materials of various kinds, the author considered, took an important place. Reinforced bins had been constructed for holding grain, coal, cement, ore, broken stone, sand, and other materials. It seemed established now that not only did reinforced concrete possess in a supreme degree the qualities of fire-resistance and long life, in which respects it was superior to steel, which had been used largely for the construction of silos in preference to timber, but it originally cost no more and sometimes less than steel, while the cost of frequent painting and repairs was saved. Steel bins cost 50 to 100 per cent. more than timber bins of moderate size.

Classification of Bins.

Reinforced concrete bins were classified by the author into two main divisions: (1) those of large size without separate divisions and having relatively large area in respect to height; and (2) those of cellular construction, having compartments of rectangular, square, round, or hexagonal cross-section. The silos in both divisions were usually charged with materials from the top, either by direct dumping from railway wagons or carts, or by means of convoyers.

The first division chiefly became the problem of the retaining wall so far as design was concerned. The paper described some reinforced concrete bins of this type. Such bins are usually required to discharge material by gravitation, and they were most often built with bottoms sloping one way to two sides or to all sides, and delivering the material through side gates.

The second division entailed rather different mathematical analysis in the design, and the paper was chiefly concerned with the description of reinforced concrete bins of such cellular type, which likewise discharged their contents by gravitation, but generally, because of their shaft-like arrangement, were made to discharge the material directly under them from their lowest point through a centric or eccentric hole, and occasionally through side openings. These cellular silos might be again subdivided into (1) suspension bunkers; (2) circular bins; and (3) hopper bins. The first were constructed by suspending, from two side girders, the bottom, which was curved to assume the form of the equilibrium polygon, the stresses in the containing surface of a truly formed suspension bunker thus being purely tensile ones. In this connection it might be remarked that some suspension bunkers had been built of steel plates with a reinforced concrete lining. The circular bins (the second subdivision) were constructed with spherical or conical bottoms, and the stresses were circumferential tension and vertical compression in the cylindrical sides, and tangential and circumferential tension in the bottoms. The third subdivision included the square, rectangular, and hexagonal bins, in which there were bending stresses introduced as well as direct tensile and compression stresses. The square hopper bins were perhaps the more usual type of reinforced concrete bin in this country.

Calculation of Pressures.

The calculation of the pressures upon the side walls and bottoms of bins, the author stated, had been the subject of a fair amount of experiment and theorization, but in those of large size the lateral pressure was determined by the ordinary retaining wall theories, about which there has been a great deal of theorizing and very little experimentation. The theorists, however, worked upon two main lines of thought, namely, that of Coulomb's theory of the prism of maximum pressure and Rankine's theory of conjugate stresses. Though the variants on these two theories were very numerous, there were really only two mathematical processes of treating the same fundamental idea. They were only special cases of a single general equation.

The paper then gave formulæ for retaining walls, shallow and deep bins, circular bins, suspension bunkers, and special applications of reinforced concrete, together with tables containing experimental data and diagrams to save labour in designing bins.

Some tests have shown great increase of pressure when material was in motion in bins, but only in the cases where discharge openings were at the sides, which established the importance of such openings being in the centre, for the pressures in motion with side openings were in some cases four time as great as when at rest. When, however, the grain was discharged at the centre, the maximum variation did not exceed 10 per cent.

Advantages of Reinforced Concrete.

Reinforced concrete, apart from its fire-resisting qualities and long life, possessed some distinctive advantages as regards resistance to stresses in bins. It so happened that the horizontal reinforcement in the walls of cellular silos when resisting the bending induced by one cell being loaded while the adjoining one was empty, was not called upon to develop more than half the anchorage resistance that would require to be developed with all pockets filled simultaneously. Likewise when the anchorage stresses were greatest the bending was nil, because adjoining pockets were filled. Therefore the reinforcement for the walls afforded at the same time the best anchorage for them, and it served both functions in turn.

The corners of cellular bins in the interior of a collection were usually considered to be completely fixed, and therefore the moment at the centre was taken as $\frac{pl^2}{24}$ and in the corners as $\frac{pl^2}{12}$, where p = the unit pressure. In order to obtain the greater resistance moment thus required at the corners, recourse was usually had to the expedient of doubling the thickness of the walls there so as to use the same amount of horizontal reinforcement. The splaying of these corners serves other advantageous purposes in theory and practice.

Cost of Erection.

It was not easy to get exact figures of the cost of erection of various bins and silos, especially in this country. In America the reinforced concrete storage bins at the Santa Fé Elevator, Chicago, Ill., cost 20 cents per bushel of storage capacity, whereas the timber working house at the same place cost 1 dol. per bushel of storage capacity, exclusive of power plant; the machinery was, however, unusually expensive, and this made the cost high.

The working house of the Sante Fé reinforced concrete elevator at Argentine, Kas., cost 60 cents per bushel of storage capacity, exclusive of power plant, while the bins there cost 20 cents per bushel.

Regarding this country, a silo containing 449,000 cu. ft. of grain, with bins 8ft. sq., worked out at 8d. per cu. ft. of grain capacity, or 6d. per cu. ft. of total cubical extent. Bunkers standing on legs containing 10,280 cu. ft. worked out at 1s. 5d. per cu. ft. of coal capacity, and 7d. per cu. ft. on total cubical extent, while others somewhat larger cost 11¼d. per cu. ft. of coal capacity, or 5¾d. per cu. ft. on total cubical extent. Some maize silos in London for 167,400 cu. ft. of material cost 1s. per cu. ft. of grain capacity, or 6d. per cu. ft. total cubical extent. Some silos in Dublin containing 33,000 cu. ft. of grain cost 7¾d. per cu. ft. of grain capacity.

Then followed a description of various ore and stone bins, coal bunkers, sand and cement storage bins, and grain silos erected in this country and abroad, illustrated by lantern slides from photographs and working drawings.

DISCUSSION.

Mr. E. Fiander Etchells. Mr. E. Fiander Etchells, F.Phys. Soc. A.M.I.M.E. M.C.I., in opening the discussion, said they all owed a debt of gratitude to their secretary for having collected in such small compass such a wealth of information. There was no book so far as he knew printed in Great Britain or the United States which gave such details of silos. The reader mentioned early in the paper that the construction of reinforced concrete silos cost sometimes more, sometimes less, than steel. He doubted, with all the advantages, if reinforced concrete silos of the circular form could be put up so cheaply as a cylindrical steel shell, such as those seen at the Albert Bridge Flour Mills. The makers told him that they could put those up at 30 per cent. under the cost of reinforced concrete structure, but when you got to plane surfaces and rectangular bins reinforced concrete might hold its own in point of cost. There was one advantage which reinforced concrete had over woodwork, namely, it was vermin-proof. The rats caused a good deal of destruction of the grain and of the silo itself if built of woodwork. Then while there is not the same trouble from vermin with the steel structure, yet there was the rust which discoloured the wheat and depreciated its value, so that if we spoke of reinforced concrete on the point of cost alone, we ought not to forget that there was some-

thing beyond the cost of erection. There was one point which had been prominently brought out on the slides before them, and that was that reinforced concrete was subject to the laws of evolution. In the case of the wooden bins the hopper was easy enough to be carried out. When it came to steelwork it was an expensive item, while when we came to the hoppering of reinforced concrete it was very difficult indeed, and rather costly work, both to get in the centering and to get the rods of the right length and bend them to the same position, and to do it cheaply. It was possible that the tendency would be to make the abutments flatten, and to get the slope, perhaps, of mass concrete; or an alternative method would be to have a continuous V-shaped channel running right from end to end of the bin, and let the contents form the hopper at right angles to that.

With regard to the many formulæ given, suffice it to say that the nett effect of almost all was to show that with tall bins, after a certain height was reached, there was no further increase of weight on the bottom, so that the coals or grain, as the case might be, were carried by friction on the sides of the bin. The difficulty often met with in steel bins was that the plates were not stiff enough to carry this vertical pressure, and in this particular reinforced concrete had the advantage, because if it were stiff enough to carry the lateral pressure it would be quite stiff enough to carry the vertical loads due to the weight of the material on the sides of the bin.

Mr. William Gilbert. Mr. William Gilbert, M.Inst.C.E., M.C.I., said the author had given a valuable collection of formulæ which would be very useful for reference. When rectangular bins were used it appeared to him that the chief advantage of reinforced concrete was that very large panels could be used. If steel plates were used for large bins, then a complicated system of tie rods had to be used. With regard to the raw meal silos at Messrs. Kaye and Co.'s cement works, referred to by the author, the cost in reinforced concrete was about 10 per cent. less than the offer of a similar design in steel. The estimated complete cost worked out to about £2 per ton of raw meal stored, but the raw meal was rather a light material, only weighing about 63lbs. per ft cu. The three reinforced concrete silos at the same works, which were circular bins about 40ft. in diameter, had a capacity of about 4,500 tons, and the cost worked out at about 16s. per ton of cement stored, this figure not including the machinery used for filling or emptying the silos. The difference in cost between £2 and 16s. per ton of storage capacity was, of course, caused by the difference in the size of the bins. In addition to the interesting problems referred to by the author as to the design of bins, in the case of bins for storing finely ground powder an important point was the angle of slope at the bottom of the bin, in order that the bin might be self-emptying, and the extracting machinery in this case had to be carefully designed in order to get a uniform discharge from the bin when the material flushed and fell down suddenly.

Mr. Bylander. Mr. S. Bylander, M.C.I., said he was struck with the enormous labour which the author must have given in preparing the paper. It was most valuable in the very detailed information given, which was very useful to an engineer who had to design a work.

Mr. Munro. Mr. J. Munro, M.C.I., congratulated the author on the labour, research, and trouble he had taken in collecting the data contained in the paper. Mr. Etchells had mentioned about rats, but he always understood that there was a more terrible enemy to grain than rats, and that was the worm—the weevil, which came from the grain and pierced the wood in wooden silos. He had been told by persons who were largely interested in timber erection that the life of a timber silo was between 10 and 15 years.

Mr. Alban Scott. Mr. Alban A. H. Scott, M.S.A., M.C.I., gave some particulars of costs of reinforced concrete versus steel bins. For a series of bins of 4 tons capacity, the concrete cost 2s 7½d., and steel 6s. 3d. per cub. ft. of storage capacity; for a series of bins of 10 tons capacity the reinforced concrete cost 2s. 4d. as against steel 4s. 5d.; 60 tons capacity concrete 1s. 10½d., steel 3s. 1½d.; 140 tons capacity concrete 1s. 8½d., steel 2s. 7d.; 350 tons capacity concrete 10⅝d., steel 2s. 1d.; 2,000 tons capacity concrete 10⅛d., and steel 1s. 9d. per ft. cube of storage capacity. Those were actual tenders received and works actually executed in concrete, and both exactly on the same basis, and including all the necessary outlet doors and gearing, but not conveying plant. Moreover, steel required painting outside at regular intervals, and reinforced concrete could be put up very much quicker than steelwork.

Mr. Langford and Mr. Fraser. Mr. W. M. Langford, Assoc. M. Inst. C. E., M.C.I., next spoke. Mr. Percival M. Fraser, A.R.I.B.A., M.C.I., asked if any particular precautions were taken to protect the internal surface of the concrete against the continual movement of the coal or grain, or the falling of the coal or grain. In certain cases the material fell on to the concrete, owing to the quick discharge and intermittent filling. Was the surface of the concrete itself found sufficient, or must it be protected by steel plates?

Mr. Brand and the Chairman. Mr. Vernon Brand next spoke, and the chairman, Prof. Henry Adams, M.Inst.C.E., in concluding the discussion, said one would have thought that almost all the coal bunkers that had been constructed had been shown on the screen, but two he had inspected lately that were not there had some interesting points about them. The larger, of 2,000 tons capacity, was straight and level and true in every part, but the other, of 350 tons capacity, had hardly a straight line or a straight surface or a vertical column or vertical side to a column at any part, and when the concrete was broken away to expose the reinforcement, it was in a condition matching the exterior. He was quite sure that good workmanship inside must be accompanied by good workmanship outside.

In speaking of the retaining wall formulæ, it might not be generally known that a tank or water pressure followed exactly the same rule as Rankine's formula for earth, taking a natural slope of 0. It was not a common form of estimating the pressure of water, because it could be done quite easily another way, but it was interesting to note that the earth formula could be applied to water.

The Lecturer's Reply. Mr. H. Kempton Dyson, replying to the discussion, said that the interior surface of a bin was not usually specially protected, but left as rough as possible so as to hold up the material. Reference had been made to one example where ore was shot into the bin, and the angles thereof were protected by steel. In another example where coke fell into the hopper there was a special construction to prevent the coke breaking itself, and he suggested that something of the same sort might be done where there were heavy materials dropping into the bunker.

CONCRETE AND STEEL ITEMS.

Steel Frame and Reinforced Concrete in Schools. We note with interest that at last week's meeting of the London County Council the General Purposes Committee reported that during the Whitsun recess the Chairman of the Education Committee asked them to authorise, as a matter of urgency, the giving of effect to a recommendation of the Education (Buildings) Sub-Committee, which time did not admit of submitting to the Education Committee, that the architect should give evidence on the building laws in London in relation to reinforced concrete and steel skeleton construction before a departmental committee appointed by the Board of Education to consider the cost of the buildings of public elementary schools. They authorised, through their Chairman, the giving of such evidence on the distinct understanding that the Council was in no way bound by any opinions that might be expressed in such evidence, or committed as to its future policy in the matter. It is to be hoped that the Board of Education's Departmental Committee will offer some pronouncement on steel frame building and reinforced concrete for the construction of schools. There is no doubt in our mind that such construction would lead to considerable economy being effected without any loss of efficiency, but rather with gain.

Temperature of Concrete Setting. For the purpose of measuring the heat generated by the hardening of Portland cement, some tests are being made in the Panama Canal zone by embedding in the walls of the locks at Gatun six resistance thermometers. Readings will be taken of the temperature at various stages of the hardening of the concrete. From the time concrete begins to crystallise until it reaches its final set, the increase in temperature is rapid. From the settling point the increase is slow, but usually continues during the whole of the hardening process, which is indefinitely long, probably lasting for several years. We look to these experiments to give us some interesting information regarding this hardening and the heat produced by the chemical changes that accompany it, and perhaps some light may be thrown on expansion and contraction, more especially the latter, which is the *bête noir* of the concrete constructor.

Electrolysis in Reinforced Concrete. Some useful data on this subject were recently given in the "Iron and Coal Trades Review." The possibility of electrolysis occurring in connection with reinforced concrete is important as regards the durability of the form of construction in situations where such action is possible. In the experiments referred to three specimens were made by embedding 2in. tube to a depth of 8ins. in the concrete. Two of the specimens were placed in water, and a steady current of 0.1 ampere was passed through them from a

storage-battery, the current entering through the tube and leaving through the tank, while the third specimen was not subjected to a current in order that a comparison might be made. The current was maintained continuously for 30 days, and it was found that unexpected deterioration of the concrete took place, large cracks appearing in it, while a layer of rust formed on the tubes, and pitting was very noticeable with an appreciable loss in weight. Other tests made were on 1½in. tube buried to a depth of 9in. in a 1:3:5 concrete, and with a current of 0.05 ampere passed through continuously for 70 days. The electrolytic action was found to be very strong, and the softening of the concrete very marked; while the specimens not subjected to current remained clean and bright. The others developed a coating of rust the thickness of which increased with the duration of the flow of the current, and a coating of rust was developed on the walls of the cracks. It would be well to have some tests on reinforced concrete more allied to actual practice than these.

CONCRETE COLUMNS.

Tests of Concrete Columns Made Under Building Conditions.

The construction of a building near the engineering building of the University of Pennsylvania afforded an opportunity of testing reinforced concrete columns which had been built under working conditions. Nine columns 14in. square and 12ft. high were moulded.

The series consisted of triplicate tests of three types of columns; columns 1, 2, and 3 were plain concrete, columns 7, 8, and 9 had longitudinal reinforcement; and columns 4, 5, and 6 had spiral hooping in addition to the longitudinal reinforcement. The longitudinal reinforcement consisted of four ¾-in. square plain steel bars; the spiral hoop consisted of 5-16-in. round rod wound on 12-in. diameter at 1½-in. pitch. Steel for the reinforcement was furnished by the Philadelphia Steel and Wire Co., to whom acknowledgement is hereby made.

The concrete was a 1:2:4 mix; using a standard Portland cement, bar sand, and pebbles crushed to pass a ¾-in. screen. As shown in the next paragraph, the cement passed the specifications of the American Society for Testing Materials; the sand was the common yellow bar sand in use in Philadelphia; the pebbles were hard, angular, and in large part quartz. The concrete was made of a wet consistency in a batch mixer of about 1-3rd cubic yard capacity. It was wheeled in barrows and shovelled into the forms, as the runways were too low to permit dumping directly into place. The concrete was placed in layers of about 3ft. and thoroughly stirred as it was shovelled in.

The following are the results of the cement tests: Water used in mixing neat mortar, 21 per cent.; pats, O.K.; specific gravity, 3.09; fineness, 81 per cent. passed 200 sieve, 96 per cent. passed 100 sieve; strength neat cement, 648lb. per square inch at 7 days, and 687lb. at 28 days; strength of 1:3 mortar made with crushed quartz sand, 227lb. per square inch at 7 days, 284lb. at 28 days.

The tests of the ¾-in. reinforcing steel showed the following: Yield point, 44,000 lbs. per square inch; ultimate strength, 61,000lb. per square inch; elongation, 17 per cent.; reduction of area, 62 per cent.

The tests on the cubes and cylinders resulted as follows:

Specimen.	Number of specimen.	Age, days.	Load lb.	Load lb. per sq. in.
8-in. cylinders, 16 in. high.	1	55	119,600	2,400
	2	76	109,000	2,170
	3	76	136,000	2,710
Average				2,420
6-in cubes ..	1	55	99,500	2,760
	2	55	99,400	2,760
	3	76	112,000	3,110
Average				2,880

Modulus of Elasticity (by Cylinder 1.)

0-500 lb. per square inch.....3,850,000
500-1000 lb. per square inch.....3,000,000
1000-1500 lb. per square inch.....2,650,000

The results of the column tests are given in the following table:—

Serial number.	Age (days).	Gross	Within reinforcement.	Area of steel.	Per cent of reinforcement.	Max. load, lbs.	Max. stress, lb. per sq. in.	Modulus of elasticity 0-500 lb. per sq. in.	Modulus of elasticity 500-1000 lb. per sq. in.	Modulus of elasticity 1000-1500 lb. per sq. in.
1	71	196	..	..	..	528,000	2,690	3,700,000	2,950,000	2,950,000
2	64	196	..	..	..	440,000	2,250	3,750,000	3,200,000	2,650,000
3	58	196	..	..	..	502,000	2,560	3,850,000	3,150,000	2,150,000
						Average	2,500	3,766,000	3,100,000	2,580,000
7	53	196	64	2.25	1.15	532,000	2,710	3,300,000	2,900,000	2,450,000
8	60	196	64	2.25	1.15	488,000	2,490	4,150,000	3,550,000	3,550,000
9	66	196	64	2.25	1.15	500,000	2,550	4,700,000	3,350,000	3,350,000
						Average	2,580	4,025,000	3,266,000	3,116,000
4	62	196	113	4.64	2.40	564,000	2,870	3,550,000	3,200,000	3,000,000
5	69	196	113	4.64	2.40	564,000	2,870	3,800,000	3,500,000	3,600,000
6	56	196	113	4.64	2.40	528,000	2,690	4,200,000	3,000,000	2,200,000
						Average	2,810	3,850,000	3,230,000	2,930,000

The results of the tests impress one with the good showing made by plain concrete and the small increase in strength resulting from the use of reinforcement. The popular notion that the hooped columns are much more desirable because of their greater toughness would seem to be ill-founded, because, as can be shown also by a theoretical analysis, this toughness is not exhibited until after the maximum load is developed, which, if applied by a dead weight instead of a testing machine, would cause almost, if not quite, as sudden a collapse as would occur with either of the other types of columns. This premises axial loading, and does not consider the effect of eccentricity or earthquake.

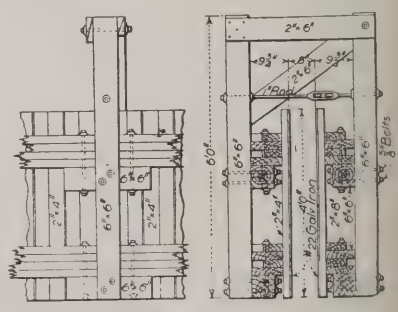
FORMS FOR A CONCRETE WATER TANK.

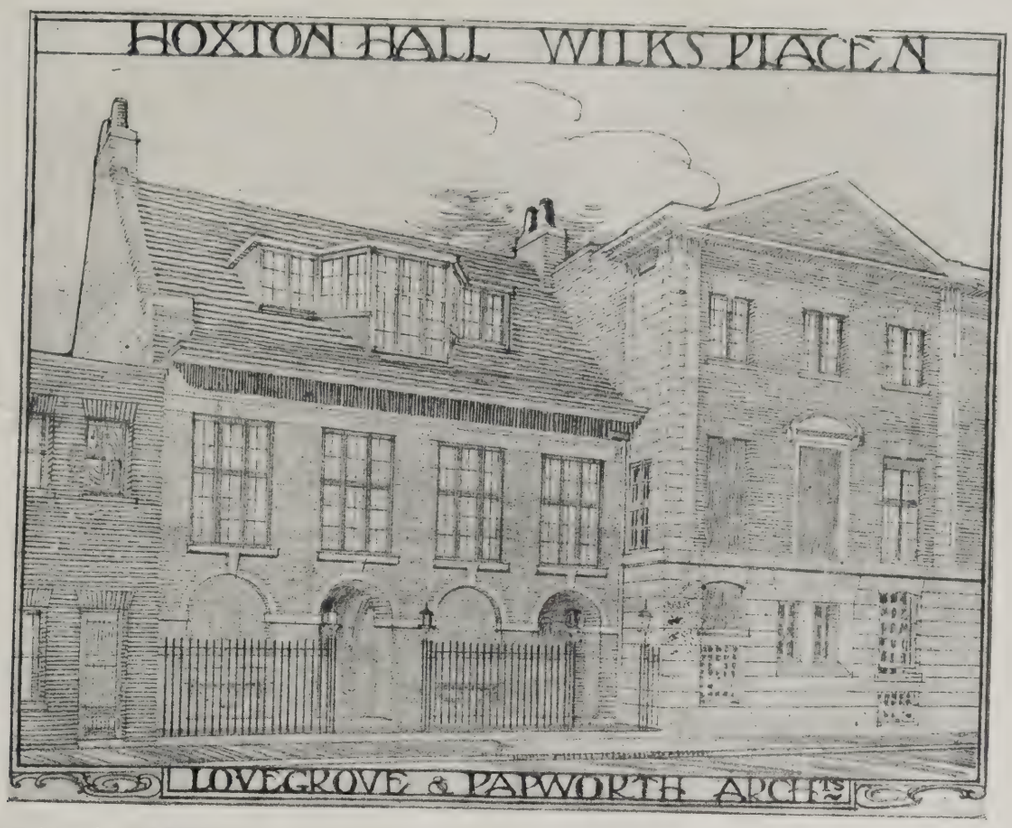
A railway in the United States now has in use three reinforced concrete water tanks for locomotive supply service. They are 24 ft. in diameter, and 16 ft. high inside, built on side-hill ledges, thus requiring no stool support. The floor and circular wall are both 8 in. thick, reinforced with square "indented" bars. The reinforcement in the floor consists of two layers of ¼ in. bars on 4 in. centres, the first layer at right angles to the second. The wall reinforcing is composed of ⅜-in. vertical bars spaced 8 in. apart on centres around the entire circle, and these are surrounded by ⅜-in. hoop bars spliced with a 4-in. wire-wound lap joint, the spacing varying from 1¾-in. at the bottom to 6 in. at the top. To provide against possible bulging of the circular wall it is tied to the floor by ⅜-in. bent bars on 8 in. centres. These bars extend part way up the side wall outside of the hoops and part way under the floor just above the floor reinforcing. An 8-in. kneebrace is placed between the wall and the floor and the former is thickened to 12 in. for a distance of 2 ft. 2 in. above the bottom of the floor.

The forms were built in sections 4 ft. high, six sections of 60 deg. each making up the full circle. The true arcs for the inside and outside forms were sawed from short pieces of 2 by 8-in. nailing strips, and these were spliced together so as to complete a 60 deg. section. On the arc side of these strips 2 by 4's 4 ft. long were nailed on 8 in. centres and No. 22 galvanized iron was fastened to these so as to form the facing for the centre. The two sides were held at the proper distance apart by an adjustable yoke, the details of which are shown herewith.

The concrete was 1:2:4 Portland cement, sand and broken stone of ¾-in. maximum size. Wherever possible the concrete was spaded so as to get 1 in. of mortar at both inside and outside surfaces, no waterproofing material being used. The climatic conditions did not necessitate a roof being built over the tank, except for the purpose of keeping out sand, so only a rough plank roof was provided.

According to the chief engineer of the railway, these tanks have remained watertight and are giving entire satisfaction under the conditions obtaining in that territory. The tanks were built by the company labour and cost approximately 2,500 dols. each, although Mr. Croswell states that the cost could have been somewhat reduced had the workmen been more experienced in this class of work.


2"x6"
9½"
2'-6"
1"Rods
6'-6"
2"x4"
6'-6"
2"x4"
6'-6"
2"x4"



THE ARCHITECTS' STANDARD CATALOGUES.

We have pleasure in being the first to announce the forthcoming issue of the Architects' Standard Catalogues. Their object, stated broadly, is to create harmony out of chaos in an architect's office; for who can but deplore the huge expenditure involved annually in the issue of catalogues and pamphlets which, without malice, are thrown into the waste-paper basket as the only means of effectively getting rid of them. Any attempt to classify and file them would leave but little time for aught else. Before the work of issuing standard catalogues was proceeded with, the organisers wisely appealed to manufacturers for their opinion on the subject, and several meetings, largely attended by manufacturers, were held. Architects' views have since been ascertained, and these, it is stated, are in entire sympathy with the proposal. Our views on the subsubject of standardised catalogues have been repeatedly expressed; and we have only to reiterated our approval of a system that promises so much convenience for architects, while at the same time offering the manufacturer much-needed relief from the disadvantages under which he laboured when his expensively produced catalogues were destroyed offhand. There can be no doubt that the system of standardised catalogues will save much mortification to all concerned. The standard catalogues are, of course, of uniform size and style, and are bound together according to subjects, each volume including all the approved catalogues relating to the heading under which they are classified. The set is expected to comprise eight volumes, each dealing with a special line, such as sanitation, materials, steel and fireproof construction, ironmongery, wall and floor-coverings, and so on. Each volume contains nothing but purely catalogue information, arranged under thumb-indexed sections, so that reference is instantaneous, thus saving not only the lamentable waste of the architect's valuable time, but the even more considerable vexation of spirit that, under common conditions, are too frequently the only result of a consultation that is therefore as much as possible avoided. On the other hand, where the arrangement is orderly and systematic, and the required item is instantaneously found, consultation becomes a pleasure instead of a nuisance. The volumes will be issued by the Architects' Bureau Association, Ltd., Bloomsbury Hall, Hart Street, W.C.

R. Waygood and Co., Limited.

The tenth ordinary general meeting of R. Waygood and Co., Ltd., took place on Thursday, June 16th, at Cannon Street Hotel, at noon, Mr. H. C. Walker, chairman and managing director, presiding. The secretary having read the notice convening the meeting and the auditors' report, the chairman in the course of his speech said that in spite of unprecedented competition and low prices, the firm, by close attention to details, had maintained the dividend, and claims to have secured the most important contracts which have been let this year, including the new Post Office, now erected on the site of Christ's Hospital, Newgate Street. This contract is for 12 electric lifts, some of them to raise 2 tons at a speed of 200 feet per minute. These are the largest electric lifts which have hitherto been made in this country to work from three-phase current, and their installation involves very special arrangements, both in design and manufacture. They were also successful in obtaining the contract for the lifts for the Royal Liver Friendly Society building in Liverpool. This is a huge office building, and is to be equipped with 15 of Waygood's high-speed electric passenger lifts, some of them working at 400 feet per minute. The height is such that it is called the first British "skyscraper," as it has 16 floors. The equipment of lifts will be second to none in the United Kingdom. The firm have secured the order from Messrs. Harland and Wolff to fit the new mammoth White Star liners, "Olympic" and "Titanic" with 16 lifts, including 8 of their special electric passenger lifts. Mr. Walker had just been to New York on the "Lusitania" and was pleased to note that the lifts his firm fitted in this magnificent steamer are in constant demand, and highly praised by passengers and crew. They have now fitted over 50 ships with their lifts, quite apart from the special work they have done in this direction for the Admiralty, for whom they have fitted 30 electric lifts on battleships and cruisers. They have also secured the order for an electric passenger lift for the Lord-Lieutenant of Ireland, Viceregal Lodge, Dublin, many others for well-known noblemen and others of high social rank. They have completed, or have in hand, lifts for over 15 public buildings, including the Tower of London Regalia Room, Birmingham Council House extension, Royal Scottish Museum, Edinburgh, Edinburgh University, the Guildhall, the Institute of Electrical Engineers, the Imperial College of Science and Technology, the Baltic Mercantile and Shipping Exchange, and the Regent Street Polytechnic, as well as 13 hospitals.

HOXTON HALL, LONDON, N.

The foundation-stone for the new buildings at Hoxton Hall, Wilks Place, was laid by Mr. J. Allen Baker, M.P., representing the Bedford Institute Association, on June 11th. These new buildings consist of new lecture-rooms and meeting halls covering a large area fronting Wilks Place, and in rear of the present Hoxton Hall Mission buildings. The basement will be used as extensive cloakrooms, lavatories, bathrooms, and chair stores, with a large boys' club room. The ground floor will contain a meeting hall and medical mission, and the first and second floors, meeting halls and girls' clubroom and lavatories. Considerable alterations will at the same time be made in the existing large hall by the provision of two new staircases and new retiring rooms and kitchens, while the entire building will be redecorated. The only new elevation in which there will be any attempt at architectural design is that to Wilks Place, on which front the buildings have been kept as low as possible, and as this is a narrow turning the design will be kept very plain. The buildings are being erected for the Hoxton Hall Mission, which is a daughter of the Bedford Institute Association by Messrs. John Grover and Son, of New North Road, the architects being Messrs. Lovegrove and Papworth of 374-8, Old Street, E.C.

ELECTION OF LICENTIATES R.I.B.A.

At the Council Meeting of the 6th June the following candidates, having been found eligible and qualified under the Charter and By-laws, were elected Licentiates of the Institute in accordance with the provisions of By-law 12:—Aberdour, James Gordon; Allen, George Pemberton; Bailey, William Henry, (Maritzburg); Barnard, Leonard William (Cheltenham); Belsher, Bernard James; Bennett, John (Bolton); Betenson, Frederic Roger, F.S.I.; Bissell, George Ernest (Colchester); Bourne, John Charles; Briggs, George Hamilton; Brooks, Stanford Morton (Glasgow); Calldott, Charles William; Church, Arthur Harold; Clark, Charles Richmond Rowland (Basingstoke); Clay, George Felix Neville, B.A., Cantab.; Coleridge, John Duke; Colville, Hubert Leonard; Cook, Ellis Taylor (Rotherham); Cox, Bernard Joseph Farrar; Creighton, Henry Richard; Davidson, William, *Owen Jones Student* 1904 (Edinbro'); Davies, Ivor Samuel (Bangor, N. Wales); Davies, George Walesly (Darlington); Dewes, Walter; Dight, Alfred Henry (Birmingham); Duff, John (Rephad, Stranraer); Fry, Peter George (Weston-super-Mare); George, Allan; Gilbertson, Alfred (Liverpool); Griffith, Edward Henry Herbert (Ringwood); Gunson, Ernest (Manchester); Harber, William Francis; Havers, Albert Charles (Norwich); Heathcote, Charles Harold (Manchester); Heathcote, Ernest Grigg (Manchester); Hewitt, Stanley Goodison (Liverpool); Hook, John; Kempster, Fred; Laing, Henry George Malcolm; Lawrence, Joseph Thomas; Lucas, William Louis, B.A.Cantab.; Martin, Robert (Manchester); McLachlan, Herbert, Gutherie; Newman, Charles James (Rugby); Norton, Charles Harrald; Partridge, Sidney Herbert (Newton Abbot); Pullin, Charles Henry; Robertson, George Birrell, *President of the Institute of Architects of N.S.W.* (Sydney, N.S.W.); Scrivener, Harold Moore (Northampton); Shann, Frank Halliwell; Sharpe, Thomas William; Shelmerdine, Edmund John; Sidwell, Henry Thomas (Rayleigh, Essex); Sinclair, Colin, M.A., F.S.A.Scot. (Glasgow); Skipper, Charles Frederick (Cambridge); Smith, William Auger (Nottingham); Tanner, Douglas George (Eastbourne); Tatchell, Sydney Joseph; Taylor, William (Aylesbury); Toombs, Edwin Ashley; Townsend, Charles William; Waterworth, John Halstead; Webb, William Herbert; Williamson, Walter (Bradford); Winder, Thomas, Assoc.M.Inst.C.C. (Sheffield); Windsor, Frank; Wire, Wilfred Travers.

SOCIETIES' REPORTS.

The Society of Engineers.

The third vacation visit of the present session took place on Wednesday, June 15th, 1910, when, by the courtesy of Maurice Fitzmaurice, Esq., C.M.G., M.Inst.C.E., a party of members of the Society and their friends visited the site of the New County Hall of the London County Council on the south side of the Thames at Lambeth.

The river is excluded by an embankment wall similar to the Victoria Embankment on the opposite side of the river. The embankment wall is founded on the London clay formation at a depth of about 20ft. below Ordnance Datum, and the whole area behind the wall is to be covered with a raft of concrete 5ft. thick, resting on the Thames ballast at a level of 8ft. below the same datum. On this raft the building will be erected. The embankment wall is being built behind a cofferdam consisting of a single row of Oregon pine piles, 14in. square, grooved and tongued, which are driven about 12ft. into the clay. The wall is of 6 to 1 Portland cement concrete, faced with Cornish and Aberdeen granite above low-water level. In front of the central portion of the future building the wall has two flights of steps leading down to the river, and the granite is finished with a rough face. Behind the wall is a series of arches forming storage vaults, and on the top of them will be a terrace, access to which will be by a flight of steps from Westminster Bridge. Special precautions were taken in constructing the foundations of the new wall near the abutment of Westminster Bridge. The bridge is founded on cast-iron piles, and, in order to avoid any possibility of weakening this support, a length of 30ft. of the wall next the bridge was founded in a caisson, which was sunk with compressed air. The foundation of the abutment was also partly surrounded with steel sheet piling driven down to the London clay. The embankment wall has been designed and is being constructed under the supervision of Maurice Fitzmaurice, Esq., C.M.G., the Chief Engineer to the London County Council, the contractors being Messrs. Price and Reeves. The raft foundation is being laid by Messrs. F. and H. F. Higgs, under the supervision of Mr. W. E. Riley, F.R.I.B.A., the Council's Superintending Architect, who is also associated with the architect for the whole scheme, Mr. Ralph Knott, F.R.I.B.A.

TRADE AND CRAFT.

Gas Fires.

The Gas Light and Coke Co. issue a very eloquent persuasive to the use of gas fires, in which, after remarking that "In our capricious climate there is no dependence that the seasons will be true to type—that even in the height of summer we may get raw mornings, damp afternoons, and chilly evenings"—stress is laid on the very important part played by sentiment in the matter of fire-lighting. "The thought of lighting a coal or wood fire at such time conjures up a sort of curious feeling that we are contemplating something wrong, violating a household rule, or ignoring the tradition that summer is not the time for a fire. There is the inconvenience of laying a fire, which the servant often accomplishes in a half-hearted way that is enough to deter a sensitive housewife from ordering a fire at all. Possibly the grate is decorated with flowers or some other form of ornament which has to be removed. The gas fire is the solution of the whole difficulty. Turn on the tap, apply a match, and in a few minutes the room is cosy; just at the right heat which you can regulate exactly to your requirements." The moral is too obvious to need emphasis; and the great convenience of gas fires, which can be instantly set going without the slightest fuss of preparation, and are cleanly, controllable, and altogether comfortable, is indisputable and demonstrable at all seasons of the year; but in summer-time these virtues become specially conspicuous.

LONDON MASTER BUILDERS' ASSOCIATION.

The monthly Council meeting was held at 31 and 32, Bedford-street, on Thursday, 16th June, last. The President (Mr. L. Horner) occupied the chair.

The Organisation Committee reported that several firms had signified their intention of becoming members, and that the names of the recently elected Associates Members had been placed upon the telephone card.

The Council considered the Bill to amend the law relating to Trade Unions now before Parliament. As the Bill proposes that the funds of the Trade Unions, which have been subscribed solely for trade purposes, be utilised to contribute to the expenses of some Members of Parliament, the Council decided to protest against the Bill.

The question of the system of measurement of slating and roof tiling was again considered. A method agreed to be the most satisfactory was forwarded to the proper authority with a request that it might be considered by them.

The Hon. Treasurer submitted the Finance Committee's report. It was decided to carry a further sum to Deposit Account

COMPETITIONS.

Whittingham Asylum Extensions.

Mr. G. T. Hine, F.R.I.B.A., the assessor appointed to judge the competitive designs for an annexe to Whittingham Asylum, has awarded the first premium of £100 to Messrs. Sykes and Evans, Chapel Walks, Manchester. Their plans have since been examined by the Commissioners in Lunacy and at the Home Office, and already preliminary site arrangements for the building have been made. The annexe is to accommodate 700 patients of both sexes.

Rockland Workhouse Infirmary.

The Wayland Board of Guardians have selected, subject to the approval of the Local Government Board, the plans of Mr. H. J. Green, of Norwich, for the above building.

Usher Hall, Edinburgh.

The result of this competition is expected just after July 9th.

LIST OF COMPETITIONS OPEN.

JULY 9. PROPOSED USHER HALL, EDINBURGH. Particulars given in our issue of April 20th. Inquiries to be addressed to Thomas Hunter, Town Clerk, City Chambers, Edinburgh.

JULY 20 YSTRADGYNLAIS SEWERAGE SCHEME. The Rural District Council will pay £20 for the most suitable scheme for sewering Ystradgynlais Lower. Particulars from Mr. T. Watkins, surveyor to the Council, Ystradgynlais.

JULY 25. NEW ELEMENTARY SCHOOL, WINCHESTER. Designs are invited from Hampshire Architects for Elementary School Buildings to accommodate 330 children. Plan of the site and full particulars may be obtained on application to Thomas Holt, Town Clerk, Town Hall, Winchester. Premiums of £50, £30, and £20 are offered for the Design selected as first, second, and third. Thomas Holt, Town Clerk.

AUGUST 23. COUNTY OFFICES AT NAVAN for the Meath County Council. Inquiries to the Secretary, Meath County Council, Ireland.

AUGUST 31. COVENTRY. NEW ELEMENTARY SCHOOL in Centaur Road. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

SEPT. 5. THE QUEEN'S UNIVERSITY OF BELFAST. Enlargement of the present buildings at a cost of about £52,000. Particulars in our issue of June 1st.

NO DATE. ASHTON-ON-MERSEY. WESLEYAN SUNDAY SCHOOL. Limited to Architects practising within ten miles of Sale. Inquiries to Mr. J. O. Barrow, Barker's Lane, Ashton-on-Mersey.

COMING EVENTS.

Wednesday, June 22.

NORTHERN ARCHITECTURAL ASSOCIATION.—Students' Sketching Club Annual Excursion

INSTITUTION OF HEATING AND VENTILATING ENGINEERS.—Summer meeting at Bournemouth (second day).

INSTITUTION OF CIVIL ENGINEERS. — The 18th James Forrest lecture. 8 p.m.

EAST LONDON COLLEGE (University of London).—Professor C. A. M. Smith on "The Illumination of Interiors." 8 p.m. (third and concluding lecture).

Thursday, June 23.

R.I.B.A.—Final and Special Examinations for candidates as A.R.I.B.A. commence and continue to July 1st.

INSTITUTION OF HEATING AND VENTILATING ENGINEERS.—Summer meeting at Bournemouth. Concluding day.

SOCIETY OF ARCHITECTS.—Visit to the Japan-British Exhibition.

Friday, June 24.

ROYAL SANITARY INSTITUTE.—Meeting at Dublin.

NEW BUILDINGS.

PROPOSED.

Aberdeen.—Mr. A. Marshall Mackenzie, A.R.S.A., has prepared plans showing the new additions to King's College, Old Aberdeen, which it is proposed to erect on the property for many years carried on as the Aulton Brewery, closely adjoining the College buildings, and which the University authorities acquired some time ago. The old buildings will, of course, be cleared away, and on the site there will be erected improved accommodation for the English and History classes. The buildings will be of freestone, so as to harmonise with the college, of which they will form part, and the architecture will follow the lines of the University Chapel. The extensions involve an outlay of about £20,000.

Bolton-on-Dearne.—The Urban District Council has received a letter from the Local Government Board respecting their housing scheme. The Council, it will be remembered, applied for sanction to borrow sums of £300 and £150 for the purchase of land at Highgate for the purposes of allotments and housing, respectively. The letter said: "The Board are advised that the purchase money, £450 for the entire property, would be more equitably apportioned as follows: £250 for allotments and £200 for housing purposes." Subject to this the Board had decided to comply with the application, and their formal sanction was enclosed. Regarding the Council's application to borrow £600 for the purposes of the erection of a storeyard, stables, and depot, the Local Government Board also wrote stating that an inquiry would be held in due course.

Bridlington.—At a recent special meeting of the Bridlington Town Council a resolution was submitted instructing the Council to purchase at a cost of £7,250, the People's Palace and the adjoining land, and to apply to the Local Government Board for sanction to borrow £7,400 to complete the purchase. It was stated that there was no present intention to erect a Town Hall and offices, though these were necessary, and would have to be provided in the near future. The property could be secured and held by the corporation without costing the ratepayers anything. The resolution was carried.

Coalville.—The Urban Council has approved the following plans:—House, Crescent Road, Hugglescote; four houses, Ashby Road, Hugglescote; house, Bakewell Street, Coalville; house, Bakewell Street, Coalville; house, Battleflat; two houses, Church Lane, Whitwick.

Colwyn Bay.—It has been decided to proceed immediately with the completion of St. Paul's Church, Colwyn Bay, by building the tower, as originally intended. According to the design selected by the Committee, the tower promises to form a striking feature. It will be about 85 ft. in height, of quiet and dignified character, with eight handsome belfry windows, but very little minor ornamental detail. Situated at the north-west corner of the nave, and forming the main entrance to the church, it will provide a roomy porch, over which there will be a classroom, surmounted by the ringing-room and belfry, with space for a full peal of bells. The tower is square in plan, with massive buttresses at the angles, and built like the church of local limestone, with red sandstone dressings. A Building Sub-Committee has been appointed, the plans and tenders are now under consideration, and it is hoped that the contract may be settled by the end of June. It is estimated that the total cost will amount to over £3,500, exclusive of the cost of reinstating the church grounds and other contigent expenses.

Drogheda (Ireland).—Mr. J. F. M'Cabe, L.G.B. Inspector, has held an inquiry, in the Courthouse (Drogheda), into an application of the Corporation for £15,000, in connection with a new housing scheme which they have formulated for the erection of artisans' dwellings. There was no opposition on behalf of the ratepayers.

Normanton.—An inquiry has been held at the Normanton Urban Council offices with respect to the Urban Council's application to the Local Government Board to borrow £8,250 for the erection of 38 houses for the working classes, abutting on land at Haw Hill Park.

Quarrington.—The scheme for erecting a new church for the parish of Quarrington, which shall be close to Sleaford, is being pushed forward, and it has been decided to purchase a site offered by the Marquis of Bristol, at the north-west corner of the cricket field. About £1,400 is in hand and promised to meet the cost of the scheme.

Shrewsbury.—At a recent meeting of the Shrewsbury Town Council a resolution was proposed, urging the widening of the English Bridge, which is the main and only approach to the town for vehicular traffic from London, Birmingham, and the Midlands, and that application be made for a loan of £5,000, to carry out the work. This had become urgently necessary for the safety of the public in consequence of the large increase in the traffic in recent years. The Chairman of the Improvement Committee thought that when any loan was applied for it should be to improve generally the dangerous places in Shrewsbury, and in view of that, he moved as an amendment that a committee of the whole Council be appointed to consider and report on the best design and financial arrangement for the alteration of the English Bridge. This was agreed to.

Wednesbury.—At a recent meeting of the Town Council a report was presented by the Education Committee stating that twenty tenders had been received for the erection and provision of the new public elementary school, in accordance with the plans and specifications approved by the Board of Education, and that the tenders of Messrs. J. Summerhill and J. Jellyman had been accepted conditionally upon the Town Council approving the expenditure of a sum of £15,385, the amount of such tender. The report stated that the committee would recommend the Town Council to approve the expenditure, and to obtain and provide a loan for the amount required to cover it. It was decided that the report should be discussed in committee.

IN PROGRESS AND COMPLETED.

Cheltenham.—The new chapel at St. Paul's Training College, the foundation-stone of which was laid in January of last year by the Bishop of Gloucester, has been dedicated by the Archbishop of Canterbury. The building, which is of white square-cut stone, built in the Early Perpendicular style, will provide accommodation for 600 worshippers, and has been erected on the south-east side of the College grounds, in the rear of the existing buildings. The roof is of red tiles, and the whole of the interior woodwork, including roof timbers of light oak, harmonises with the stone. The chapel is lofty, and is lighted by six traceried windows on each side and one at the east end, while at the west end over the gallery is a circular window. A narrow round tower with lights at the top, similar to one just opposite at the rear of the college, stands at the north-west corner. The floors of the ante-chapel, chancel, and aisles, are laid with marble mosaic. The chapel proper is 100ft. in length, and 39ft. in width from wall to wall, and 33ft. between the piers. Arches spring from pier to pier longitudinally, and so form an arcade above the windows on each side. The chancel is 22ft. by 14ft., and the ante-chapel, which is at the end of, and divided by an oak screen from the main chapel, is 32ft. by 15ft. The cost was £10,000, Messrs. C. Hodgson-Fowler, of Durham, and Chatters and Smithson, of Cheltenham, being the joint architects. Messrs. Collins and Godfrey were the builders, the heating apparatus being fixed by Messrs. Marshall, and the electric light installed by Steel and Co.

Eastleigh.—The Bishop of Winchester has consecrated the new church of All Saints', which has been built to meet the needs of this large and rapidly increasing community, which has recently been augmented by the removal to Eastleigh of the locomotive department of the London and South-Western Railway. The new church has cost £8,000, and is part of a scheme involving a sum of £12,000, the remainder of this amount being set apart for the building of a large parochial hall. It is built in the Perpendicular Gothic style of Swanage stone, with exterior dressings of Monk's Park (Bath) stone, and interior dressing of Beer stone, and provides seating capacity for 700 people. North and south transepts are provided, also a morning chapel, clergy vestry, and octagonal choir vestry. The choir stalls are of oak, the arcading on either side of the nave being a striking feature of the interior. Messrs. Musselwhite and Sapp, of Basingstoke, were the builders, and architect is Mr. N. C. H. Nisbett, F.R.I.B.A., of Winchester, diocesan architect and surveyor

Fairhaven (Lytham).—The new Wesleyan Church, which has been erected from the designs of Mr. A. Brocklehurst, architect, Manchester, at a cost of between £5,000 and £6,000, has been formally opened on completion. Seating accommodation is provided for 500 people, and the building is furnished in oak, with pitchpine ceiling, having an exterior of parpoints, relieved with dressed and carved stone.

London, N.—The laying of the foundation-stone at the Tollington High School for Girls, Grand Avenue, Muswell Hill, has been performed by the Hon. Mrs. Bevan. The new building will accommodate 300 girls, and is planned to meet every requirement of the education authorities. It is a three-storey structure of utilitarian design, with few decorative features, and is built of red pressed bricks, with stone and brick dressings. It contains a number of classrooms of uniform size, laboratory, cookery school, assembly hall (60ft. by 30ft.), and a gymnasium, with floor suitable for dancing and lighting arranged for drawing purposes. The corridors are of fireproof construction, the floors are sound-proof, and the heating will be by a system of hot water at low pressure from a room in the basement. Playgrounds are provided both back and front—one for the senior scholars and the other for the juniors. The cost of the building is £5,000, exclusive of the freehold site. The school has been erected from the plans of Mr. Alfred Conder, architect, by Messrs. John Grover and Son, Islington. The work is already well advanced, and the school will be opened in September.

London, S.W.—Rapid progress is being made with the erection of Messrs. Arding and Hobb's new premises at Clapham Junction, which will cover an area of nearly 30,000 square feet, the height from the basement being 68 ft. The frontage in St. John's Road will be 190 ft., in Lavender Hill 140 ft., and in Ilminster Gardens 50 ft., making with the "Island" windows, which will be 20 ft. deep, a total glass frontage of about 510 ft. The building, which is to be divided into blocks, 40 ft. by 100 ft., will include all the latest improvements for the comfort and convenience of customers, including a large restaurant, reading, writing and retiring rooms. Messrs. Gibson, Skipwith, and Gordon, of 5, Old Bond Street, W., are the architects.

New Washington (Durham).—A large and commodious new theatre, providing seating accommodation for 1,800 persons, has been completed and opened at New Washington, Co. Durham. The site is in a central position, in close proximity to the main thoroughfare, and the building, which is of red brick, with a slate roof, is lighted throughout by electricity. Messrs. Hope and Tasker, of Newcastle-on-Tyne, were the contractors.

Rothesay.—A roller skating rink and entertainment pavilion promoted by a syndicate of Glasgow gentlemen, has been opened at Rothesay by Mr. Harry Hope, M.P. for the county of Bute. The building, which occupies the site of the old gas-works, is handsome and commodious, and provides accommodation for 4,000 persons, Mr. J. Campbell Reid being the architect.

IMPORTANT ANNOUNCEMENT.

THE

ARCHITECTS' STANDARD CATALOGUES

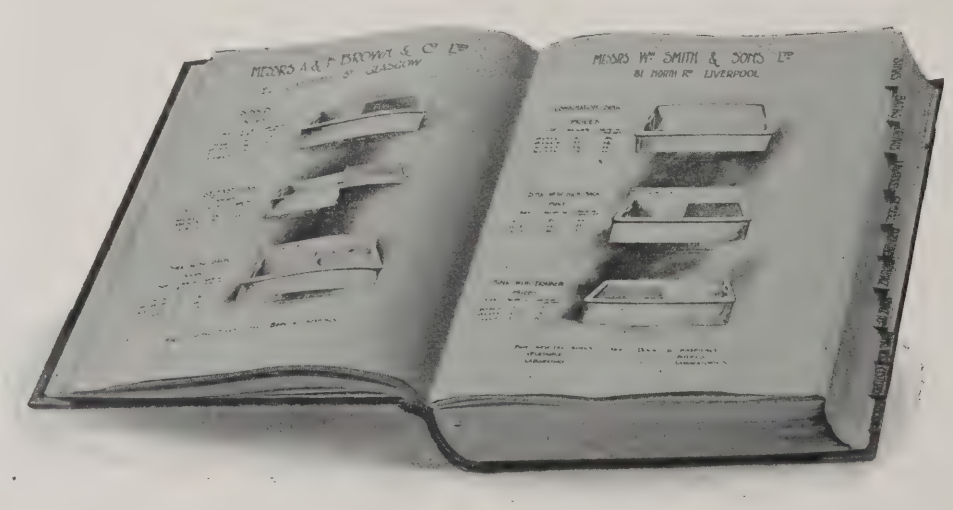
Issued under the auspices of

THE ARCHITECTS' TECHNICAL BUREAU.



This work has been **recommended by a Committee of Manufacturers,** appointed at public Meeting of Manufacturers to report thereon.

The set of volumes as shown above will contain Catalogue and Manufacturers' general information of service to Architects.



The details of this publication have been subjected to the revision of Committees of Architects and Manufacturers.

For preliminary application form and full particulars apply to ***THE MANAGER,***

THE STANDARD CATALOGUE PUBLISHING CO.,

Bloomsbury Hall, 24, Hart St., Holborn, LONDON, W.C.

Telephone ;—GERRARD 825 (3 lines).

COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about **five days** or longer after the date of this issue.
Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders.
The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

June 25. **EVESHAM.**—Repairs to, and painting and decorating of, the Town Hall buildings, for the T.C. Specifications may be seen at the offices of the Borough Surveyor, H. S. Harvey, Town Hall, Evesham, and all further particulars can be obtained from the Borough Surveyor. Tenders to be sent to Thos. A. Cox, Town Clerk, Evesham. The contractor whose tender is accepted will be required to enter into usual formal contract with the Town Council.

June 27. **WITHNELL.**—Extensions and alterations to St. Paul's schools. Plans may be seen and quantities and particulars obtained from Jolly and Buckley, Architects, Chorley, to whom tenders must be delivered. Whole tenders invited.

June 27. **MERTHYR TYDFIL.**—Erection of sixteen semi-detached houses with roads, sewers, etc., for the Park Crescent Building Club, near the recreation ground. Plans and specifications can be seen at the office of the architect, Rees Morris, "Idrisville," Queen's Road, Merthyr Tydfil.

June 27. **DIPTON.**—Erection and completion of business premises at Dipton for George Maddison. Drawings, specifications, and conditions of contract may be seen at either of the offices of Thomas E. Taylor, The Grove, Lanchester, also Front Street, Annfield Plain.

June 27. **MERTHYR TYDFIL.**—Erection of an additional pavilion, together with other work, at the Mardy Isolation Hospital for the T.C. Plans may be inspected and specification and bills of quantities obtained on deposit of £2 2s., upon application to the Borough Engineer, Merthyr Tydfil. Tenders must be sent to T. Aneuryn Rees, town clerk, Merthyr Tydfil.

June 27. **STONE CHAIR (Shelf).**—Carpenters and joiners', plumbers' and glaziers', slaters' and plasterers' work, and materials required in connection with the alterations and additions to the Variety Club, Stone Chair, Shelf. Plans and specifications may be inspected from June 21 to June 27, on which last-named day tenders must be delivered to G. Reginald Oddy, Architect, Northowram, Halifax.

June 27. **MERTHYR TYDFIL.**—Erection of two semi-detached houses of design (A), also two semi-detached houses of design (B), near the Thomastown Park. Plans and specifications can be seen at the office of Rees Morris, architect, "Idrisville," Queen's Road, Merthyr. Tenders for houses of design (A) to be sent to C. L. Stewart, Accountant, Milbourne Chambers, Merthyr Tydfil, and tenders for design (B) to be sent to the architect.

June 27. **MERTHYR TYDFIL.**—Erection by one contract of eleven covered playsheds at the Council schools at Pengarnddu, Penyrheolgerrig, Caedraw, Abercanaid, Troedyrhiw, Aberfan, Edwardsville, and Woodlands, for the Education Committee. Particulars may be obtained from the deputy surveyor, Town Hall, Merthyr Tydfil. Tenders to be sent to E. Stephens, clerk to the Education Committee.

June 27. **MERTHYR.**—Alterations and additions for the conversion of Cyfarthfa Castle into a secondary school, and the erection of science laboratories, art and lecture rooms, with latrines, playgrounds, and other works in connection therewith. Specification, quantities, and form of tender may be obtained from T. F. Harvey, M.Inst.C.E., Borough Engineer, on and after June 6, on deposit of £5 5s. Plans and drawings may be seen at Cyfarthfa Castle, and other information obtained, on and after June 6. Tenders must be sent to T. Aneuryn Rees, Town Clerk, Town Hall, Merthyr Tydfil.

June 27. **BELFAST.**—Erection of chimney shaft and flue connections at the Electric Power Station, Belfast, for the Tramways and Electricity Committee. General conditions, specifications, and drawings can be seen at the office of the City Surveyor, City Hall, Belfast, and bill of quantities obtained from Acheson Ferguson, Scottish Provident Buildings, on deposit of three guineas, to be lodged with the City Chamberlain, City Hall. Tenders to be lodged at the office of R. Meyer, Town Clerk. Compliance with Standing Order No. 44 relating to payment of wages and hours of labour, etc., will be required.

June 27. **PORTSMOUTH.**—Erection, completion, and maintenance in thorough repair for six calendar months from the completion of the whole thereof, of the following works, namely, a chapel, house, offices, boundary walls, and fences in the new cemetery at Milton, within the Borough of Portsmouth, for the Council. On deposit of £3 3s. a copy of bills of quantities, with forms of tender, can be obtained on application to G. Hammond Etherton, Town Clerk, The Town Hall, Portsmouth, and the specification, general conditions, and plans can be seen, and any further particulars obtained, at the Borough Engineer's Offices, at the same address. Tenders must be sent to the Town Clerk. Fair wages clause.

June 28. **CHACEWATER.**—Erecting waiting-room and verandah at Chacewater Station, Cornwall, for the Directors of the Great Western Railway. Plans, etc., may been seen, and forms of tender, etc., obtained, at the office of the Engineer at Plymouth (North Road) Station.

June 28. **LONDON, W.**—Extension of the verandah covering over the goods platform at Acton Station, for the G.W.R. Plans and specification may be seen and forms of tender and bills of quantities obtained at the office of the Engineer at this Station. Tenders must be addressed to G. K. Mills, Secretary, Paddington Station, London.

June 28. **NEWTON ABBOT (Devon).**—Erection of a new goods shed, etc., for the Directors of the G.W.R. Plans and specification may be seen and forms of tender and bills of quantities obtained at the office of the engineer at Plymouth (North Road) Station. Tenders must addressed to G. K. Mills, Secretary, Paddington Station, London.

June 28. **KEYNSHAM (near Bristol).**—Erection of a new goods shed at Keynsham, near Bristol, for the Directors of the G.W.R. Plans and specification may be seen and forms of tender and bills of quantities obtained at the office of the engineer at Bristol Station Tenders must be addressed to G. K. Mills, Secretary, Paddington Station, London.

June 28. **DEVIZES (Wilts.).**—Erection of new waiting rooms, footbridge, and verandahs, at Devizes station, for the Directors of the G.W.R. Plans and specification may be seen and forms of tender and bills of quantities obtained at the office of the Engineer at Bristol Station. Tenders must be addressed to G. K. Mills, Secretary, Paddington Station, London.

June 28. **LANCHESTER.**—Erection and completion of extra nurses' bedrooms at Maiden Law Sanatorium for the Hospital Board. Drawings, specifications, and conditions of contract may be seen and forms of tender may be obtained at the architect's office, 22, Durham Road, Blackhill. Tenders to be sent in to W. H. Ritson, clerk, Lanchester. Geo. Thos. Wilson, architect.

June 28. **AUDENSHAW (Lancs.).**—Conversion of the sanitary offices at Nos. 6, 8, and 10, Guide Lane, and 2 and 4, Croft Street, for the U.D.C. Plans can be seen and copies of tender, quantities, and specification obtained on application to the sanitary inspector, J. T. Dewhurst, Council Offices, 2, Guide Lane, Audenshaw. Tenders must be addressed to the Chairman, Sanitary Committee, Council Offices, Audenshaw.

June 28. **LEYTON.**—Construction of underground conveniences in High Road, Leytonstone, for the U.D.C. Plans may be seen, and specification, bill of quantities, form of tender, and other particulars obtained of William Dawson, M.I.C.E., Town Hall, Leyton. Tenders (in special endorsed envelopes supplied with the forms) must be delivered at the meeting of the Council to be held on June 28, at the Town Hall, Leyton, at 7 p.m. Sureties will be required.

June 28. **CLATTERBRIDGE (near Birkenhead).**—Erection and completion of new observation pavilion, and alterations and additions to administrative block, at the sanatorium, Clatterbridge, near Spital, for the Wirral Joint Hospital Board. Plans and specification may be inspected, and bills of quantities obtained from the architects, John H. Davies and Sons, 14, Newgate Street, Chester. Tenders to be delivered to J. E. S. Ollive, clerk, 54, Hamilton Street, Birkenhead.

June 28. **LONDON, S.E.**—Building a boundary wall at the Home Park Depot, Lower Sydenham, for the Lewisham B.C. Plan and specification may be seen and forms of tender obtained at the Town Hall, Catford (Surveyor's Department). Tenders must be delivered at the Town Hall, Catford, and placed in the box there provided for the purpose. The works are to be proceeded with immediately on acceptance of tender and execution of contract, and the contractor must employ local labour as far as practicable in carrying out the work. Rate of wages, etc., clause to be observed.

June 28. **KNOWLE, near Fareham (Hants).**—Erection of a work-room block and sundry alterations at the County Lunatic Asylum, Knowle, Fareham, Hants. Specifications, conditions of contract, and plans may be inspected and copies of the bill of quantities and all other necessary information obtained on application at the office of W. J. Taylor, County Surveyor, The Castle, Winchester, on and after, June 17. Drawings may also be seen at the Asylum. A deposit of £6 6s. will be required for copy of bill of quantities. Deposits must be made by cheque payable to the Hants County Council and crossed Bank of England, or the bills will not be sent. Tenders must be on forms supplied by the County Surveyor, and must be delivered to J. Railton, Clerk to the Committee of Visitors, Knowle.

June 29. **WOOLWICH.**—(See "Painting.")

June 29. **ADWICK-LE-STREET (Doncaster).**—Erection of a mortuary chapel, caretaker's house, and board-room for the Burial Board. Plans and specification can be seen and particulars obtained at the office of John Simmons, C.E., architect, Bank Chambers, Doncaster, to whom tenders must be delivered.

June 29. **LLANTWIT FARDRE (Pontypridd).**—Erection of two cottages at their cottage homes, Church Village, Llantwit Fardre, for the Pontypridd Guardians. Plans and specifications can be seen and bill of quantities obtained from the Clerk of the Works, John Richards, The Homes, Llwynypia, on deposit to him of £1 1s. Tenders to be sent to Wm. Spickett, Clerk, Union Offices, Pontypridd.

June 29. **CHESTERFIELD.**—Erection of seven hunger-houses, horse-shed, and appurtenant buildings in the cattle market, Queen's Park Road, Chesterfield, for the Corporation. Plans and specifications may be seen and bills of quantities and form of tender obtained on application at the Borough Surveyor's Office, on deposit of £1 1s. Tenders to be delivered at the office of Jno. Middleton, Town Clerk, 24, Gluman Gate, Chesterfield.

June 29. **ATWICK, ETC. (Yorks.).**—Works, for the Education Committee of the East Riding:—(a) Alterations and additions to the Council school at Atwick; (b) erection of new cloak-rooms and formation of yards, etc., at the Council school at Holmpton; (c) erection of new cloak-room and heating chambers, etc., at the Council school at Hutton, Cranswick. Plans and specifications may be seen and forms of tender obtained on application to the Building Surveyor, County Hall, Beverley. Quantities in respect of the Atwick school only can be obtained upon depositing £1 1s. A copy of the plans and specifications, together with forms of tender, will be deposited at the respective schools. Tenders to be delivered at the office of John Bickersteth, clerk to the East Riding Education Authority, County Hall, Beverley.

June 30. **NEW MALDEN.**—Erection of church schools at Kingston Road. Plans and specification can be seen at the offices of Vincent Davison and Nicol, architects, Coombe Chambers, New Malden. Tenders to be sent to J. T. Thompson, Queensmead, Thetford Road, New Malden.

June 30. **KESTEVEN.**—Alterations and additions to farm buildings and cottages at Metheringham Fen and Tanvats for the Small Holdings Committee of the Kesteven C.C., according to plans, specification, and quantities prepared by Jesse Clare, County Architect, Sleaford, of whom quantities and all particulars can be obtained. Tenders to be delivered to Thos. H. Holdich, Sleaford.

June 30. **BATH.**—Erection of mess room and office and pair of cottages at the sewage disposal site at Saltford, near Bath, for the Corporation. Plans may be seen and quantities obtained at the office of the engineer, W. H. Radford, C.E., Albion Chambers, Nottingham, on deposit of £2 2s. Plans can also be seen at the City Surveyor's Office, Guildhall, Bath. Tenders to be sent to Fredk. D. Wardle, Town Clerk, Guildhall, Bath.

June 30-July 4. **ST. ALBANS.**—Erection of a new public library in Victoria Street for the T.C. Further particulars and forms of tender may be obtained, and plans may be seen, at the office of Guilford Dudley, the architect to the Council, 2, Spencer Street, St. Albans, on June 30. Intending contractors will be required to deposit a sum of £3 3s. prior to particulars being furnished. Tenders must be sent to E. P. Debenham, town clerk.

July 1. **PRESTON (Yeovil).**—Alterations and additions to the schools at Preston, Yeovil. Particulars may be had from C. and C. B. Benson, architects, Yeovil.

(*Continued on next page.*)

July 1. **PORTH.**—Erection of two villas at Cemetery Road, for H. A. Bolton. Plans and specification may be seen at the office of James T. Jenkins, architect and surveyor, Porth and Bedwas, to whom tenders must be delivered.

July 1. **ST. AUBYN'S (Cornwall).**—Additions and alterations to the buildings at St. Aubyn's, Trevilly, Sennen. Plans and specifications can be seen by application to the Steward, Chyaneglos, Marazion, to whom tenders should be sent.—Piers S. St. Aubyn.

July 1. **LONDON, N.**—Construction of underground conveniences in Finsbury Park, by the Finsbury Gate, Seven Sisters' Road, N. Drawings, condition, and specification may be seen, and forms of tender and bills of quantities obtained, on and after the 20th inst., upon application to the Borough Engineer, J. Patten, Barber, at the Town Hall, Upper Street, N., and deposit of £2 2s. Tenders must be sent to Wm. F. Dewey, Town Clerk, Town Hall, Upper Street, N.

July 2. **FOLKESTONE.**—Erection of a temporary building at the County school for girls, for the Kent Education Committee. See advertisement page xxii. in this issue for further particulars.

July 2. **TREVISCOE (near St. Stephens, Cornwall).**—Erection and completion of proposed Wesleyan Methodist Church, Grampound Road, according to plans and specifications, which may be seen by appointment at the residence of Capt L. H. Dyer, Treviscoe, to whom tenders are to be sent. Plans and specifications may be seen and particulars relating to the work may be obtained at the office of Sampson Hill, architect, Green Lane, Redruth.

July 2. **CHIPPENHAM, ETC.**—Internal and external renovations to Chippenham Police Station, also police cottages at Highworth, Ludgershall, and Shrewton, for the Standing Joint Committee of the Wilts C.C. Specifications and forms of tender can be obtained on application to the County Surveyor, Trowbridge. Tenders addressed to the County Surveyor, must be delivered at the office of J. George Powell, county architect and surveyor, Trowbridge.

July 4. **FOOTSCRAY (Kent).**—Enlargement of Longlands Council School, for the Kent Education Committee. See advertisement in this issue for further particulars.

July 4. **SOUTHEND-ON-SEA.**—Alterations and additions to Leigh Road and Brewery Road Council Schools, for the Education Committee. Plans, specifications, and conditions may be seen, and form of tender obtained, on deposit of a cheque for £1 1s., upon application to Ernest J. Elford, C.E., borough engineer and surveyor. Tenders to be delivered at the office of J. W. Barrow, Clerk to the Committee, Education Offices, Municipal Buildings.

July 4. **FOOTSCRAY (Kent).**—Enlargement of Longlands Council School at Footscray, Kent, for the Kent Education Committee. Plans and specification, prepared by the Committee's Architect, (Wilfred H. Robinson, M.S.A.), and conditions of contract may be inspected at the office of the Committee. Send name and address, accompanied by a deposit of £1, to Fras. W. Crook, secretary, Caxton House, Westminster, S.W. The person whose tender is accepted will be required to provide two sureties who will enter into a bond to the Committee for the satisfactory completion of the contract. Tenders must be addressed to Thos. Beeton, Corner House, Church Avenue, Sidcup.

July 4. **GORAGHWOOD (Ireland).**—Erection near their Goraghwood Station of a timber-framed storage bin, etc., about 50 feet x 50 feet, and averaging about 35 feet high, with timber roof, covered with corrugated iron, for the Directors of the Great Northern Railway Company, Ireland. Also an engine and boiler house, etc., about 75 feet long by 36 feet wide. Sides and roof to be steel framed and covered with galvanised corrugated iron. Drawings and specifications may be seen at the office of F. A. Campion, chief engineer, Amiens Street terminus, Dublin, or copies of them at the office of the district engineer, Belfast, and forms of tender can be obtained. Tenders should be delivered to T. Morrison, secretary, Secretary's Office, Amiens Street terminus.

July 5. **WOKING.**—Erection of a new sorting office at Woking for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster, Woking. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be delivered addressed to the Secretary, H.M. Office of Works, etc., London, S.W.

July 5. **MAIDSTONE (Kent).**—Erection of offices, workshops, stores, etc., upon the Council's wharf in St. Peter Street, Maidstone, for the Bridges and Roads Committee of the County Council, in accordance with drawings and specification, which may be seen at the office of the County Surveyor, West Borough Chambers. Bills of quantities can be obtained upon a deposit of a cheque for £3 3s. Tenders to be forwarded to W. B. Prosser, Clerk of the Council Sessions House, Maidstone. Fair wages clause.

July 5. **LONDON, E.**—Erection of proposed nurses class-room and addition to drug stores, etc., at the District Sick Asylum, Devons Road, Bromley, E., for the Managers, in accordance with plans and specification prepared by their architects, J. and W. Clarkson, 136, High Street, Poplar, E. The drawings and conditions of contract may be seen at the offices of the architects, and a copy of the specification and form of tender obtained upon payment to the architects of a deposit of £5. Tenders to be addressed to Walter R. Foskett, Clerk to the Managers, at the Asylum, Devons Road, Bromley-by-Bow, E. Parties tendering will be required to declare that they pay the rate of wages and observe the hours of labour that are generally recognised by the trade unions and considered fair in the trade, and will be required to provide two approved sureties, each bound in the amount of the contract, for the proper fulfilment thereof.

July 6. **CHIPPING ONGAR (Essex).**—Execution of (a) general painting and repairs, (b) tiling and roof repairs, and (c) alteration to kitchen in administrative block at the children's homes at Chipping Ongar, for the Hackney Guardians. Specifications, conditions of contract, and forms of tender can be obtained of Frank R. Coles, Clerk to the Guardians, and the drawing relating to the alteration to the kitchen in administrative block may be seen at the Guardians' offices, Sidney Road, Homerton, N.E. The contractor will be required to give approved security in a bond, the form of which may be seen at the Guardians' offices. Tenders must be delivered at the office of the clerk. Tenders are, so far as they relate to section (c)—i.e., alteration to kitchen in administrative block—conditional upon the sanction of the Local Government Board.

July 7. **SOUTHEND-ON-SEA.**—(See "Engineering.").

July 8. **MATLOCK.**—Alterations and additions to Smedley's Hydropathic, consisting of 32 bedrooms, etc., etc., for the Directors. Tenders are invited for work connected with the following trades:—Mason, bricklayer, concretor, excavator, and drainage, joiner, plasterer, plumber, glazier and painter. Persons desirous of tendering will please inspect the site and take their own quantities from plans and specifications, which will be on view at the Secretary's Office of the Hydro, from June 24 to July 5. Tenders to be sent addressed to the "Chairman of the Board of Directors."

No date. **ELLESMERE.**—Erection of new shop premises with store rooms, etc., at Ellesmere, for the Ellesmere and District Co-operative Society, Ltd. For plans and specifications, etc., apply to the Secretary of the Society.

No date. **ROMFORD.**—Erection of new business premises and dwelling-house, with works incidental thereto, on the site of the Old Windmill and Bells, Market Place, Romford, for L. F. Stone. Send names to the architect, E. J. Little, Hornchurch Road, Romford, or to C. E. Pease, F.S.I., Surveyor, 16, Clifford's Inn, Fleet Street, E.C. Bills of quantities can be obtained.

No date. **GRANTHAM.**—Construction and erection of a new drill hall at, and certain alterations to, the Barracks, at Grantham, for the Lincolnshire Territorial Association. Bills of quantities and specification of works required may be obtained by approved applicants at the Offices of Scorer and Gamble, Architects, Bank Street Chambers, Lincoln, on deposit of £2 2s.

No date. **EGREMONT.**—Extension of the gasworks for the U.D.C. Contract No. 1: Excavations, concrete and masonry of retort house. Full particulars and copy of the bill of quantities may be obtained from the engineers, Thomas Newbigging and Son, 5, Norfolk Street, Manchester, on deposit of £1 1s. Drawings and specification may be seen at the Engineers' office, or at the gasworks, Egremont.

ENGINEERING.

June 27. **PORTMADOC.**—Diverting the River Dwyryd from Aberia Point to join the River Glaslyn at a point opposite Messrs. Greaves' No. 2 wharf, between the Ballast Bank (Lewis's Island) and Trwyncae'rogo, for the Estuary Committee. Particulars may be obtained on application to Morgan Thomas, C.E., Town Hall, Portmadoc. Tenders must be sent to Jno. Jones, Secretary, Town Hall, Portmadoc.

June 27. **LICHFORD (Lymington).**—Designs, specifications, and tenders for a ferro concrete bridge (8ft. span), at Lichford, in the parish of Milton, for the Lymington R.D.C. Also for a concrete surface water channel near the Milton Schools. Particulars to be obtained of S. Crittall, surveyor, Sway. Tenders must be sent to J. Davis Rawlings, Clerk, 38, High Street, Lymington.

June 27. **SEATON.**—Laying 280 yards of 3in. cast-iron socket pipes, with appendages, including sluice valve and hydrants, for the U.D.C. Specifications and conditions may be seen at the office of the Council's surveyor, E. W. Skinner, by appointment. Tenders must be addressed to A. P. Cann Evans, Clerk to the Seaton Urban District Council, Town Hall, Seaton.

June 27. **BOGNOR.**—New low pressure hot water heating installation, at the Bognor Council schools, for the West Sussex and Chichester Joint Education Committee. Plan and specification can be obtained on application to Haydn P. Roberts, A.R.I.B.A., County Education Architect, Horsham. The contractor whose tender is accepted may be required to enter into a contract with the West Sussex County Council, and to enter into a bond with two approved sureties, if required, for the due carrying out of the contract. Tenders to be delivered to Lionel Thompson, Secretary, Thurloe House, Worthing.

June 28. **DEVIZES (Wilts.).**—(See "Building.")

June 28. **LONDON, W.**—Reconstruction of a footbridge, etc., at Hammersmith Station, for the Joint Committee of the Great Western and Metropolitan railways. Plans and specification may be seen, and forms of tender and bills of quantities obtained, at the office of the Engineer at Paddington Station. Tenders must be addressed to H. Townsend, secretary to the Hammersmith and City Railway Joint Committee, Paddington Station, London.

June 29. **OLDHAM.**—Construction of a concrete gasholder tank, 212 feet diameter by 41 feet deep, adjoining their Hollinwood gas station, for the Corporation Gas Committee. Copies of specification and drawings can be obtained on application at the Gas Offices, Greaves Street, Oldham, on deposit of £2 2s.

June 29. **SALTASH (Cornwall).**—Construction of a steam ferry bridge, to run on chains across the river Tamar at Saltash passage, for the Saltash Corporation. Plans and specifications of the bridge may be obtained from Fred Et. Cleverton, town clerk, Saltash. The bridge is to be delivered on chains at Saltash within twelve months of the signing of the contract. Tenders to be sent to the Town Clerk.

June 29. **HOPE (Derbyshire).**—Construction of a concrete service reservoir and the providing, laying, and jointing of about 7,560 lineal yards of 4in. and 600 lineal yards of 3in. diameter, turned and bored spigot and socket cast-iron pipes, together with all necessary valves, hydrants, intake tank, and other works connected therewith at Hope, Derbyshire, for the Chapel-en-le-Frith R.D.C. Drawings may be seen, specification, bill of quantities, form of tender, key plan of the district, and other information can be obtained on application to Brady and Partington, engineers to the Council, Town Hall, Chapel-en-le-Frith, via Stockport, on deposit of £2 2s. Tenders to be delivered to J. B. Boycott, Clerk to the Council.

July 1. **MAYFIELDS (Staffs.).**—Sinking a borehole of about 6in. internal diameter to such depth as may be found necessary to obtain water at Slack Lane, Mayfield, near Ashbourne, and also for making a 14-days' continuous pumping test to ascertain the yield of water, for the R.D.C. A copy of specification may be obtained on application to Luther Adams, surveyor, Stanton, near Ashbourne. Tenders must be sent addressed to the Clerk, Mayfield R.D.C., Ashbourne.

July 4. **DUBLIN.**—Construction and erection of twin Scherzer rolling lift bridges across the entrance to the Royal Canal, North Wall Quay, Dublin, for the Port and Docks Board. Specification and drawings can be seen at the office of the Engineer of the Board, John P. Griffith, M.Inst.C.E., East Wall, Dublin, from whom any further information required can be obtained. If on examination of the specification and drawings, intending contractors should desire to obtain copies, these, together with the special printed form of tender, can be obtained on deposit of £5. Contractors are required to state whether they have constructed Scherzer rolling lift bridges, or other opening bridges, and to give full particulars of such works and the names of engineers under whom these were carried out, and to whom reference may be made. Tenders must be on the special form, and addressed to the Secretary, Port and Docks Office, Westmoreland Street, Dublin.

July 5. **MANCHESTER.**—Manufacture, delivery, and in some cases the transport and erection of the steelwork and ironwork required for nine bridges and one subway on the Aqueduct between Walkden and Audenshaw, the weight being about 700 tons, for the Corporation Waterworks Committee. Specification and form of tender may be obtained on application to G. H. Hill and Sons, civil engineers, Albert Chambers, Albert Square, Manchester, and 3, Victoria Street, Westminster, upon receipt of cheque for £2 2s. as deposit. Tenders, addressed to the Chairman of the Waterworks Committee, must be forwarded to the Secretary, Waterworks Offices, Town Hall, Manchester.

July 7. **SOUTHEND-ON-SEA.**—Extension of Southchurch Esplanade, for the Corporation. The esplanade will be approximately 1,260 feet in length, 69 feet in width, and will be protected by an apron wall. Copy of the general conditions, specification, and duplicate copies of the bill of quantities and form of tender may be obtained and plans inspected on application to Ernest J. Elford, M.Inst.M.E., borough engineer, Municipal Buildings, Southend-on-Sea, on deposit of £5 5s. Tenders to be delivered to H. J. Worwood, town clerk, Town Clerk's Office, Southend-on-Sea.

July 16. **BURNLEY.**—Construction of an impounding reservoir, with catch-waters, aqueducts, meter houses, etc., at Hurstwood, near Burnley, for the Burnley Corporation. Plans may be seen, and specification, schedule of prices, form of tender, and all other particulars obtained on application to J. Diggle and Son, engineers, 14, Victoria Street, Westminster, S.W., and Hind Hill Street, Heywood, Lancashire, on deposit of £5. Tenders must be sent to Peregrine Thomas, town clerk, Town Hall, Burnley.

(*Contracts continued on page xvi.*)

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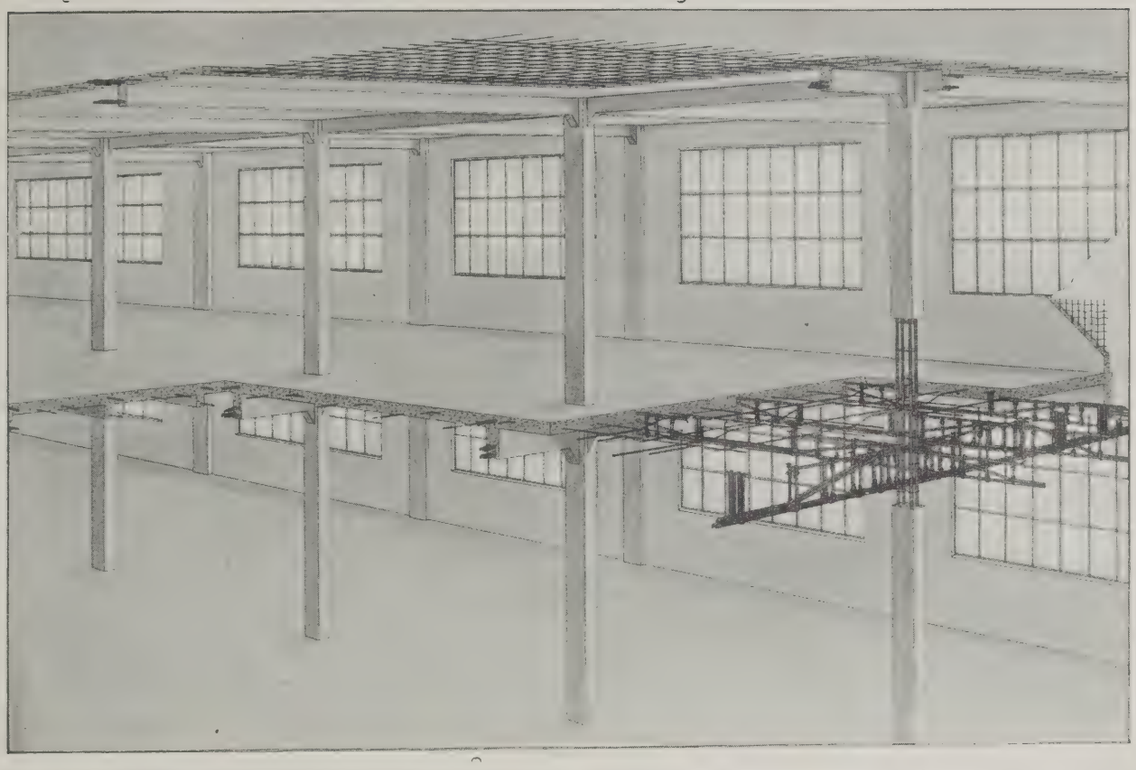


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2. Stirrups any length and varied spacing.
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4. No loose members.
5. Al members completely framed as Units.
6. Exactitude of disposition.
7. No risk of members being displaced.
8. Elimination of Errors in workmanship
9. Formed from ordinary standard sections of steel.
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SANITARY ENGINEERING.

June 28. **LEYTON.**—(See "Building.")

June 28. **WINTERTON.**—Construction of a new sewer for Earlsgate in the U.D. of Winterton, together with the manholes, vent shafts, and other works, for the U.D.C. Tenders to be addressed to Norman Gibson, Clerk to the Council, South Street, Winterton. Plans and specifications may be seen and tender forms obtained at the office of Alexander M. Cobban, 12. Home Street, Scunthorpe.

June 29. **SOUTH NORMANTON.**—Laying about 260 yards of 6in. and 9in. stoneware pipe sewers, together with manholes; also the construction of small sewage tanks, percolating beds, and incidental works at Berristow Row, South Normanton, for the Blackwell R.D.C. Drawings, etc., may be seen, and full particulars obtained, at the office of the district surveyor, Henry Silcock, 67, Westgate, Mansfield, on deposit of £1.

June 29. **PATELEY BRIDGE.**—Shaw Mills sewerage scheme.—Providing and laying about 840 lineal yards of 9in. and 6in. earthenware pipe sewers, together with the necessary manholes, etc., also for the construction of sewage disposal works, consisting of detritus tank, storm water tank, open septic tank, percolating filter, and all contingent works, for the R.D.C. Plans and specification may be inspected at the offices of the Engineers, Spinks, Pilling, and Rodwell, 20, Park Row, Leeds, from whom bills of quantities and form of tender may be obtained on deposit of £1 1s. Tenders must be delivered to W. Oddie, Clerk to the Council, Pateley Bridge.

June 30. **CROMPTON.**—Construction of extensions to their sewage works at New Hey, for the U.D.C., comprising the following:—Contract 1.—(a) 12 precipitation tanks, with channels, valve pipes, sluices, and other appurtenant works; (b) first and second contract bateria beds, about 1½ acres in extent, with filter area for supernatant water, and all appurtenant works; (c) detritus tanks, screening chambers, storm-water overflow chamber, with necessary channels, etc; (d) valves, screens, penstocks, lime mixer, oil engines, and machinery, etc. Contract No. 2.—(a) Dynamos and electrical equipment for lighting new and present buildings, with motors for driving machinery, standards, wiring, lamps, etc., complete; (b) alterations to present buildings, with cast-iron overhead tank, and all requisite sewer diversions, channels, etc. Drawings, specifications and general conditions of contract may be seen, and bills of quantities obtained, on application to J. P. Wilkinson and Son, Civil Engineers, 301, Cathedral Street, Manchester, and on deposit of a crossed cheque, value £5 5s. Tenders to be addressed to the Clerk to the Council, Town Hall, Shaw, Oldham.

July 1. **LONDON, N.**—(See "Building.")

July 1. **HANDFORTH.**—Construction of about 2,280 yards of earthenware pipe sewers, of 15in., 12in., and 9in. diameter, with manholes, flushing chambers, ventilators, etc., and also for the construction of sewage tanks, the laying-out and draining of certain land, etc., for the purposes of sewage disposal. Plans may be seen and copies of the specification and quantities obtained on application to Herbert Worsley, Clerk to the Council, 36, St. Petersgate, Stockport, on the deposit of £5 5s. Tenders must be sent to the above.

July 7. **LYMINGTON.**—Cleansing of the outfall sewer on the Mudlands outside Lymington for the T.C. Specifications may be seen at the office of J. Davis Rawlins, Town Clerk, 38, High Street, Lymington, and it will be desirable for persons tendering to inspect the outfall. Tenders should be sent to the above.

IRON AND STEEL.

June 28. **LONDON.**—Supply of about 120 tons of steel bridge girders and other iron and steel work of British manufacture, for the Directors of the G.W.R. Plans and specification may be seen and forms of tender and bills of quantities obtained at the Office of the Engineer, at Paddington Station. Tenders must be addressed to G. K. Mills, Secretary, Paddington Station, London.

July 4. **DUBLIN.**—(See "Engineering.")

July 4. **NOTTINGHAM.**—Supply and delivery at Nottingham of 400 tons of steel rails of the British Standard Section No. 4, for the Tramways Committee of the Corporation. Drawings may be seen, and copies of the specification and form of tender obtained, on applying to Arthur Brown, M.InstC.E., City Engineer, Nottingham, on deposit of £1 1s. Tenders to be delivered to J. A. H. Green, Town Clerk, Guildhall, Nottingham. Fair wages clause.

PAINTING.

June 25. **EVESHAM.**—(See "Building.")

June 27. **STOCKTON-ON-TEES.**—Painting at the Borough Hall and Town Hall. For particulars apply at the Borough Engineer's Office, Town Hall. Tenders to be sent to Arthur B. Crosby, Town Clerk, Borough Hall, Stockton-on-Tees.

June 27. **CROOKSTON (Govan).**—External painter work to be done at Hawkhead Asylum, Crookston, for the Govan Lunacy Board. Schedules of quantities, etc., may be obtained on application to John Mitchell, Clerk, 7-8, Carlton Place, Glasgow, with whom offers are to be lodged.

June 27. **LIVERPOOL.**—Painting required at their Cottage Homes Institution, at Olive Mount, Wavertree, for the Select Vestry of the Parish, according to a specification which may be seen at the office of H. J. Hagger, Vestry Clerk, Parish Offices, Brownlow Hill, Liverpool, to whom tenders must be sent.

June 27. **CLECKHEATON.**—Painter's and decorators' work required to be done at the town hall, for the L.D.C., in accordance with specification prepared by their surveyor, which may be inspected at his office, Town Hall, and where form of tender and any further particulars may be obtained. Tenders must be sent to John H. Linfield, clerk, Town Hall, Cleckheaton.

June 28. **EDINBURGH.**—Painter work at various schools for the School Board. Specifications may be obtained at the Board offices, Castle Terrace. Tenders must be lodged with J. W. Peck, Clerk to the Board, School Board offices, Castle Terrace, Edinburgh.

June 28. **LONDON, W.C.**—Cleaning and painting their offices, 15, Henrietta Street, and 29, Maiden Lane, Covent Garden, for the Guardians of the Strand Union. A copy of the specification and form of tender can be obtained of the Guardians' architect, A. A. Kekwick, 12, Norfolk Street, Strand, on depositing £2 2s. in cash. Tenders are to be delivered at 15, Henrietta Street, Covent Garden. The party whose tender is accepted will be required to enter into a bond with two approved sureties for the due performance of the contract.

June 29. **WEST HARTLEPOOL.**—Painting, etc., at the public library, in accordance with the specification to be seen at the office of Nelson F. Dennis, M.Inst.C.E., Borough Engineer and Surveyor, Municipal Buildings. Tenders are to be addressed to the Chairman of the Public Library Committee, and delivered at the Town Clerk's Office, 78, Church Street.

June 29. **WOOLWICH.**—Painting and certain repairs at the Town Hall, Wellington Street, for the B.C. Copies of the specification and form of tender may be obtained at the office of J. Rush Dixon, M.Inst.C.E., borough engineer, Town Hall, Woolwich. Tenders must be sent to Arthur B. Bryceson, Town Clerk, Town Hall, Woolwich. Fair wages clause.

June 30. **LLANFYLLAN (Wales).**—Whitewashing and colouring the Union Workhouse. Specification may be inspected at the clerk's office at Llanfyllin. Tenders should be sent to T. Edwards, Clerk to the Guardians.

June 30. **CLARACH (Wales).**—Repairs, painting, and colouring of the Congregational Chapel, for the Trustees. Tenders can be sent in separately if desired, and should be forwarded to Griffith Jones, Nantllan, Clarach, Aberystwyth. The specifications may be seen at the Chapel House.

June 30. **LONDON,** S.W.—(a) Painting works, etc., at the Infirmary; (b) painting works, etc., at the Intermediate School, for the Guardians of the Wandsworth Union. Forms of specification and tender can be obtained upon application at the office of F. W. Piper, clerk, Union Offices, St. John's Hill, S.W., to whom the respective tenders must be sent.

June 30. **SHREWSBURY.**—Paint, colour, etc., the interior of the Board Room, offices, etc., and the exterior wood and iron work of the cemetery buildings, for the Cemetery Committee. Specification may be seen and printed form of tender obtained at the office of W. Chappel Eddowes, borough surveyor, Borough Surveyor's Office, The Square. Tenders to be sent to the Town Clerk, Guildhall.

July 1. **BIRSTALL (Yorks.).**—Painting Prospect Mill—ironwork with red oxide, woodwork with white lead and oil. Apply to Taylor Yeilding, Birstall.

July 6. **CHIPPING ONGAR (Essex).**—(See "Building.").

July 6. **LONDON N.E.**—Cleansing various wards, etc., at their Infirmary, High Street, Homerton, N.E., for the Hackney Guardians. Specifications, conditions of contract, and forms of tender can be obtained at the Guardians' offices, Sidney Road, Homerton. The contractor will be required to give approved security in a bond, the form of which may be seen at the Guardians' offices. Tenders must be delivered to Frank R. Coles, Clerk to the Guardians.

No date. **HOWDENDYKE.**—Painting the outside woodwork of the Steam Packet Inn, Howdendyke.—Apply to J. Wilson, Proprietor.

No date. **ASPULL.**—Cleaning, painting, etc., as follows, viz:—1st, iron fencing on road side near Springs Bridge; 2nd, the iron work underneath Springs Bridge; 3rd, tramway shelter near Finger Post; 4th, the wood finger post. Particulars can be obtained on application to L. Athron, Clerk, Council Offices, Aspull.

ROADS AND CARTAGE.

June 25. **LEWES.**—Supply of 600 tons of 2in. broken granite, 150 tons of coarse granite screenings, and 500 tons of broken surface picked flints, for the T.C. Forms of tender, etc., may be had, and further information obtained, at the Borough Surveyor's Office, Town Hall, Lewes.

June 27. **WHITSTABLE.**—Supply of 835 yards broken pit flints that will pass through a 2½ ring; 120 yards hoggin; 130 yards Thames ballast; 110 tons of ⅜in. granite chippings and dust; 60 tons of best Portland cement for the Tankerton Estate, Limited. Tenders to be addressed to the Tankerton Estate Office, Whitstable.

June 27. **STRATFORD-UPON-AVON.**—Supply of broken and unbroken road macadam required for the maintenance of the borough roads during ensuing year, for the T.C., according to specification to be obtained, together with form of tender, on application to Roden Dixon, C.E., borough surveyor, Municipal Offices, Stratford-upon-Avon. Tenders to be lodged with the Borough Surveyor.

June 28. **SOYLAND (Yorks.).**—Supply of about 635 tons of granite macadam, 2in. gauge, delivered at Ripponden or Rishworth Railway Station (L. and Y. Railway) in such quantities and at such times as required, for the Soyland U.D.C. Tenders to be sent to L. H. Longbotham, clerk, Council Offices, 4, Carlton Street, Halifax

June 28. **LONDON, N.W.**—Relaying of 3,336 yards super. or thereabouts of wood paving in Cambridge Road and Cambridge Gardens, Kilburn, for the Willesden District Council. Plan and specification may be seen, and all further particulars obtained, upon application to O. Claude Robson, M.Inst.C.E., engineer to the Council, Public Offices, Dyne Road, Kilburn, N.W. Tenders to be delivered at the offices of the Council. A £10 Bank of England note to be deposited with each Tender under separate cover.

June 28. **LONDON, S.E.**—Kerbing, channelling, and metalling the roadways and paving the footpaths with artificial stone (in separate contracts) of Springrice Road, Lewisham, for the B.C. Plan and specification may be seen and forms of tender obtained at the Town Hall, Catford (Surveyor's Department). Copies of the specification may also be had on payment of 5s. in each case, which will not be returned. Tenders must be delivered at the Town Hall, Catford, and placed in the box there provided for the purpose. The works are to be proceeded with immediately on acceptance of tender and execution of contract, and the contractor must employ local labour as far as practicable in carrying out the work. Rate of wages and hours of labour clause to be observed.

June 29. **BOLLINGTON.**—Supply of about 300 tons of Welsh granite macadam for the U.D.C. Particulars may be obtained from Samuel Knight, clerk, Council Offices, Bollington, near Macclesfield.

June 29. **LLANTRISANT.**—Construction of a new road, from Penygarreg to Gwernleuci, in the parish of Llantrisant, for the R.D.C. Plans, etc., may be seen, and quantities and forms obtained, from Thomas Saunders, Surveyor, School Street, Pontyclun, Glam., upon deposit of £5

June 29. **BRAINTREE.**—Supply and delivery at Braintree Railway Station of 600 tons (more or less) of 2in. granite; and for the use of a steam roller and scarifier, for the U.D.C. Forms of tender may be obtained on application to H. H. Nankivell, Surveyor, Vestry Hall, Braintree. Tenders to be delivered to Herbert J. Cunnington, Clerk.

June 29. **BEDFORD.**—New paving works required in St. Paul's Square, Bedford. Drawings and specifications can be seen, and copies of bills of quantities, forms of tender, and all information obtained upon application to N. Greenshields, A.M.I.C.E., Borough Engineer and Surveyor, Town Hall, Bedford. Tenders must be addressed to Harry Smith, Deputy Town Clerk, Town Hall, Bedford.

June 30. **SURBITON.**—Street improvement works at Tolworth Road, for the U.D.C. Drawings, etc., can be seen at the office of Henry T. Mather, engineer and surveyor, Council Offices, Ewell Road, Surbiton, and a copy of the specification obtained between 10 a.m. and 1 p.m. Tenders must be delivered at the Council Offices. A deposit of £1 1s. must be made.

July 4. **EAST DEREHAM.**—Supply of 350 tons (more or less) of 2½in. broken granite, and 350 tons (more or less) of 1½in. broken granite, to be delivered free at the East Dereham Station of the Great Eastern Railway Company before the end of November, 1910, for the U.D.C. Forms of tender may be obtained on forwarding a stamped addressed foolscap envelope to the surveyor, H. G. Himson, Theatre Street, East Dereham. Tenders to be sent to B. H. Vores, clerk to the Council.

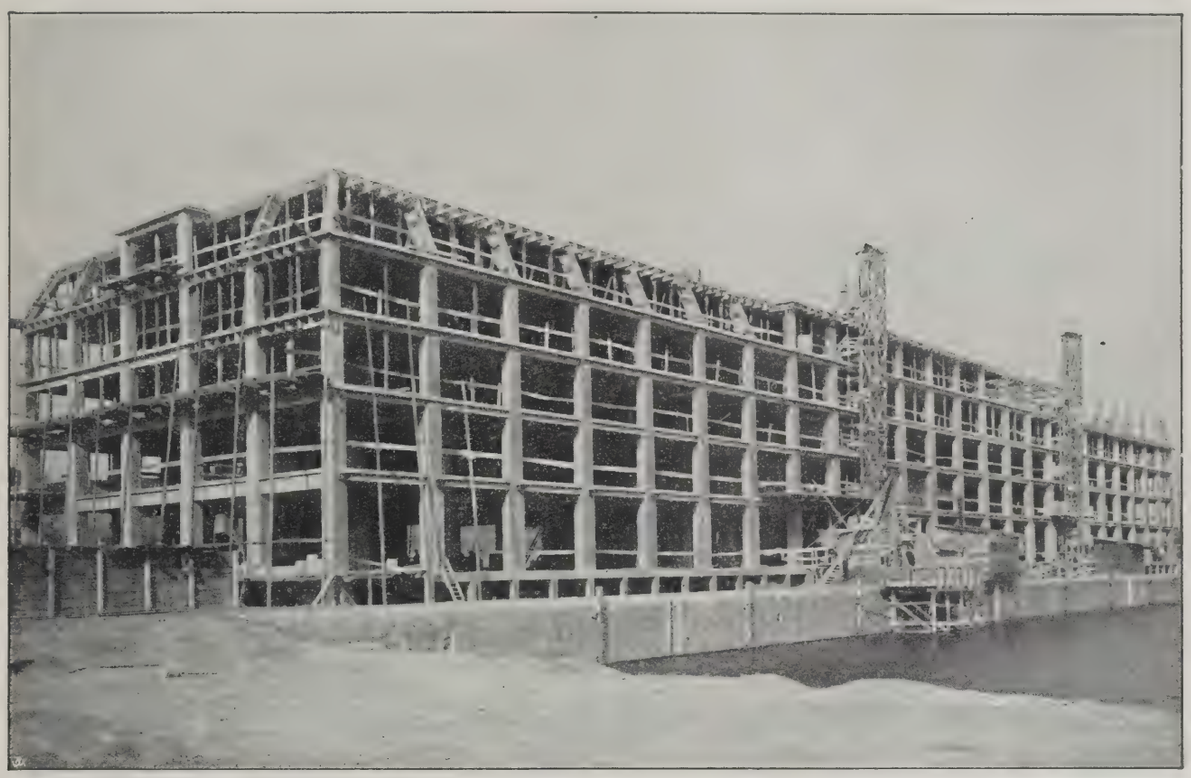
July 5. **FEATHERSTONE (Yorks.).**—Street works in Albert Street, Post Office Road (part of), Newport Terrace, Wilson Street, and Whiteley Street, within their district, which include kerbing, flagging, channelling, macadamizing, etc., for the U.D.C. The plans may be inspected, and copies of the specification, bill of quantities, form of tender, and general conditions obtained, on application to Samuel Chesney, engineer and surveyor, Council Offices, Featherstone. Applications must be accompanied by a deposit of £1. A fair wages clause will be inserted in the contract. Tenders, together with the priced quantities, must be received by J. A. Haigh, clerk, Council Offices, Featherstone.

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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, ARCHITECTS' AND BUILDERS' JOURNAL, *Caxton House, Westminster.*

Information from accredited sources should be sent to The Editor," at latest by noon on Saturday if intended or publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Abergavenny.—For the erection of workmen's cottages at Coldbrook for Sir Arthur Herbert, G.C.V.O. W. J. Prichard, Architect, 16, Monk Street, Abergavenny.

E. F. King and Co., Newport	£1,723 0 0
Robert W. Moon, Newport	1,677 0 0
Charles H. Reed, Newport	1,618 0 0
Foster and Hill*, Abergavenny	1,530 0 0

*Accepted.

Audley (Staffs.).—For erection of farm house and buildings at Audley, Staffordshire. T. Bibbey, architect, Cheadle.

T. R. Yoxall, Stoke-on-Trent	£1,735 0 0
S. Wilton, Newcastle	1,700 0 0
F. H. and H. Maddock, Audley	1,570 0 0
E. Johnson,* Audley	1,433 6 9

*Accepted.

Birmingham.—Accepted for erection of new manufacturing premises, offices, and warehouse, for William Neale and Sons, Ltd., Cox Street, Birmingham. Joseph D. Wood, architect, Newhall Street, Birmingham.

G. Webb and Son, Birmingham, £3,530.

Colwyn Bay (North Wales).—For alterations and additions to Beech Holme, Pwllycrochan Avenue, Colwyn Bay, together with new motor garage, etc., for W. E. Buckley. A. M. Fowler, jun., architect, Colwyn Avenue, Llandrillo-yn-Rhos, North Wales.

General contract.

H. Davies	£2,198 2 5
R. Roberts	1,993 5 4
Davies and Sons	1,911 8 1
Wood and Co.*	1,696 5 0

Plumber work

Parry and Jones	£305 17 1
J. S. Jones*	256 17 0
Pierce and Co.	236 15 0

Steelwork.

E. Wood and Co., Cornbrook, Manchester	£172 10 0
S. Wood, Sheffield	97 15 0
Lambourne and Co.,* Manchester	91 10 0

Oak panelling, parquetry, etc.

Greenhalgh and Co., Warrington	£249 0 0
Waring and Gillow, Ltd., Manchester	216 13 6
Goodall, Lamb and Heighway, Ltd., Manchester	215 15 0
D. Allen and Sons*	197 10 0
Wood and Co.	195 17 0

Conservatory.

D. Lowe and Sons, Cornbrook, Manchester	£295 0 0
Foster and Pearson, Ltd.* Beeston	244 0 0

Heating apparatus.

Harlow and Son, Stockport	£44 10 0
Foster and Pearson, Ltd., Beeston	43 15 0
Seeward and Co., Lancaster*	34 10 0

Rest of Colwyn Bay.

*Accepted.

Eastbourne.—For extension to motor 'bus depot, Roselands, for the Motor Omnibus Committee. A. Ernest Prescott, borough surveyor.

J. Martin	£3,646
T. Dunlop	3,538
A. W. King and Son	3,488
C. P. Dennis and Co.	3,442
M. Hookham	3,397
F. W. Allcock*	3,305

All of Eastbourne.

*Accepted.

Gelligaer (Wales).—For erection of an isolation hospital, for the U.D.C. P. V. Jones, architect, Hengoed.

D. Jones, Hengoed	£11,453
H. J. Davies, Bargoed	11,057
J. L. Hancock	10,680
G. Griffiths and Sons	10,248
Knox and Wills	10,000
E. Walters and Son, Bristol	9,937
James and Morris	9,712
Jones Bros., Treharris	9,660
S. Shaile	9,625
T. F. Howells, Caerphilly	9,519
D. Davies and Sons	9,489
Voddon and Lee, Bargoed	9,418
E. Turner and Sons	9,359
D. W. Davies and Howell	8,680
R. Jones, Abertridwr	8,452
J. Lloyd,* Ystrad Mynach	8,000

Rest of Cardiff.

Architect's estimate, £9,515

*Accepted.

Letchworth (Herts.).—For alterations to house (Te Whare), Norton Road, Letchworth, Herts, for Miss Lissaman. 'gernon Hallam, architect, 21, Marlin Crescent, London.

G. W. Sousler (lowest), £150.

London, N.—For erection of banking premises at Lower Edmonton, N., for the London and Provincial Bank, Ltd. V. Vagnolini, architect, 33, Stirling Road, Clapham Rise, London, S.W.

W. Irwin	£3,125
C. J. Newby and Bros.	2,985
Mattock Bros.	2,983
A. Fairhead and Son	2,963
H. Knight and Son	2,948
A. Monk	2,815
Rice and Son*	2,796

*Accepted.

London, S.E. — Accepted for erection of branch library at New Cross Gate, for the Deptford B.C.

E. J. Gorham, Point Hill, Greenwich, £4,500.

Northampton. — For erection of new Baptist chapel, Cogenhoe, Northants. H. H. Dyer and Son, architect.

T. Higgs	£925
Powell	903
Sharp and Robinson	893
Hawlin	884
J. G. Sharman	877
D. Sharman	875
A. J. Chown	858
G. W. Sousler	849
Marriott	844
W. Higgins	837

Amended Estimate.

A. J. Chown	650
W. Higgins	640
G. W. Sousler	630
Marriott	635

Northampton.—For erection of Congregational new chuch, Abington Avenue, Northampton. Sutton and Gregory, architects, Nottingham.

Beardsmore and West	£4,443
G. W. Sousler	4,413
H. Green	4,390
A. P. Hawtin	4,318
E. Green	4,272
Martin	4,267
Archer and Son, Ltd.	4,248
R. Cosford	4,230
W. Heap	4,184
Thos. Higgs	4,176
A. J. Chown	4,137
E. D. Sharman	4,082

Ramsey.—Accepted for erection of new police station and court, for the Hunts Standing Joint Committee.

Thackray and Co., Huntingdon, £2,498 14s. 3d.

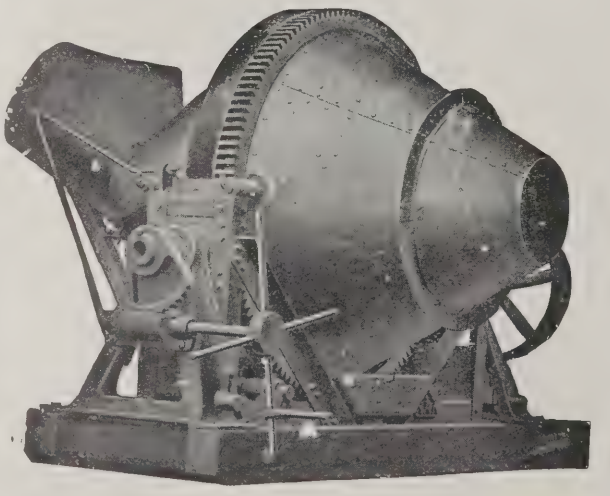


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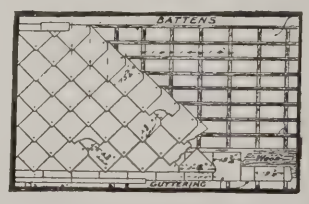
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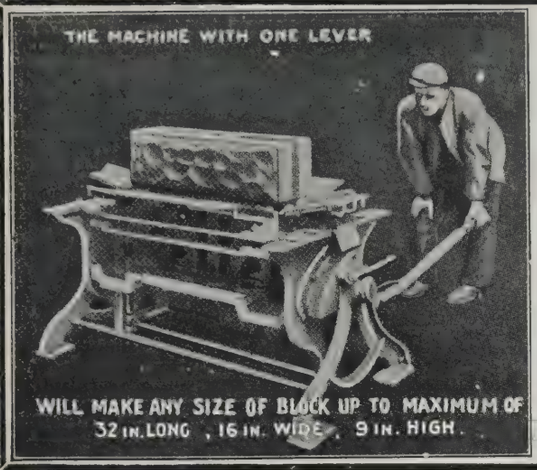
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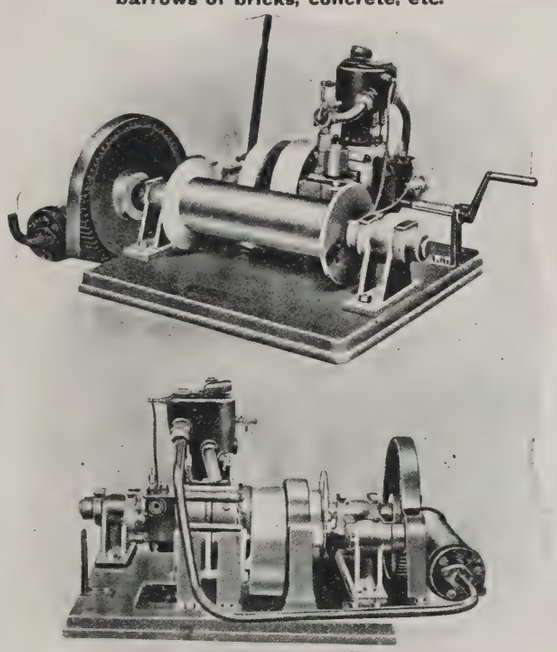
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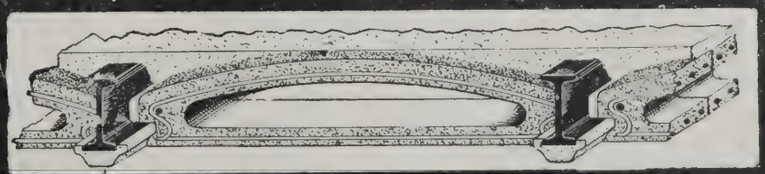
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LATE CONTRACTS.

BUILDING.

June 27. **SALFORD.**—Supply and erection of a timber stores at the Central Car Depot, Frederick Road, Pendleton, for the Tramways Committee. Further particulars and form of tender, etc., may be obtained from the General Manager, Tramways Department, 32, Blackfriars Street, Salford. Tenders, addressed to the Chairman of the Tramways Committee, Town Hall, Salford, must be delivered to L. C. Evans, Town Clerk, Salford.

June 28. **SETTLE.**—Alterations and additions at the Settle Gas Company's Works. Plans, specifications, and bills of quantities may be seen on application at the works. Tenders addressed to the Chairman of the Settle Gas Company must be delivered at the Company's Office, Church Street, Settle.

June 28. **ABBEYLEIX (Ireland).**—Erection of labourers' cottages under their 10th improvement scheme, for the R.D.C. Forms of tender, plans, specifications, and other particulars can be had on application at the office of James Finnegan, Clerk to Council, Clerk's Office, Workhouse, to whom tenders must be sent.

June 30. **ARDSLEY (Barnsley).**—Removal of two galleries in the Infants' Dept. of Ardsley (Barnsley) Council School, Barnsley Road, Stairfoot (trade, joiner), for the West Riding County Council Education Department. Specifications on application. Tenders to be received by T. Graham, West Riding Education Offices, Obelisk Chambers, Barnsley.

June 30. **SANDSEND (Whitby).**—Stonework for the re-building of East Row Bridge, near Sandsend, in the Whitby Rural District, for the North Riding of Yorkshire County Council. Specifications may be seen and bills of quantities obtained at the County Surveyor's Office, County Hall, Northallerton. W. H. Bryning, County Surveyor.

July 1. **NAAS (Ireland).**—Building eight labourers' cottages throughout the Rural District, according to old plan and specification to be seen at the office of D. J. Purcell, Clerk of Council, Naas, where forms of tender and any further information required can be also obtained.

July 4. **TRIM (Ireland).**—Erecting 16 houses in the Urban District of Trim, according to the plans and specifications prepared by C. K. Douglas, A.M.Inst.C.E., which may be inspected at the office of the Town Clerk, Town Hall, Trim, where copy of specification, bill of quantities, and form of tender can be had on deposit of £1. Tenders, addressed to Chairman of the Council, will be received by the Town Clerk. The work must be completed within six months from date of Architect laying out plots. The contractor whose tender may be accepted must be prepared to enter into a bond with two solvent sureties for the due performance of contract.

July 8. **MEXBOROUGH.**—Whole or separate tenders for Mexborough new mixed and infants' school, and special subjects block (builder, joiner, slater, plumber, plasterer, painter), for the West Riding Education Committee. Plans may be seen, and specifications, with quantities, obtained on application to the Education Architect, County Hall, Wakefield. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders must be addressed to Francis Alvey Darwin, Clerk of the County Council, at above address.

No date. **CARLISLE.**—Enlarging and remodelling the kitchen block at Cumberland and Westmorland Asylum, Garlands. Send names to Geo. Dale Oliver, F.R.I.B.A., County Architect, Carlisle, from whom all particulars may be obtained.

SANITARY ENGINEERING.

June 30. **ALNWICK.**—Canongate District Sewerage, Contract No. 1.—Erection of engine house, ejector chamber, and storage tank, also for the construction of 200 lin. yards 12in. earthenware pipe sewers, 500 lin. yards 9in. earthenware pipe sewers, and 360 lin. yards 5in. cast-iron rising main; together with manholes, storm overflows, etc., for the U.D.C. Plans and specification may be inspected at the Council Offices, Green Bat, Alnwick; and also at the office of the Engineers, Spinks, Pilling, and Rodwell, 20, Park Row, Leeds, from whom bills of quantities and form of tender may be obtained on deposit of £2. 2s. Tenders must be delivered to Robt. Middlemas, Clerk to the Council, Alnwick.

PAINTING.

June 27. **MANCHESTER.**—Painting chapels, railing, etc., at Gorton Cemetery, for the Parks Committee. Specifications may be obtained at the office of the City Architect, Town Hall, upon deposit of £1 1s. All cheques or postal orders are to be made payable to the order of "The Corporation of Manchester." Tenders to be delivered at the above office

June 28. **CROYDON.**—Painting the ward blocks and other buildings at the Borough Hospital, Waddon, for the B.C. Specifications, conditions, and form of tender may be obtained on application at the Borough Engineer's Office, Town Hall, Croydon. Tenders will only be received subject to the terms of the draft contract, general and special conditions deposited at the office of F. C. Lloyd, Town Clerk, Town Hall, Croydon, which may be inspected during office hours.

July 1. **STAINCLIFFE (Batley).**—Painting, colour-washing, whitewashing, etc., inside Staincliffe C.E. School, for the Batley Education Committee. Specifications may be obtained from O. J. Kirby, Borough Engineer, Town Hall, Batley. Tenders to be sent to G. R. H. Danby, M.A., Secretary and Director of Education, Education Offices, Batley.

July 1. **SALFORD.**—Painting two bridges over the River Irwell. Specification and forms of tender and all other information may be obtained at the Borough Engineer's Office, Town Hall, Salford. Tenders to be delivered to L. C. Evans, Town Clerk, Salford.

July 1. **SHEFFIELD.**—Painting, distempering, etc., for the Education Committee, at the following:—1, Pavilions at High Stores Playing Fields; 2, Training College Women's Hostel, Ecclesall Road; 3, School of Cookery and Domestic Science, Leopold Street; 4, Pupil Teachers' Centre, Holly Street; 5, Technical School of Art, Arundel Street; and for asphalting at King Edward VII. School. Specifications and forms of tender may be obtained on application to the City Architect, Town Hall, Sheffield. Tenders (enclosed in Official envelope) to be delivered to G. S. Baxter, Secretary, Education Office, Sheffield. Any person or firm tendering will be required to comply with the fair wages and conditions of labour clause, and also the clause against assigning or sub-letting, adopted by the Sheffield Corporation, copy of which may be obtained on application.

No date. **ECCLESFIELD.**—Painting and distempering required to be executed at Council Schools, for the County Council of the West Riding of Yorkshire. Applications for specification to W. Hayes, Divisional Clerk, Education Office, Ecclesfield.

ROADS AND CARTAGE.

June 27. **ABBEYLEIX.**—Maintenance of roads, and for special works, for the R.D.C. Tenders can be had on application. The County Surveyor's specifications for the several works can be seen at the office of James Finnegan, Clerk to Council, Clerk's Office, Workhouse, to whom tenders must be sent.

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THE ARCHITECTS' & BUILDERS' JOURNAL

WEDNESDAY,
JUNE 29th, 1910.

Volume XXXI No. 804.



Photo: Topical.

THE PENNSYLVANIA RAILWAY STATION, NEW YORK CITY, U.S.A. McKIM, MEAD, AND WHITE, ARCHITECTS.



The garden front has a projecting loggia supported on stone columns. The bricks are 2in., most carefully selected for colour. The result is very subdued: an effect of great quietness was aimed at, and is believed to have been attained.

(*See also pages* 670, 671, 673.)

HOUSE NEAR FARNHAM, SURREY: THE GARDEN FRONT. NIVEN, WIGGLESWORTH, AND FALKNER, ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

JUNE 29th, 1910. CAXTON HOUSE, WESTMINSTER. VOLUME 31. No. 804.

Note: The List of Contents will be found on Page V of the front advertisements in this and subsequent issues.

What Can Examination Do?

THE Institute of Architects last week was in the somewhat singular position of presenting its gold medal to an English architect who was not a member of that body, and who disapproved of an important part of its policy, and took the opportunity of saying so. While he was touched, he said, by receiving the highest distinction of a Society of which he was not a member, he still remained a hardened unbeliever in the possibility of discovering an artist by the process of examination; an expression which, of course, was intended as a condemnation of the Institute's "Preliminary," "Intermediate," and "Final" Examinations, and its admission of Associates to its ranks as a result of these examinations.

Now, what are the reasonable objects of examinations in architecture, and the advantages to be gained by them? The first of all, perhaps, is that the process of working up for an examination marks out for a student a special course of study—a very important point with a subject so diverse and complicated as architecture. A young man entering, without any special guidance, on the study of architecture, is liable to be almost bewildered by the number of subjects which are more or less closely connected with it; the history of the art, the mastery of planning, the various practical subjects which are connected with modern building, etc. A programme for examination, drawn up by men of experience, furnishes him with a lead, classifies the studies to be undertaken, and gives something definite to work up to. At the time when the question of examinations was being much canvassed and argued about, for and against, we remember seeing a letter from a young student, testifying that the programme of the Institute examination, a new thing at that time, was really the first assistance he had ever had towards the pursuance of a distinctly marked line of study, and it had been of incalculable advantage to him, as we have no doubt it has been to many others. That is one point.

The first step towards acquiring the power of designing modern architecture is a knowledge of the art as it already exists, of its various forms and traditions, acquired by a study of the principal architectural styles of the past. This, we know, is denied by some, who argue that this study of past styles is what leads to archæological architecture, and that it would be better for a beginner in the practice of modern architecture to be left to evolve his own design based on the practical requirements of each building. It might almost as well be said that a modern poet should be unacquainted with the poetic literature of the past, in order to ensure his originality. How is he then to test and train his own perception of style? It is the same with architecture. Architecture is a traditional art; every great building in the world has been influenced by buildings which have preceded it; and no one mind has the originating power to evolve a style of architecture with no basis of precedent to go upon. Then there is the training of the eye and the taste to be considered, an end which can only be acquired by the study of the finest examples of architectural style and proportion. The Intermediate examination of the Institute demands, as the first requirements in its programme, the production of two sheets of careful drawings of any two out of three Orders of classic architecture mentioned, and a sheet of details of classic ornament from the round. While mentioning the subject, we may add that in mentioning "Doric" it should specify whether Greek or Roman Doric, or give the preference to the former, which affords the far finer training to the eye and mind. But to return: Is it intended by this that the student should necessarily contemplate introducing these Orders or this classic ornament into his own work as a practising architect? Surely not; the Classic Orders are put down for study because they (the Greek ones especially) are the best examples of refinement in detail, profile, and proportion of parts, and therefore the best studies for fostering a refined perception in such matters; to borrow Steele's expression, "to know them is a liberal education." We know how painfully architects are often struck by the coarseness of the details which engineers put into their masonry when they begin to get "architectural"; but why is this? It is not because engineers want to do coarse architectural detail; it is that they do not *know* that it is coarse, because their eye has never been trained by the study and the drawing of classic models. If engineers who design bridges and railway stations had all been compelled to go through a study of the Greek Orders (only) as a portion of their education, we should soon see a difference in their architectural details. And besides this, the history of architecture in general, of the changes and developments out of which the leading styles grew into being, is a history of the greatest interest, of which even well-educated people in general know far too little; and who is to be expected to know it, if the architect does not?

As to examination in a practical knowledge of construction, and of the provisions necessary for the scientific heating and ventilation of buildings, we do not gather that the utility of that is contested even by those who object to examination in architecture in a general way. From the Institute point of view, that is a means of ensuring that architects who are admitted to its membership do know that which the public expect them to know, and which at all events can be acquired by anyone who makes up his mind to acquire it, apart from all questions of artistic power in design. And a programme of requirements of this kind in an examination is not only useful as a guide to study, but also as an inducement to young men who are disposed to look too exclusively to the æsthetic side of architecture (as a good many are at present) not to neglect points which are necessary to the safety or comfort of a building, however beautiful its design may be. If some of those who object to examinations in architecture had been compelled to go through an examination in construction, we should not, perhaps, have seen such curious results as the covering of a museum floor with iron columns, because the architect had not realised that a floor some forty-five feet wide could be carried by girders in one span.

A good deal of criticism has been expended on the introduction of an apparently very general examination in history

and geography, and in one foreign language, in the Institute Preliminary examination; and it is complained that these subjects have nothing to do with architecture. We are not so sure of that; but at all events they have to do with securing that an architect who is a member of the Institute should be a fairly well-educated man, a matter which has some bearing on the respect with which the profession will be regarded by the public. The history of architecture is very intimately connected, too, with the history of nations, and cannot be fully understood apart from it. And the knowledge of both French and German is of value to an architect nowadays —many valuable books, both on architectural history and construction are published in Germany, many of which are not translated; and M. Choisy's French books (very little known among English architects) are most valuable additions to an architectural library. And at any rate it is as well that an architect should have more notion of the idiom of our nearest neighbours than to translate "il vient de sortir"—"that comes of going out." Languages, history, etc., are omitted in the Final examination of the Institute, but we are not sure that it would not be well to have an "Honours" examination for such subjects of general education.

Lastly, there comes the great *crux*, the idea of examination in design, which commands a large proportion of the marks in the Final examination, where a design is required to be made on the spot, in two days' work, of a building of moderate dimensions, or a portion of a more important edifice, from particulars given. This is the only point at which examination in design comes in, and the difficulty is that there is no absolute standard of good and bad design. Nor, indeed, is there any absolute test as to which of two plans is the best; and plan is a part of design. As far as convenience of planning is concerned, however, it is pretty easy to decide positively that a plan is a bad one, from the point of view of convenience. It is not so easy to decide which of two plans is the best in regard to architectural effect, or to bring such a question to any decisive test. But we take it that the function of the examiner in this case is mainly a negative one. Examination cannot evolve architectural genius; that may be agreed on all hands. It cannot decide positively which of two designs shows the better artistic character. But it can say, in regard either to plan or design, or both—"We must have something better than this, at all events." And to that length it may have a wholesome preventive and corrective influence. We have seen plans, produced by architects who object to examination on principle, which would infallibly have led to their author being "ploughed" at the Final examination; a result which might have revealed to them some of their own deficiencies.

Corporation Competition.

MR. JUSTICE NEVILLE, in his judgment, given last week in the Chancery Division of the High Court of Justice, in the case of the Attorney-General v. The Corporation of Leicester, decided that the corporation had exceeded its statutory powers with regard to the supply of electricity. The corporation, not content with supplying electric energy, had opened a shop, in one of the principal streets of Leicester, for the supply of electric fittings, and an unnamed ratepayer of the borough set the law in motion with the very laudable object of determining whether or not this enterprise had legal sanction. Mr. Justice Neville made it very clear that in his opinion "the installation of electricity and provision of fittings is a separate business incidental to the use but not to the supply of energy." He therefore granted the declaration and injunction for which the plaintiff applied. Whether the corporation will think it worth while to carry the case further remains to be seen. So far, at all events, they have done the State some service in demonstrating the lengths to which municipal powers can be stretched, and hence the unwisdom of the ratepayers in placing in the hands of a corporation a weapon which may be turned against themselves in a way that possibly was not generally foreseen.

The necessity is now apparent of discriminating between monopoly and competition in municipal undertakings. It may be justifiable, and may even be necessary, to entrust a corporation with certain large undertakings of public and common service—such, for instance, as that of water supply —in which virtually there is, and can be, no competition. Even if it is perhaps best, on the whole, that a monopoly of such a great public service should be entrusted to a corporation rather than be left to private enterprise, over which the public may have no effective control, it is a very different matter to allow a corporation to come into direct competition with the established trades of its ratepayers, as it certainly does when it opens a shop for the sale of small goods, or sends round workmen to do odd jobs. Even when, as must often happen, the corporation is unable to supply the goods, or to do the work so cheaply as can the private tradesman, the latter is nevertheless at a manifest disadvantage.

The Proposed India Museum.

SINCE writing a note on this subject last week, we have had the opportunity of seeing Mr. Chisholm's sketch design for the proposed museum. This is in the quasi-Oriental style which the architect applied very successfully for Government buildings during his professional career in India, and which we thought very well suited to the country, as designs which represented Eastern forms modified by European influence, and designed with reference to the Indian climate. Whether such a style would be equally in place in London may be a question. It has not in this case the justification of climate. Still, if an India Museum is built, it would be fitting that its exterior should suggest India to some extent; but it should not appear too exotic. There is another point in regard to this special building; the proposed site is a parallelogram, with the shorter side to the river, but the principal elevation of the building is on the long side. It would seem, under these conditions of site, that the elevation towards the river should be the most important, as it will be much more seen than the side. The architectural composition includes large and small cupolas of somewhat Oriental character, and a lofty central tower. If the river front were modified so as to give it more importance, the design ought to make an effective group.

Truro Cathedral.

IT is a satisfaction to know that Truro Cathedral is at last completed by the erection of its two western towers. At one time, after the choir had been opened for service, there was some fear lest the completion of the nave, with its western towers, should be adjourned *sine die*, as it was said that all the subscriptions available from the county had been exhausted. The funds, however, have been somehow found, and Truro thus becomes the first Anglican cathedral entirely planned and carried out in this country in modern times. The building of the nave of Bristol, from Street's design, was a remarkable and unprecedented event at the time, furnishing proof that a modern architect could complete a mediæval cathedral in a style entirely worthy of the ancient portion of the building; and as this was not the "restoration" of any ancient work, but the addition of a necessary portion of the building which was not in existence, we do not see how the most determined anti-restorationist could have grounds for criticising it. The nave formed part of an incomplete design, and to have built in a modern style to give testimony to its date would have been an architectural absurdity. In the case of Truro Cathedral the architect was to erect an entirely new church, and the question might well then be raised, and, we think, was raised at the time, whether a cathedral commenced in the nineteenth century should adopt the style of the thirteenth or fourteenth. We should have been inclined to think that it ought not to do so; that

it should be frankly a modern church in a modern style; but it is certain that this would not have met the sentiment of those who promoted the work and collected the money for it. They associate a certain style of architecture with the idea of an English cathedral, and association must count for something. One thing is certain, that if the object was to revive the style of the mediæval cathedral, this could not have been better done than in the interior of Truro; it is almost, one may say, more mediæval than an actual mediæval building, in all the treatment of its detail, even to spacing the corbels under the floor of the central tower at unequal distances, which a mediæval builder would not necessarily have done. There are special points in the building, too, which are original; notably, the two lofty windows, one on each side of the chancel, which throw a flood of light across this part of the building. Externally there is a little more modernity in the building; it is mediæval on Pearsonesque lines. The architect judged rightly in adopting the composition of a centre tower with two western towers, a form of cathedral design peculiarly English; the French suggested the twin towers, but the dominant central tower is a peculiarly English feature, and one the typical French cathedral loses very much by wanting.

The R.I.B.A. Gold Medal.

MR. THOMAS GRAHAM JACKSON, R.A., received on Monday week, at the Royal Institute of British Architects, Conduit Street, the Royal Gold Medal. Among the company present were: Sir Lawrence Alma-Tadema, O.M., R.A., Sir Henry Tanner, Sir Charles Lawes-Wittewronge, Sir Brumwell Thomas, Sir Aston Webb, R.A., the Provost of Eton (Dr. Warre), the Warden of Wadham College, Mr. Thomas Brock, R.A., Mr. John S. Sargent, R.A., Mr. Reginald Blomfield, A.R.A., Professor Waldstein, Mr. Basil H. Jackson, and Mr. Ian MacAlister (Secretary).

Mr. Ernest George, A.R.A., President, in making the presentation, spoke of Mr. Jackson as an accomplished architect and man of letters. Upon finishing his University course Mr. Jackson became a pupil of Sir Gilbert Scott. Beginning his career in the heat of the Gothic revival, he had acquired a knowledge of the mediæval methods of building which had served him well, for the Gothic inspiration is felt in most of his works, though they may be clothed with forms or detail of other origin. He was an artist of strong individuality, with an intimate and practical knowledge of material, and he had helped much to bring together the several arts, and was some time Master of the Art Workers' Guild. His name will always be associated with Oxford, where the modern growth of the city has been generally under wise direction, the spirit of the old being preserved, while there is freshness, originality, and beauty, in the new. To him they owed modern buildings for Brasenose, Lincoln, Corpus, Trinity, Balliol, and Hertford; the new Radcliffe Library, Somerville Hall, the City High School, and the High School for Girls; also the restorations of the Bodleian Library, St. Mary's and All Saints' Churches. At Cambridge they owed to him the new Law Library and Law School, as well as the Sedgwick Memorial Museum and other buildings. To the same hands they owed the restoration of many precious relics—Eltham Palace, Great Malvern Priory, Bath Abbey, Christchurch Priory, and the anxious work of maintaining Winchester Cathedral against the threatening of underground forces. He had studied Romanesque in its home, and the Dalmatians sought his help in the building of the campanile of their cathedral at Zara. He had been a valued member of the Board of Architectural Education, and he had a grand record of scholastic work, which at the same time was scholarly work, and would always be honourably associated with the name of Thomas Graham Jackson.

Mr. Jackson, having been invested with the blue riband, replied that he was deeply sensible of the honour conferred upon him. To an artist no appreciation could be so welcome as that of his brother artists. They lived, indeed, by the patronage of the public, who on the whole were able to form a right estimate of the merits of those whom they employed, but who were perhaps too liable to be influenced by fashion and blind obedience to be always right at the moment. But it was to the judgment of those who followed the same craft as himself that the artist looked for due appreciation of his work. He was deeply touched by the fact that they had bestowed their highest distinction on one who was not a member of their society, but one who at times had been even an opponent of their policy—an opposition that had never caused interruption of friendly relations between them.

On the motion of Mr. John Slater, seconded by Sir Aston Webb, R.A., the president was thanked for his services during the past two years.

House of Lords Decision Under the Compensation Act.

A POINT of considerable importance to employers, with respect to the Workmen's Compensation Act, was determined in the House of Lords, recently, in the appeal of Vickers, Sons, and Maxim, Ltd., v. Evans, in which the application of Section 16 of the First Schedule of the Act of 1906 was tested. In that section, power is given to the arbitrator, in the event of a review taking place more than twelve months after the accident, the applicant for compensation having by that time ceased to be a minor, to increase the compensation to any amount not exceeding fifty per cent. of the weekly sum which the workman would probably have been earning at the date of the review, but for the accident, but not in any case exceeding £1. The appellant, while still a minor, in July, 1907, obtained employment with the defendants as a labourer, as he was short of work in his own trade of stove-grate fitter. While working for Messrs. Vickers, Sons, and Maxim, he met with an accident to his right arm, and was awarded 11s. 4d. a week compensation. In February, 1909, he was able to do light work found for him by the company at the same rate of wages as he had received before the accident, and the compensation was thereupon reduced to one penny per week. In August of the same year, the applicant, having attained his majority, applied for a review of the award, claiming that but for the accident he would have been earning more than the old rate of wages. The county court judge at Sheffield then found that as a stove-fitter the applicant would have been able to earn 30s. a week. He therefore increased the 1d. per week to 7s. 6d. until further review. This judgment was upheld by a majority of the Court of Appeal, in which Lord Justice Buckley dissented from the Master of the Rolls, and Lord Justice Moulton. In the House of Lords, the Lord Chancellor, Lord Macnaghten, Lord James of Hereford, and Lord Collins agreed that the appeal should be dismissed; Lord Macnaghten expressing approval of the method adopted in the Act in trusting to the discretion and good sense of the county court judge to fix a proper amount with relation to the probable earnings of the applicant after he had come of age, supposing he had not been prevented by the accident. This decision of the House of Lords will be regarded by builders as adding yet another to the already too heavy burden of risks under the Compensation Act. The boy whose accident affects his earning capacity after he has become a man may demand increased compensation when he attains his majority. Apparently, in the case of the building trades, the amount of the revised compensation will be based on the easily ascertained rates of wages agreed upon between the respective organisations of the masters and the men; and the knowledge of this extended liability will not tend to the increased employment of boys, while it rather seems to add to the complexity and vexatiousness of the apprenticeship question.

NOTES AND NEWS.

A Twelfth Century Triptych.

A valuable and interesting work of art has recently been placed on exhibition in the Mediæval Room of the British Museum by the kindness of Mr. J. Pierpont Morgan, who has lent it to the Museum. It consists of a triptych made about 1180 A.D., and containing relics of the true Cross mounted on enamelled adjuncts by Godefroi de Claire. This triptych was made for Wibald, a famous Abbot of Stavelot, a great monastery in the Ardennes. During the Napoleonic wars the triptych was carried by the then Abbot into Germany, where it lay until its acquisition a few months ago by a London dealer, who sold it to Mr. Morgan. There are represented upon it two series of subjects—on the one side the conversion of the Emperor Constantine, and on the other the story of the "invention of the Cross" by the Empress Helena. Wibald, who died in 1185, was counsellor of the German Emperors of his time. The enamel upon the triptych comprises probably the finest pieces known of the kind of enamel made on the Meuse in the twelfth century.

Artesian Wells in the City of London.

The revised charges for water instituted by the Metropolitan Water Board have led to the sinking of a large number of artesian wells within the city boundaries. Between 1836 and 1907 fourteen wells were sunk, but since 1907 as many as 22 have been put down, making 36 in all. The Public Analyst reported that the waters were highly pure and soft, but somewhat saline, and are better for domestic purposes than those of the Water Board. As an example of the saving effected by well-sinking, the case of an hotel is mentioned paying £900 a year in water-rate. An artesian well was installed at a cost of £800, and running expenses amount to £200 a year. Thus a saving has been effected of £700 a year. As, however, the supply is largely tapped by the Water Board before it reaches the City, it is possible that the supply will ultimately be affected, and there is thus an element of speculation in well sinking.

The Land of the Incas.

Sir Clements Markham, lecturing on the above subject before the Royal Geographical Society, dealt with a map covering Southern Peru, and part of the north of Bolivia, including the vast forest region to the east, most of which has recently been explored. This land was formerly the country of the Incas. Near the southern shores of Lake Titicaca, there were the ruins of a great city. In the time of the Incas it was the same ruin as now. Its origin and history were absolutely unknown, and myths were invented to account for the numerous stone statues. The ruins showed very advanced proficiency in the masonic art, and there were monoliths which had been conveyed from great distances. The size of those cut and carved stones was unequalled in any other part of the world except Egypt. To archæologists the map would be very serviceable, as it included the sites of 18 ancient ruins of Incarial or pre-Incarial times.

Quarry-Dressed Stone.

The question of quarry-dressed stone is a source of frequent trouble, but does not always assume such complexity as a case that is reported from the North. A builder had tendered for a certain building contract, at a price that admitted of the stone being dressed on the job. The "building owners," however, who happened to be a church council, had ascertained that the stone would be cheaper if dressed at the quarry, and they demanded a consequent reduction. The stone was then brought to the job ready dressed. This the workmen refused to stand, as it is a breach of the working rules that have been agreed upon between their and the employers' respective organisations. The bricklayers, stonemasons, and joiners have threatened to strike unless the rule is observed, and they are supported by a decision arrived at by the local Conciliation Board. It is stated that the church council have refused to compensate the builder for the increased expenditure which he must now incur; so that, between the building owners and the workmen he is placed in an unenviable position.

The Newest Model Town.

"The model town of the world" is—yet to be built. But "wealthy and philanthropic New York women" are going to build it. In order to make the "grafting" of public officials, and corrupt politics generally, impossible, there will be neither public officials nor politics. "Once a week the residents will meet in the Coliseum and decide on public measures and bring to trial all persons charged with crime, the guilt or innocence of the prisoners to be decided by the vote of the meeting. There will be no public-houses." All this is to happen in Kentucky. The architecture should be of corresponding simplicity, and the design of that Coliseum should be splendidly null in character, considering the miscellaneous uses to which it is likely to be put. But the model moral town should be model (and moral) in its buildings; and if it materialises on these lines, it will be worth a long journey to see.

A Pre-Reformation School of English Sculpture.

An exhibition which has been held during the present month in the rooms of the Society of Antiquaries illustrated a curious phase of English art—that of mediæval alabaster work, an industry that, according to the catalogue, "flourished in England, principally at Nottingham and in Derbyshire, throughout the fourteenth and fifteenth centuries and the earlier half of the sixteenth century." The exhibition reminds a writer in the "Morning Post" that prior to the Reformation there was a living school of English sculpture; and he alleges that some of the finest examples were shipped over to the Continent at the spoliation of the churches in the reign of Edward VI., and now masquerade as the work of French carvers, while many of those that remained were hacked to pieces by the supporters of Cromwell. He adds that "hardly less disastrous must have been the well-intentioned ravages of the Gothic Revival in the nineteenth century, against which Ruskin and Morris inveighed." The compositions vary considerably in artistic merit, some being merely mechanical reproductions of a set pattern or motive, while others are invested with the charm of genuine art. The subjects consist largely of passions, martyrdoms, resurrections, crucifixions, and like subjects. Alabaster continued in use for memorials long after the Reformation, and there are references to it in the Elizabethan dramatists. Webster anticipating the modern dislike of violent and theatrical sculpture.

House Near Farnham, Surrey.

(See pp. 666, 671, 673.)

This house, an example in the modern Georgian manner, is built in red brick, with stone dressings to the porch, brick quoins relieving the surface at the corners of the bay, etc. The windows are of wood painted white. The bricks are 2in., most carefully selected for colour. The result is most subdued; an effect of great quietness was aimed at, and, it is believed, has been attained. The entrance hall and vaulted corridor are simply finished in white, the latter being paved with dark red hexagonal tiles, and the entrance hall has a floor of black and white marble squares. The hall has walls panelled with oak. The inner hall is panelled with basswood stained black, but not sufficiently dark to hide the grain. The ceiling has modelled plaster beams. The fireplaces have a Teale grate with a surround of Medmenham tiles. The drawing-room, to which this forms the lobby, is panelled in pine, painted white, and the dark panelling of the hall acts as a foil. The general contractor was A. G. Marden, of Farnham. The bricks for the south front were supplied by T. B. Lawrence and Sons, of Bracknell. The general contractor carried out all the work, including the panelling, to the satisfaction of the architects. The grates were supplied by the Teale Fireplace Co., of London; G. P. Bankart, of London, executed the modelled plasterwork and the lead rainwater heads. The marble paving was supplied by Art



The entrance hall and vaulted corridor are finished simply in white, the latter being paved with dark red hexagonal tiles, and the entrance hall has a floor of black and white marble squares. The hall has walls panelled in oak.

HOUSE NEAR FARNHAM, SURREY: ENTRANCE HALL AND CORRIDOR.
NIVEN, WIGGLESWORTH, AND FALKNER, ARCHITECTS.

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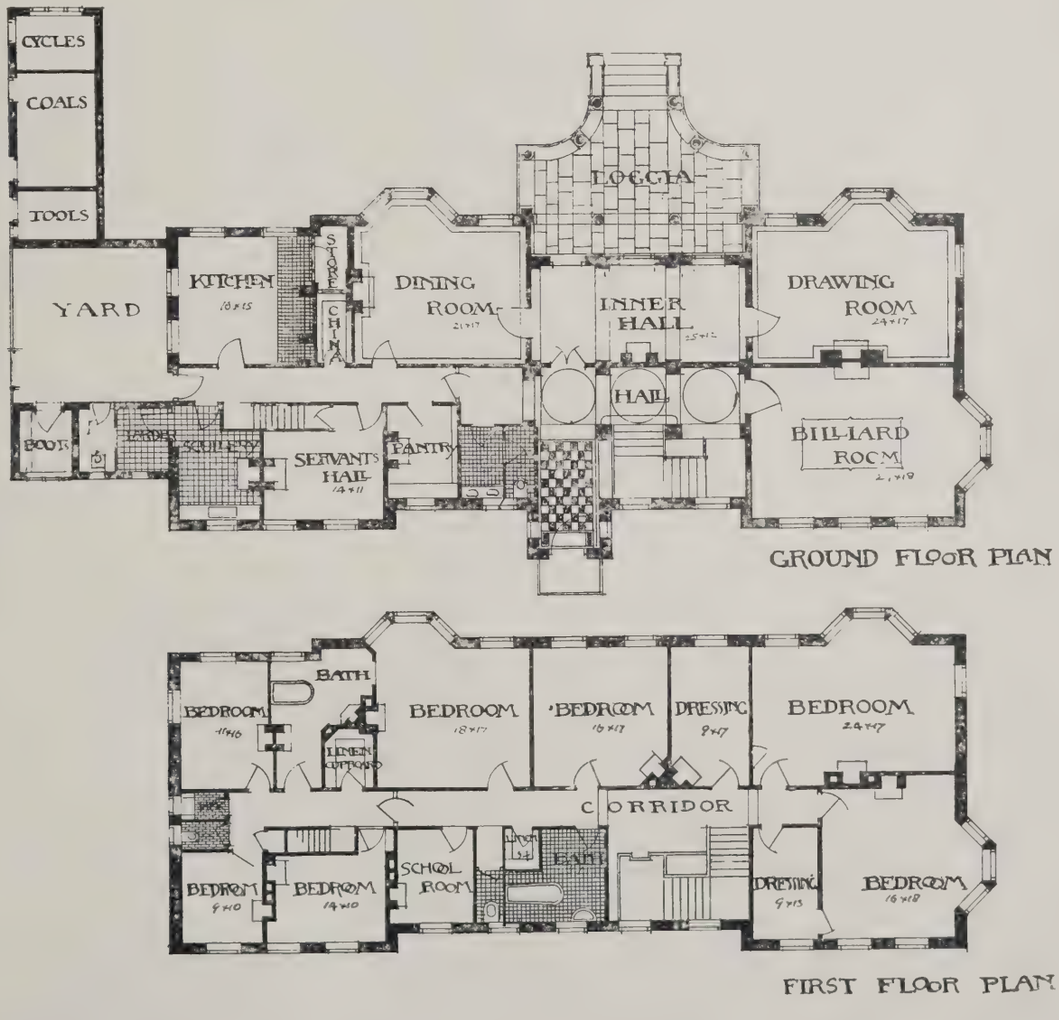
Pavements and Decorations, Ltd., London. The sanitary fittings are by Shanks and Co., Ltd.; Messrs Niven, Wigglesworth, and Falkner were the architects.

Brick Court, Temple.

To Sir Aston Webb's several happy adventures in restoration is now added the sympathetic and altogether seemly rebuilding of No. 1, Brick Court, Middle Temple Lane. The old house had to come down because its foundations had suffered in indirect consequence of the borings and tunnellings and artificial earthquakes that have robbed the earth of its natural stability, and the new building has been designed in the true spirit of the old—a simple thing to do, but not every eminent architect would have done it with such unassuming fidelity. Simplicity, however, is the dominant note of the Temple. It is seen not only in its buildings, many of which are plain to ugliness, but in their names, of which the same terms may be used—e.g., Paper Buildings, Pump Court, and Brick Court; blunt and honest names, baldly descriptive, deduced directly from the evidence, and devoid of every vestige of imagination, the Benchers habitually restraining the exuberance of that wayward and unforensic faculty. The Goldsmith house next door was built in 1704, so that it was sixty years old when Oliver Goldsmith, having received five-hundred pounds for "The Good Natured Man," got an unwonted feeling of unlimited wealth, and on the strength of it left his dingy rooms in Garden Court, and took chambers —three rooms on the second floor—in No. 2, Brick Court. He bought the lease for four hundred pounds, and furnished the rooms in sumptuous style, the better to entertain his many friends, not all of whom were of the grave sobriety of Johnson and Reynolds; for Blackstone, in chambers immediately below, complained that the racket made by "his revelling neighbour" did not assist him in the compilation of his commentaries. Ten years—the happiest of his life—were spent by Goldsmith in No. 2, Brick Court, where he died on April 4th, 1774. On the day of his funeral — April 9th — "his staircase in Brick Court was crowded with mourners of all ranks and conditions of life, conspicuous among them being the outcasts of both sexes, who loved and wept for him because of the goodness he had done."

Honours to a Landscape Painter.

It is so common to find art entirely overlooked in the distribution of "birthday honours," that it is a surprise, as well as a pleasure, to find that for once the name of an artist figures in the list, and we may congratulate Sir Alfred East on a distinction that has been well earned, although one may think that there are other painters who have claims to recognition of this kind. It is to be presumed that this is an honour entirely due to the artist's distinction as one of our finest landscape painters. The majority of the honours conferred are obviously—somewhat too obviously—recognitions of political services or leanings; but we are not aware that Sir Alfred East's landscapes have so far exhibited any tendencies towards a symbolical support of Liberal principles.



HOUSE NEAR FARNHAM, SURREY: PLANS. NIVEN, WIGGLESWORTH, AND FALKNER, ARCHITECTS.

NEWS IN BRIEF.

At an Executive meeting of the York Master Builders' and Contractors' Association, held recently, it was carried unanimously: "That the best congratulations of this Association be offered to our President (the Right Hon. the Lord Mayor of York, Alderman James Birch) on his attaining the honour of the Freedom of the City of London successively to his recent reception of the Freedom of the Worshipful Company of Plumbers."

* * *

Mr. Bertram MacKennal, A.R.A., has been appointed to design and model the Coronation medal and the coinage of the new reign. Mr. MacKennal, who is an Australian sculptor, born in Melbourne in 1863, designed and modelled the medals for the Olympic Games of the year before last. He was elected an Associate of the Royal Academy last year, and was the first Colonial who ever achieved that distinction. He is the first Overseas Briton ever called upon to design the English coinage.

* * *

The new electrical laboratory which, at the cost of the Drapers' Company, has been erected on the north side of the Museum of Oxford University, is of stone and red brick, in Renaissance style, and has cost about £23,000. Mr. T. G. Jackson, R.A., is the architect.

* * *

A national committee, of which his Majesty the King, when Prince of Wales, graciously acted as honorary chairman, has been formed under the auspices of the British Empire League, to secure the erection in London of a memorial to Captain Cook. The committee propose that a memorial, by a sculptor of repute, should be erected in the best available position in the centre of London. The First Commissioner of Works has promised his co-operation in the choice of a suitable site. For the purpose a fund of at least £3,000 will be needed. Nearly one-third of this amount has been subscribed by members of the committee.

* * *

The Aberdeen Byron Statue Sub-Committee having received subscriptions amounting to over £900 (£1,000 was the amount desired) have resolved to proceed with the scheme. The statue, which is to be of bronze, and to be erected in the grounds of the Aberdeen Grammar School, has been entrusted to Mr. Pittendrigh Macgillivray, R.S.A.

* * *

A conference took place in Edinburgh recently between representatives of art schools in Scotland to consider the carrying out in the various art centres in Scotland of instruction which would be of special value to those who intend to pursue an architectural career. For some time past efforts have been made in Edinburgh to obtain architectural surveys of the historic buildings of Scotland, and it is thought that by general co-operation amongst the various art schools a good deal more might be done in this direction. Aberdeen would share in any scheme which might be decided upon. The matter will be reported to the Governors of the Technical College.

* * *

We are informed by Messrs. Fredk. Jones and Co., makers of the "Hercules" partitions, etc., that the business hitherto carried on at their several addresses, viz., Perren Street, Kentish Town N.W.; Duncan Street, Salford, Manchester; Hercules Works, Burton-on-Trent; and Slag Wool Works, South Bank, Yorks, under the style of Fredk. Jones and Co., will be known as Fredk. Jones and Co., Ltd., with registered office at Perren Street, Kentish Town, N.W. The business will be carried on under the same management and proprietorship as hitherto, and outstanding liabilities will be met by the new company on the usual monthly pay-day.

* * *

Mr. Edward W. Beeson and Mr. John J. Roth, of the firm of Beeson and Roth, and Mr. Guy Study, architects (U.S.A.), announce that they have formed a partnership under the firm name of Beeson, Roth, and Study, with offices at 1008-1009, Liggett Building, St. Louis, Mo., U.S.A.

* * *

Bournemouth will celebrate its centenary in a series of fêtes lasting from July 6th to July 16th. A hundred years ago it consisted of a single house, and now has seventy-five thousand inhabitants. As a writer in a London daily paper observes, "It would be difficult to discover a town which has a more beautiful centre, or more picturesque suburbs, or better kept parks." Its tiled and gabled detached houses are a great relief to the eye as compared with the stucco terraces that make most of our southern watering-places so unspeakably depressing.

* * *

We are requested to announce that Messrs. James H. Tozer and Sons, Ltd., engineers and contractors, Birkenhead and London, have appointed Mr. Vere Sussex Hyde, M.C.I., manager of their reinforced concrete department (Lock Woven Mesh System) at their London office, York Mansion, York Street, Westminster, S.W.

* * *

His Majesty the King has been graciously pleased to become Patron of the Iron and Steel Institute. His late Majesty King Edward VII., was Patron during the whole of his reign.

* * *

The President of the Board of Agriculture and Fisheries has appointed a Departmental Committee to inquire into the pay and classification of the civil assistants, temporary civil assistants, and labourers employed on the Ordnance Survey, and to report whether, having regard to the conditions of their employment and to the rates current in analogous occupations, their remuneration is adequate. The committee will be constituted as follows: Sir Walter Foster (chairman), Mr. G. L. Barstow, a Principal Clerk in the Treasury, Colonel J. W. Greig, M.P., Mr. George D. Kelley, and Mr. F. Newman Rogers. Major W. C. Hedley, R.E., of the Ordnance Survey will act as secretary.

* * *

The Great Quebec Bridge.—The cost of the steel work in the great Quebec bridge will, it is expected, reach £2,000,000. Tenders are anticipated from seven British, German, American, French, and Canadian firms.

* * *

The designs of Mr. Burke-Downing, F.R.I.B.A., have been selected by the assessor in the architectural competition for the church and parish hall to be erected in Narbonne Avenue, Clapham Common, as a memorial to the late Canon Greene, rector of Clapham.

* * *

The building now being erected in Old Scotland Yard, Whitehall, S.W., is a new recruiting depot. Part of the building will be devoted to police purposes, one of the former houses on the site having been given up by the Police authorities to enable the ground to be cleared for the new building.

* * *

It is stated that the sum which is to be spent upon the development of Preston, midway between Torquay and Paignton, is £70,000. Mr. Paris Singer has constructed a sea wall, roads are being provided, and numerous houses and bungalows are in course of erection.

* * *

Mrs. Currie, Mrs. Merrilees, and Mrs. Percy Molteno have given £25,000 to the University of South Africa, Cape Town, for the erection of a hall and the foundation of a scholarship of £150 a year in memory of the late Sir Donald Currie.

* * *

The fund for rebuilding the Bedford College for Women at South Villa, Regent's Park, now amounts to £48,000—£100,000 is the sum required. Mr. Basil Champneys has been appointed architect.

* * *

The Standard Music Hall, opposite Victoria Station, London, has been acquired by the Alfred Butt Syndicate, and is to be rebuilt. The new hall will seat from 2,500 to 3,000 people.

* * *

Mr. Selwyn Image has been elected Slade Professor of Fine Art, Oxford University, in the room of Mr. C. J. Holmes, who resigned upon his appointment as Director of the National Portrait Gallery.

* * *

Jedburgh Abbey, one of the most interesting ruins in Scotland, has been in serious danger of collapse. Fortunately, the services of Sir Rowand Anderson were requisitioned in time to save the building from destruction, and the structure has now been secured to last for many generations.

* * *

Mr. McKenna, replying to a question by Mr. Bowerman, in the House of Commons, stated that so far as the Admiralty was aware there was sufficient tenement accommodation at Greenock to house the Torpedo Factory employees. To encourage the building of cottages on the English system for the Torpedo Factory employees, the Admiralty have agreed to guarantee, on certain conditions, the rent of 100 houses, which are to be commenced forthwith and to be completed by the end of this year.

* * *

The list of honours and promotions issued last Thursday in celebration of the birthday of his late Majesty King Edward, is less interesting from the point of view of art, architecture, and the building industry than it might have been. Among the new peers, however, is Sir Weetman D. Pearson, Bart., president of S. Pearson and Son, Ltd., the cosmopolitan contractors. Sir William Mather, who becomes a Privy Councillor, is chairman of Mather and Platt, Ltd., of the Salford Ironworks. Mr. Charles Henry Davis, who is knighted, is the solicitor to the Public Works Loan Board. Mr. Alfred East, the landscape painter and etcher, and President of the Royal Society of British Artists, also receives the honour of knighthood. Also among the new knights are Mr. Clarendon Hyde, a partner in the firm of S. Pearson and Son, and Mr. Alexander Rose Stenning, who is the retiring President of the Surveyors' Institution.

ARCHITECTURE AT THE ROYAL ACADEMY.

CONCLUDING NOTICE.

It remains for us now to say a few words as to domestic and street architecture at the Academy. In this, as in other classes of design, the frequent absence of plans is to be deplored, and there is no class of building in which plan is of more importance. How can anyone say whether a house is a good or a bad one, as a residence, unless the plan and disposition of the rooms is shown? It may be an agreeable object in a perspective view, and be a very uncomfortable house to live in. And there are cases in which not only is there no plan, but the exterior of the house has no more character or individuality than the lithographs of "desirable residences" in an estate agent's window. Such things have no rightful place in an Academy of Arts.

Schools of the smaller kind come under the heading of domestic architecture. They should at least have that character, so we may include Messrs. Swarbrick's "Elementary School, Didsbury" (1410), of which plans are given. The building is picturesque, and the three large mullioned windows mark effectively the position of the large hall. But there is nothing in the plan to explain the tower-like erection in the centre, and there is a range of class-rooms all facing south! Will architects of schools never learn that a class-room facing south means, in bright sunshiny weather, constant discomfort? You might just as well plan an architect's drawing-office with a south aspect.

Mr. T. P. Figgis's designs are never commonplace, and his "Radium Institute, Riding-House Street" (1426) is a good piece of masonry design, with distinct style of its own in the treatment of the detail of windows and cornice. This is really street architecture, and not mere "frontage." Mr. Hack's little elevation drawing, "Design for Offices" (1439), is also good in a quiet way. Mr. Richter's "Recess in Hall" (1448) does not demand a plan—it is merely a good water-colour drawing of an interior with classic decorative features, and one doubts whether its proper place should not rather be in the water-colour room. And the same remark would perhaps apply to Mr. Leslie Cook's "A Renaissance Dining Hall" (1658), not equal, however, as a water-colour, to Mr. Richter's drawing. Mr. J. H. Somerset shows a very pretty little foreign roadside house at "Hardelot, France" (1456), and has added a plan in the corner, the greater part of which is carefully obliterated by the catalogue number being inserted over it. It would have been as easy to insert it in the opposite corner, which is nearly blank; but it is the rule that the number is put in the left-hand corner, and that it hides the plan no one cares. "House at Church Stretton" (1452), by Mr. Ernest Newton, is another of these little water-colour drawings, this time without a plan, in which, however, we can realise a picturesque garden front, with a double flight of steps from the garden to the terrace, and an arched recess and seat devised beneath the steps.

Mr. Tapper's "Bicton Hall" (1463), which is hung very high, badly wants a plan to explain it. The centre block of the house projects far in front of the wings (a bad arrangement architecturally), with a semicircular bay in the centre and a loggia with coupled columns. There is a formal garden laid out on each side of the centre block, but what one wants to know is, how the internal plan works out into this unusual disposition of masses? Mr. Barrow's "'Olantigh,' Kent" (1464), is on old eighteenth century lines; a square brick house with a great stone portico of Ionic columns, the house and the offices arranged *en echelon*. The plan is too high up to be properly seen, but there appears to be some rather stately garden arrangement in the rear, on the axis line of the portico. "Sutton Valence School" (1471; no plan), by Messrs. H. P. Adams and C. Holden, is an artistic and effective monochrome drawing of a building surrounding three sides of a quadrangle, with a very good school character about it. The lower building at the end of the wings is badly connected with the rest, and makes awkward-looking lines; but in other respects the building seems so suitable to a school that one regrets the more not to see a plan of it.

Mr. Lionel Crane's "Highfields, Marlow" (1468, 1476; no plan), has a pretty garden front, with its curved columned porches abutting against the sides of the gabled projections. "The Common Room at Rounton Grange" (1478) is an interior which looks as if it were intended as an illustration of plaster-work. It is a wainscoted room with a plaster barrel vault with enriched ribs, and Welsh vaults over the windows; but the detail, as far as shown, is rather commonplace. "The Croft, Woodchurch" (1480), by Messrs. Fair and Val Myer, is original. It is a house round a central courtyard, which is seen from under a cloister of Tudor arches in the foreground. The general style is rather too much like a pretence of being a mediæval building. Messrs. Seth-Smith and Monro's "Proposed Hotel and Motor-Boat Club, Shoreham Beach" (1482; no plan) is a pretty and piquant little drawing of a very marine-looking group of buildings. A little drawing of "House in Teesdale" (1483), by Mr. Leonard F. Wood, deserves attention for the treatment of the plan, and especially for the summer "tea-room" with open arches, divided from the courtyard and the kitchen wing by a circular porch. There appears to be a swing door into the porch from the kitchen. It is something to come on a little device in house planning which seems quite new. Another small drawing that deserves mention is Messrs. Castle and Warren's "The Doone, Byfleet" (1563), an L-shaped small thatched house, with a circular court fitted into the internal angle, and a drive up to it at an angle of 45 degrees. Mr. Ashbee's "Reconstruction and Additions, Woolstaplers' Hall, Campden" (1568), is a large sheet entirely of plans and elevations, in which the treatment of the grass courts and yards is very fully shown. The architecture of what appear to be the new portions is not interesting, but is perhaps controlled by the style of the existing buildings. But this is much more the right sort of drawing for the architectural room than many of the mere pictorial views exhibited.

Messrs. Forsyth and Maule's "'Beechlaw,' Puttenham" (1517), is a good house shown in a neat line drawing and plans, a feature in which is a low wing added for a laundry. Three houses designed for the Hampstead Garden Suburb (1582) show in the plan the preposterous arrangement of having all the kitchens facing south and all the drawing-rooms facing north! But in these æsthetically conceived garden suburbs one can be surprised at nothing unpractical. Mr. Mawson's "Pond Garden, Pittencrieff House" (1583), is an effective pencil drawing of a garden scene. Mr. Arthur T. Bolton's "Villa in the Warren, Ewhurst" (1591), is such an interesting and unusual bit of (apparently) brick architecture that one regrets the more to find no plan. Next we may notice a rather fine scheme for a "Proposed London House" (1599), by Mr. MacDonald Gill. This has a symmetrically arranged square plan with a central *cortile*. The angles of the plan are emphasised, the centre portions of the wall slightly recessed; the principal sitting-rooms being arranged at the angles. In the upper portion the windows are grouped under arched recesses running up through the second and third storeys, and the walls illustrated by a structural polychromy of white and blue bands, probably glazed bricks. This is a really fine and dignified town house, and we hope it may rise from the state of being "proposed."

Mr. Schwabe's "Design for a Frontage" (1612), as such, does not perhaps call for a plan, and is a really interesting attempt at a stone street front with some novelty of detail, and sculpture (bas relief) well introduced in suitable positions. This is a front which would be quite worth carrying out. Mr. Walter Cave's "Ewelme Down" (1618), is a good example of what may be called the rambling type of large country house, with an irregular plan and grouping dominated by a large square tower-like mass at one point of the composition. It is a style of country mansion design for which there is much to be said, combining as it does picturesqueness with a suggestion of dignity; only we like to see the tower in such a case respond to something of importance in the plan. In this case the tower, on the ground plan, only marks the position of the pantry—a useful element in a house plan, but hardly one to distinguish by raising a tower above it. Mr. Ernest Wilmott's "Sketch of a Garden" (1621) is, we presume, only a design *en l'air*, but it is a fine one. It shows a large formal garden on a high level, with lofty retaining walls connecting it with a wooded park on the lower level. At one point the high garden and retaining walls project forward in a kind of bastion, at the foot of which is a monumental doorway leading to a stair to the upper level.

Mr. Mallows exhibits a fine drawing of "The West Front of Hampton Court Palace: showing proposed restoration of moat, bridge, and great gatehouse" (1633). The architecture is, of course, mainly a representation of what exists; the drawing is interesting as showing what may have been the original appearance of the approach to Wolsey's palace. Mr. Tapper's "Eastham Grange" (1643) looks very like an old country house with low walls and high roofs. Whether it is actually a new house or a treatment of an old one there is nothing to show. If it is entirely a modern house it is a great deal too archaic-looking, but the drawing is an effective one. Mr. Jell's illustration of the rebuilding of some houses in Bury Street and Ryder Street (1646) is a poor drawing, but the design seems better than the drawing. Mr. Prentice's "Manor House, Motgrove" (1651; no plan), is a good monochrome water-colour of a domestic Gothic house of the rambling type, shown from that point of sight which is called a bird's-eye view.

It will be gathered that there are few things very remarkable in the domestic architecture designs, and there are far too many drawings which are merely more or less pretty pictures of houses, conveying no adequate information as to their merits, either in plan or in detail.

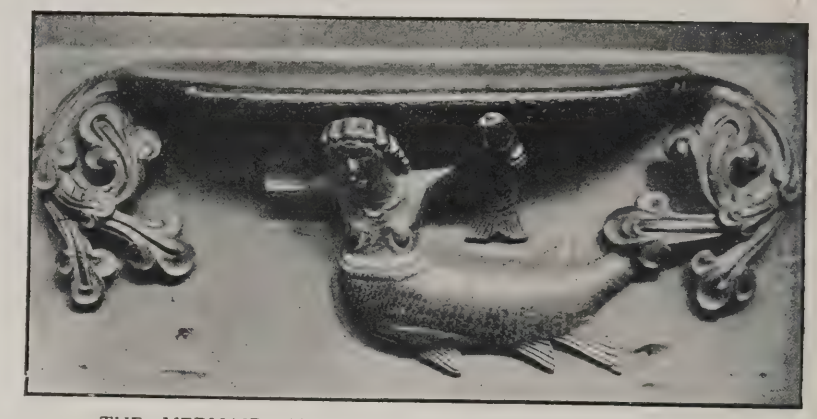
BOOKS.

Misericords.

The subject of carved misericords in English churches, treated of by Mr. Francis Bond, is of social and historical, as well as artistic interest; indeed, it may be said that the former is the principal interest in this class of carvings, which are mostly very rude in their representations of human and animal figures, and are more humorous than beautiful. But, as Mr. Bond points out in his preface, these carvings tell us much more than what people thought about birds, beasts, and fishes. They constitute a kind of history of English social life in the fourteenth, fifteenth, and sixteenth centuries, as it was lived by the common folk. Many of them are very satirical in intent, and the odd thing is that the satire is not infrequently directed against the church and the monks themselves.

Mr. Bond has classed his descriptions and illustrations according to subjects depicted. We begin with Eastern mythology, which comprises St. George and the Dragon and the Phœnix, the last-named being represented in a carving at Westminster. Classical mythology includes the peacock, siren, mermaid, dolphin, centaur, and two or three other legends; and of these the mermaid is the most frequent and the most popular. The author does not suggest any reason for this beyond the fact that the mermaid's tail lends itself very well to effect in carving. We imagine, however, that there was some symbolism in the mermaid more than we are aware of now.

Among the beasts represented the lion is naturally a favourite, as he lays himself open to many symbolical meanings, though the attempts at representing his outward form and dignity are hardly successful. It is somewhat of a surprise to come on the elephant, and to find him treated with a good deal of vigour in a carving from Exeter, though the feet are not quite right. Where, one wonders, did the mediæval carver see an elephant? Among birds, the pelican (of course) and the owl come. The pelican from Beverley Minster is a really fine piece of conventional carving—or what seems conventional to us; perhaps with the original carver it was as near as he could get to realism. The griffin is one of the favoured fabulous animals. The one from Cartmel is a good example of the spirit of mediæval carving.



THE MERMAID AND THE FISH: EXETER CATHEDRAL.

(From Bond's "Misericords." By permission of Mr. Henry Frowde.)

In addition to the animals, real or fabulous, there is a whole series of stories, legends, seasons of the year, agricultural operations, etc., represented in these misericord carvings, which we have not space to mention in further detail. There are 241 illustrations of these in Mr. Bond's book, which is, we believe, the first devoted to this special subject. It is an exceedingly interesting volume, both in illustrations and subject matter, and full of curious information.

Wood Carvings in English Churches. I.—Misericords. By Francis Bond, M.A. Henry Frowde; London, New York, Toronto, and Melbourne: 1910. 7s. 6d.



THE PELICAN: BEVERLEY MINSTER.

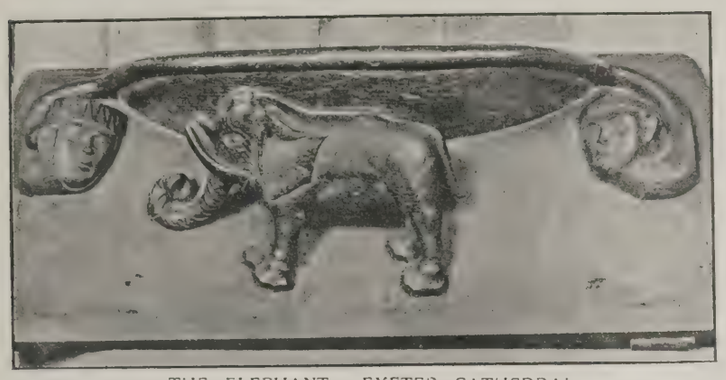
(From Bond's "Misericords." By permission of Mr. Henry Frowde.)

The Notable Buildings of East Ham.

The "Borough" Guide to East Ham, compiled by Frederick Bingham, includes twenty-three illustrations, a street plan of the borough, and a map showing railway communications. It is well produced, and the illustrations include, we suppose, all the notable buildings, old and new, in the borough. Among them are Anne Boleyn's tower, house, and gardens, the Municipal Technical College, the Passmore Edwards Hospital, the old and the new parish churches, the Manor Park and Plashet branch libraries, electric power station, municipal dwellings, etc. Of these the oldest is the parish church of St. Mary Magdalene, which possibly may have been built in Saxon times. It is built of flint and stone, and of the low but massive square tower the lower part is no doubt of Norman construction, while the upper portion is probably much later. The list of vicars extends back to 1328. Greenstreet House is locally known as "Anne Boleyn's Castle," from a tradition that the unfortunate Queen was once confined in its tower. With regard to the modern buildings, we regret to notice that in only one instance, so far as we have been able to find, has the compiler thought it worth while to mention the name of the architect. From our point of view, this very common but very regrettable practice is as indefensible as would be that of omitting to mention the name of the author of a book, painting, or piece of sculpture. In other respects the guide is useful and commendable. It is issued by the East Ham Corporation.

Byzantine Art.

The author of this very painstaking account of Byzantine art deprecates, at the outset, the very common notion that it is a sterile and stereotyped if not altogether dead art. It is, on the contrary, as this volume proves, an art that is at once complex and flexible, having in it all the elements of vigorous vitality, and still capable, as we in England have good reason to know, of impressing itself deeply on the minds of men. Indeed, its growing popularity—or, rather, its increasing power—is signalised by the production of this stout volume, which probably owes its origin to its author's and publishers' perception that such a work would be welcomed as possessing current practical interest. The book is itself one of the many striking portents that Byzantine art, so far from being barren and stagnant, is prolific and mobile—a force that counts. "It is," says M. Diehl, "a living art, of



THE ELEPHANT: EXETER CATHEDRAL.

(From Bond's "Misericords." By permission of Mr. Henry Frowde.)

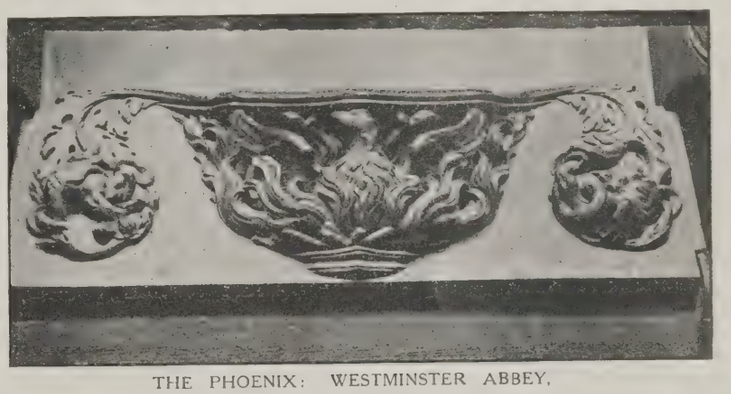
which the development follows a logical curve, continuous and progressive, and of which it is necessary, as with all living organisms, to study the evolution and the successive transformations." These considerations have determined the plan and character of the work under notice, which, conformably to the author's conception of his subject, is, notwithstanding its modest title, less a manual than a history of Byzantine art. At all events, the historical method of presentment has been followed. The author believes that, for instance, it is both more instructive and more scientific to present the history of Byzantine architecture in the chronological sequence of its development, rather than to analyse and compare the divers forms and details of different times. If a choice must be made, the chronological method is, no doubt, that which seems to be more simple and natural; but comparison is essential to completeness.

The book, however, does not pretend to be a treatise on Byzantine architecture, although that subject is handled with considerable fulness in its proper place, while illustrations of its details, coming frequently into other specific classifications, may almost be said to pervade the volume; and illustrations of more or less strictly architectural character form the bulk of the 420 process engravings which constitute the most interesting, if not the most valuable, feature of the book. One can quite understand that the selection of these illustrations has been for him, as he confesses, "a serious and constant preoccupation." One of the most quaintly interesting of the collection is Fig. 179, which is taken from the Barberini Psalter, in the Vatican library, and represents Macedonian builders at work.

It must not be inferred, however, that the text is subservient to the illustrations. Its 800 and more pages are written in no superficial or perfunctory spirit, but represent the patient research and the judicious conclusions of a genuine historian of art, who, moreover, writes in a plain and straightforward style, and with characteristic French neatness and clearness of expression. Summing up the results of his labours, M. Diehl writes: "The discoveries of recent years have revealed to us the marvellous efflorescence of art which, between the fourth and the fifth centuries, spread itself over Syria, Egypt, Asia Minor—in the great Hellenistic cities penetrated by the spirit of the ancient Orient. It is impossible to say how much Byzantium owes to this powerful artistic movement; but it is necessary to add—and it cannot be emphasized too strongly—that the point at which these various influences met and merged was Constantinople; and that is why the new Christian art of the East is legitimately termed Byzantine." Nor does he fail to note that: "In the sixth century, that art created a *chef d'œuvre* of architecture, Santa Sophia, a marvel of science and audacity, an incomparable work, in which is materialised in wonderful perfection the characteristic form of Byzantine construction, the cupola. In this typical monument, Byzantine art manifests at the same time the taste and the feeling for decoration which must for ever be counted as among its essential qualities, while it satisfies the demand that art should be creative.

Every catholic-minded art lover will be glad to accord this book an honourable place in his library; but he will first see that it is bound in accordance with his own taste, for, in accordance with French practice, it is put up in paper covers. This is really an advantage, as it gives the book an opportunity of "ripening," to the benefit of the ultimate binding in boards. There is a good index.

Manuel d'Art Byzantin. Par Charles Diehl, Correspondant de l'Institut, Professeur à la Faculté des Lettres de l'Université de Paris. Paris: Librairie Alphonse Picard et Fils, Libraire des Archives des Nationales et de la Société de l'Ecole des Chartes, 82, Rue Bonaparte. Pp. xii.—838. 15 francs.



THE PHOENIX: WESTMINSTER ABBEY.

(From Bond's "Misericords." By permission of Mr. Henry Frowde.)

Some Venerable Yorkshire Churches.

The author of "Richmondshire Churches" approaches his task in a properly sympathetic spirit. "If it be true," he writes, "that the houses in which we dwell and the public buildings with which we are brought in contact exercise a certain influence over our minds, for good or for evil, for our pleasure or for our distress—how much more is that the case with the churches in which we worship? . . . . It is not too much to say of our ancient churches that they express the permanent sub-consciousness of the life of the English people. In their varied styles they reflect the changes which have passed over our national history." He claims to have traversed "a new and untrodden district in describing for us the ten church fabrics in Richmondshire, which present, collectively, an epitome of English ecclesiastical architecture from the eleventh to the sixteenth century." Nor, in illustrating the book, has he been contented, as are so many of the writers of popular books about buildings, merely to give picturesque elevations and views. He differs from the superficial "populariser" in realising that "nothing is, perhaps, so useful, for the proper understanding of a church, as a study of its ground-plan," and he has himself drawn the plans to the uniform scale of 5ft. to the inch. Believing that such terms as "late Early English" and "early Decorated" are not only vague and indeterminate, but are rapidly becoming obsolete, he has discarded them in favour of round dates—"about 1260" conveying a more definite idea to the mind of the casual reader, and being quite sufficient for the serious student of architecture. In a few cases there is historical evidence of the date, as at Catterick, where the original contract is in existence and is dated 1412. It is a quaint document, and Mr. McCall has done well to reproduce it in full.

The ten churches dealt with are those of St. Lambert, Burneston; St. Anne, Catterick; St. Mary, Hornby; St. John-the-Baptist, Kirkby Wiske; St. Michael, Kirklington; St. Patrick, Patrick Brompton; All Saints', Pickhill; St. Mary, Wath; Holy Trinity, Wensley; and St. Nicholas, West Tanfield. St. Gregory, Bedale; and St. Mary, Masham, are omitted, not because they lack interest, but because the author has dealt with them elsewhere, which seems to us to be an insufficient reason for their exclusion.

Of course, the interest of the book is not wholly, nor even chiefly, architectural; and the author (whose casual observations on art in architecture are invariably sound and judicious) is obviously well equipped for a comprehensive view, as he has more than a relish for the archæology, heraldry, and ecclesiology, which, when dexterously dealt with, invest the subject of ancient buildings with an indefinable charm. Mr. McCall, in fact, is not only well acquainted with his subject in all its bearings, but knows how to handle it, and in "Richmondshire Churches" he has produced a book that is interesting as well as informative.

Richmondshire Churches. By H. B. McCall. Illustrated. London: Elliot Stock, 62, Paternoster Row. Pp. xiv.—226. 10s. net.

THE LEGALITY OF EXTRAS.

By OUR LEGAL EDITOR.

Among the questions which most frequently arise in relation to building contracts, there is none more important to the builder than this: "Can I claim for extras?" Extras may be defined as work not expressly or impliedly included in the original contract. The matter has to be considered from several points of view. The building owner, who probably reckons on the work being done for a fixed sum, does not want the limit to be exceeded. The builder may find the task he has undertaken to be impossible unless he is allowed to charge for extras. Consequently the architect, who is in a middle position, is often in a dilemma. On the one hand, he does not want to make a slovenly job by refusing to allow as an extra something which has been inadvertently omitted from the specification; for unless his skill be something more than human, it will be almost impossible to provide for everything when executing a very large contract. On the other hand, he does not like to ask the building owner, who has employed him, to pay a large bill for extras.

Grave Liability.

The gravity of the liability which may be imposed on a builder by extras is well illustrated by the case of Rigby v. Bristol (Mayor), 1860, 29 L.J. Ex. 359. There an Act empowered a corporation to scour an inland harbour, and they did so by taking up the mud in barges and letting it out at the mouth of the harbour, so as to be carried down the river. The corporation employed the plaintiff to excavate and remove certain estimated quantities of earth down the river at certain prices, the contract (not noticing the scouring prices) providing only for extra work ordered by the engineer of the corporation in writing. In consequence of the cleansing process, which was continued while the plaintiff was engaged in the work, the quantity of soil he had to remove was vastly increased by great deposits of mud. The plaintiff applied for and was refused any additional remuneration, and after the work was completed sued the corporation for compensation. The case of the plaintiff as stated at the trial did not show that the method of cleansing adopted by the corporation was unusual or unreasonable, and, on the contrary, it appeared rather to be a proper mode of carrying out the powers of the Act. It was held that as it did not appear that the process was unlawful or wrongful, there was no cause for action.

The Position of the Architect.

The first thing an architect should do when called on to decide as to extras is to look at the terms of the contract. Sometimes it defines his duty very clearly. Thus it usually provides that the builder shall have no claim for extra payment beyond the contract price in respect of any work done by him for the employer, whether executed before or after the completion of the contract, unless such payment is expressly ordered. The duty of ordering payment is left to the architect, the contract providing that he is to grant a written order expressly stating that the work is to be the subject of an extra charge, and then only for the amount which the architect in his final certificate shall certify to be due to the builder in respect of such alterations and additions. The contract should also provide that extras shall be executed subject to the same conditions as the other work specified for, and that the prices contained in the bill of quantities shall be applicable as far as possible.

The Burden of the Building Owner.

It often happens that when proceeding with the work something occurs to increase the burden which may have to be placed upon the building owner. In order that the architect shall be kept informed of any such additional expense, it is well to provide that the builder, in proceeding with the works in accordance with any supplementary detail or other drawing, sketch, or instruction, that will cause any additional expense, he shall immediately intimate the same to the architect.

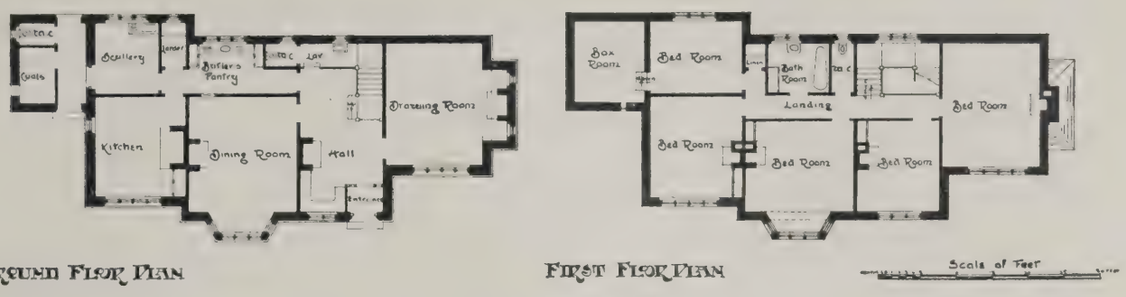
Lump-sum Contracts.

If the contract is a "lump-sum" contract, it is obvious that anything extra must be done and paid for under some contract express or implied which is distinct from the original contract. Unless there is such an express or implied contract, the builder does the extra work at his peril; he cannot recover the price of it. For instance, if work is to be done at a given price, and the builder does the work better or uses better materials, the employer is not liable to pay any greater price (Wilmot v. Smith,



This house is situated upon the Warley House Estate, about three miles from Halifax, Yorkshire, in the middle of the stone district. The outside walls are of the best delf-dressed wallstones, walled random, and the dressings are of coarse millstone-grit ashlar. The roof is covered with grey stone slates. The windows are of metal casements and leaded lights.

HOUSE, WARLEY TOWN, NEAR HALIFAX. JOSEPH F. WALSH, F.S.I., AND GRAHAM NICHOLAS, F.R.I.B.A., ARCHITECTS.



HOUSE, WARLEY TOWN, NEAR HALIFAX: PLANS.

JOSEPH F. WALSH, F.S.I., AND GRAHAM NICHOLAS, F.R.I.B.A., ARCHITECTS.

1828, 3C. and P. 453). But the "extra" clause does not apply to work wholly outside the original contract. Thus, where plasterers who were employed to do the inside of a house under a written contract were verbally requested to do the entablature outside, it was held that they might sue for the price of this without producing the written agreement. (Reed v. Batte, 1829, M. and M. 413.)

Contracts Under Seal.

Where the contract is under seal, as where, for instance, a builder agrees to do work for a corporation or other local authority, the original contract cannot be varied or altered except by a new contract under seal. Consequently, if the builder, at the verbal request of the local authority or one of their officers, does some extra work, he could not recover anything in respect of it. But where such a contract contains the usual clause allowing the extras to be ordered by the architect, his order need not be under seal. In Williams v. Barmouth Urban Council (1897, 77 L.J. 383), where the plaintiff contracted to do certain sewerage works for the defendant council, there was the usual power for the engineer who had control and supervision of the works to vary, alter, enlarge, or diminish any of them. It was held that all variations coming within the terms of the power conferred on the engineer could be validly made without being under the common seal of the urban authority.

Authority for Extras.

It is a general rule that the architect cannot order extras without authority. In other words, the cost of extras done pursuant to an order which the architect has no authority to give, cannot be recovered from the employer. For instance, in Cooper v. Langdon (1841, 9 M. and W. 60), a builder was sued for not building a house in accordance with his contract. He pleaded that he deviated from the drawings, etc., by the direction of the architect. It was held that this was no answer to the claim, as it was not proved that the architect had power, under the terms of the contract, to bind the employer by allowing deviations from the drawings.

Further, he must authorise extras in the manner in which he is directed to authorise them. If an express order or direction in writing is necessary, nothing less than an express order or direction will suffice. (Russell v. Sa Da Bandeira, 1862, 13 C.B.N.S. 149). So, a mere sketch made by an architect was held not to be a sufficient written direction for extras. (Myers v. Sarl, 1860, 30 L.J.Q.B.9.) These cases will show that the architect who is called upon to allow for extras should exercise the greatest care in complying with the requirements of the contract.

Architect's Liability.

In Sharpe v. San Paulo Railway Co., (1873, L.R. 8 Ch. 597), during the excavation for a railway, the engineer promised that he would make alterations so as to effect a diminution in cost in order to make up for work which turned out to be more expensive than had been supposed, though the work was actually included in the entire contract. It was held that the contractor could not recover anything on the promise. The architect, however, may become personally liable for extras if he orders them on a representation that he has authority to do so. The authority of the architect to order extras does not extend to things wholly outside the contract. This point was illustrated in Russell v. Sa Da Bandeira (1862, 13 C.B.N.S. 149). In that case there was a contract for the building of a ship. It was provided that no charges should be demanded for extras, but that any additions which might be made, by the order in writing of the employer's agent, should be paid for at a price previously agreed upon in writing. During the progress of the building of the ship, several additions and alterations were made by the direction of the employer's agents, but no written order was given for them. Goods were also ordered for the use of the ship. It was held that the shipbuilder could not recover for extras, alterations, or additions made during the course of the performance of the contract, unless where he had received previous written orders, agreeably to the contract. The goods ordered for the use of the ship were, however, held not to be extras. The extra clause must not be construed as authorising the architect to allow the contractor to depart materially from the general design of the work under execution. Dealing with the "extras" and "omissions" clause in the old case of Rex. v. Peto (1826, I.Y. and J. 53), Alexander C.B. said: "Everyone who is at all conversant with building knows that, in the course of building, it occurs sometimes to add, and sometimes to desire, that certain things may be omitted; this appears to have been in the contemplation of those who prepared this instrument; and accordingly they have introduced that clause, which was clearly inserted to prevent in the first place any such direction affecting the rest of the contract, and in the next place to provide for the manner in which the contractor was to be paid in case that event should happen." After reading the clause, he said: "Is it possible that this clause was intended to give to the surveyor, a person who ought to be in general but an overlooker of the owner, to see that the work is accurately performed, a power to vary the whole scheme of the building? Or, if it were so intended, that it could have been expressed in such language? In sound construction it should be limited to that to which the condition has confined it, namely, to such extra work as may be done, or something which is to be omitted; but it cannot refer to the substitution of one thing for another, more especially anything so important as the making of the foundation on which the whole validity and security of the building depends."

Employer Ordering Extras.

If it can be distinctly proved that the employer ordered extras, he will be liable to pay for them, as in that case a new contract will have come into existence. But an allegation that he assented to alterations will not be sufficient. In Lovelock v. King (1831 1 Moo. and Rob. 60), a carpenter had agreed to alter certain premises for a fixed sum. Considerable deviations were made from the original plan, which it was alleged the employer had seen and had not objected to. The carpenter sued for the "measure and value" price of all the work done. It was laid down that the employer was not liable for any larger sum than that fixed by the contract, by reason of his assenting to deviations unless he was expressly or impliedly informed that such deviations would increase the cost.

The Final Certificate.

The architect's final certificate may have an important bearing upon the question of extras. The result of many cases appears to be that even where extras must be ordered in writing, the final certificate of the architect is conclusive, both in the case of the employer and the contractor, whether the order in writing was actually given or not. As an illustration, reference may be made to the Irish case of Connor v. Belfast Water Commissioners (1871, 5 Ir.L.R. C.L. 55). There the plaintiff contracted to do certain works for the defendant commissioners. The contract provided that no extras should be made without an order in writing, and that such extra works should be valued by the engineer, and that the valuation should be final. It also provided that if extra works were ordered, the contractor should send in accounts within a month, and that in default of his so doing, the defendants should not be bound to pay for them. It was also provided that the defendants should not be bound to pay for any works, except upon the production of a certificate signed by some principal or resident engineer, and that the principal engineers or engineer for the time being should be the exclusive judges of the execution of the works and of everything connected with the contract; and that the certificates under their hands or hand should be binding and conclusive on both parties. It was

held that the engineers having given a certificate for the extra works, the defendants were precluded from setting up as defences to the action for the price of the extra works; that the extra works had not been ordered in writing, and that no accounts had been sent in for them, as required by the deed.

The final certificate may also amount to a determination by the engineer as to whether certain things are extras or not. This was held to be so in a case arising on a contract which provided that all extras or additions should be paid for at the price fixed by the surveyor appointed by the contractor's employer. It was held that his certificate awarding a certain amount to be due for extras was conclusive (Richardson v. May, 1883, 10 Q.B.D. 400).

PROPOSED MEMORIALS TO KING EDWARD.

At a public meeting at Aberdeen, it was resolved to erect a memorial statue in the city. A dispute as to the site it shall occupy is already in progress.—The East India Association, at a meeting held in Caxton Hall, Westminster, Lord Lamington in the chair, a project was put forward of erecting as a memorial to King Edward an Indian museum. It was suggested that a site belonging to the India Office, on the Surrey bank of the Thames, next to the site of the new London County Hall, would be eminently suitable. Mr. Chisholm, formerly Government architect at Madras, who has prepared plans for the proposed building, estimates the cost at £600,000 or £700,000. He proposed a building 370ft. long, 210ft. broad, and 130ft. high; the whole area (exclusive of corridors or staircases) being 157,251 superficial feet.—At Eastbourne it is proposed to erect a hospital on a central site.—Erith has formed a committee with the object of raising a fund for a statue.—At Bristol, the governors of the Royal Infirmary have adopted an extension scheme, involving the expenditure of £70,000, towards which they have £35,000 in hand. It was agreed that the new wing should form a memorial to King Edward.

Ipswich proposes to build a sanatorium. A public meeting was held on June 17th. About £2,500 was then subscribed, and Alderman Paul offered, if £10,000 was raised, to add £5,000 to that sum. £20,000 is the amount proposed to be collected.

As we announced recently, it has been decided to build the south transept of Selby Abbey as a memorial to the late King. The amount required is £8,000, of which Mr. Wm. Liversedge, J.P., has given £1,000.

The inhabitants of the Royal Manor of Enfield, which forms part of the Duchy of Lancaster estates, are formulating ideas for a memorial of the late King. "The Enfield Observer" of June 17th gives some commendable warnings on the subject of memorials in general.

A public meeting at Norwich on June 18th decided to raise a fund for the endowment of the Norfolk and Norwich Hospital, as a memorial. King Edward laid the foundation stone of an extension there last October.

At a meeting of the Council of Armstrong College, Newcastle, a letter was read from Sir Arthur Bigge, asking the Council to suggest for the King's approval a title for the new buildings in connection with the art department of the college. It was unanimously resolved that the title of "King Edward the Seventh School of Art" be submitted to his Majesty.

EXHIBITION.

The Goupil Gallery.

The exhibition of works by Mr. W. Rothenstein at the Goupil Gallery contains one of his most important pictures, "Carrying the Law," which has been exhibited before. The best things there are his small portraits in black and white, which are excellent. The landscapes are very crude in style, and will hardly improve the painter's reputation. Some of the jewellery by Mrs. Koehler is very good, especially the enamelled gold and emerald necklace, No. 4. The "Summer Exhibition" in the upstairs room is not a very remarkable one; there is a fine painting by the late J. M. Swan, and some good small landscapes by Cazin, Diaz, Harpignies, Le Sidaner, etc.

ART NOTES.

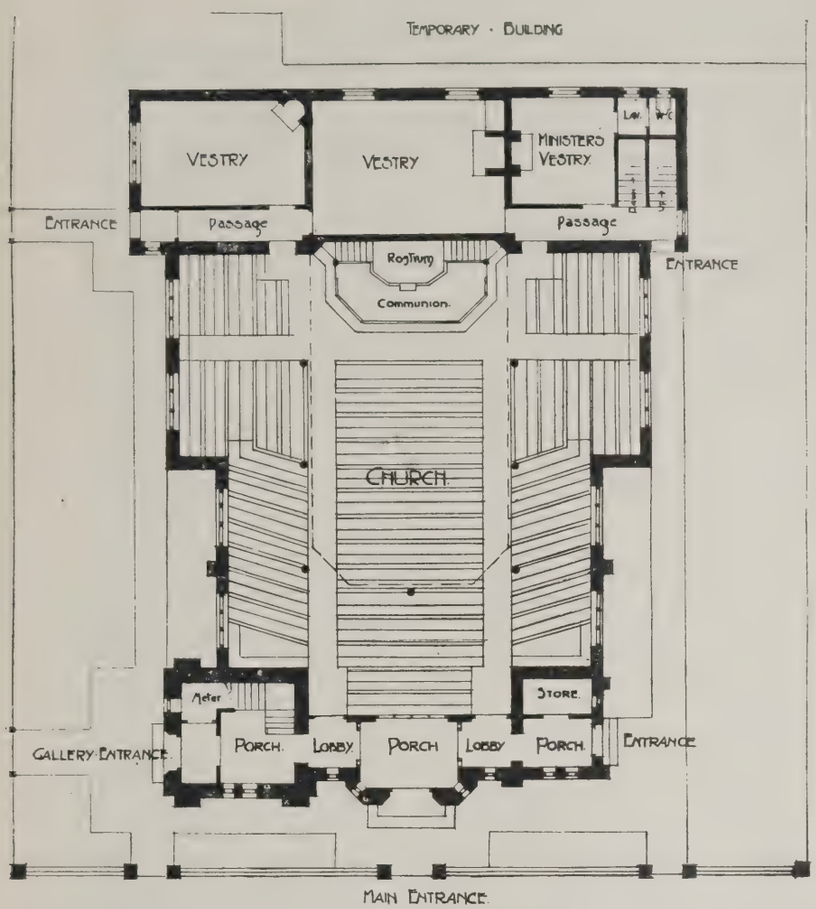
Monument to François Coppée. A monument in memory of the poet François Coppée was unveiled on June 5th in the Place St. François Xavier in Paris. A committee, of which the poet M. Jean Richepin was the chairman, was formed about a year ago to obtain funds for the monument, and nearly £1,000 was collected without difficulty. Coppée's popularity still remains considerable among the middle classes in Paris. M. Paul Déroulède presided, and among the others who delivered addresses were the poet and novelist M. Jean Aicard, the president of the Société des Gens de Lettres, M. René Doumic, and M. Robert Defiers.

Art Exhibits at Brussels. The gallery of modern art (the Palais du Cinquantenaire) at the Brussels Exhibition contains a fine and comprehensive selection, in which all nations are represented with the exception of Germany, whose art exhibits are housed in the German Pavilion. The finest section is probably the French, which is most tastefully arranged and embraces all the phases of contemporary French art. The Belgian section, comprising the Salon Triennal of 1910, contains specimens of the work of almost every one of the leading artists M. Oleffe's "August," representing a summer garden in which three women are sitting, has been especially admired. Holland, Spain, Italy, Switzerland, and Russia are also represented. In the British section are landscapes by Messrs. Alfred East, Priestman, Macaulay, Stevenson, Grosvenor Thomas, Forrester



This church had to be built as economically as possible. It contains seats for 700 on the floor and in the gallery, with about 50 in the choir above the vestry behind the rostrum. The walls are of brick covered with roughcast, with a base of red pressed bricks about 4ft. 6 ins. high. The main front has stone dressings and tracery window over centre porch.

WESLEYAN CHURCH, CHOPWELL, CO. DURHAM. BOYD & GROVES, ARCHITECTS.



GROUND · PLAN

The side elevations have wood frames filled with lead glazing. The wood work internally is executed in pitch-pine, stained and varnished, the exposed timbers in roof being left clean from the plane. The cost was £2,700.

WESLEYAN CHURCH, CHOPWELL, CO. DURHAM. BOYD & GROVES, ARCHITECTS.

Wilson, Hornel, and Austin Brown, and portraits by Mr. John Lavery and Mr. Newberry. Mr. Shannon shows a fine picture on a mythological subject.

George du Maurier Exhibition. There will be held during the present season an exhibition of the work of the late George du Maurier, of "Punch" and "Trilby" fame. A very representative collection is being got together, and it will comprise some of his most famous drawings. The exhibition will cover a period of over twenty years from 1874 to his death in 1896, and will be held under the title of "Society in late Victorian days," at the Leicester Galleries, Leicester Square.

Far Eastern Art. The exhibition of Chinese and Japanese paintings which has been for some time in preparation in the Print and Drawing Gallery at the British Museum was opened to the public on Monday week. It will include the best examples acquired by the recent purchase from Frau Olga Julia Wegener; as well as specimens of the recent discoveries of Dr. Stein in the cave temples of Eastern Turkestan, and others acquired by purchase from Dr. Anderson in 1881. In addition to these, the exhibition will comprise single examples of Chinese and Japanese paintings acquired by purchase, gift, or bequest during the last 30 years.

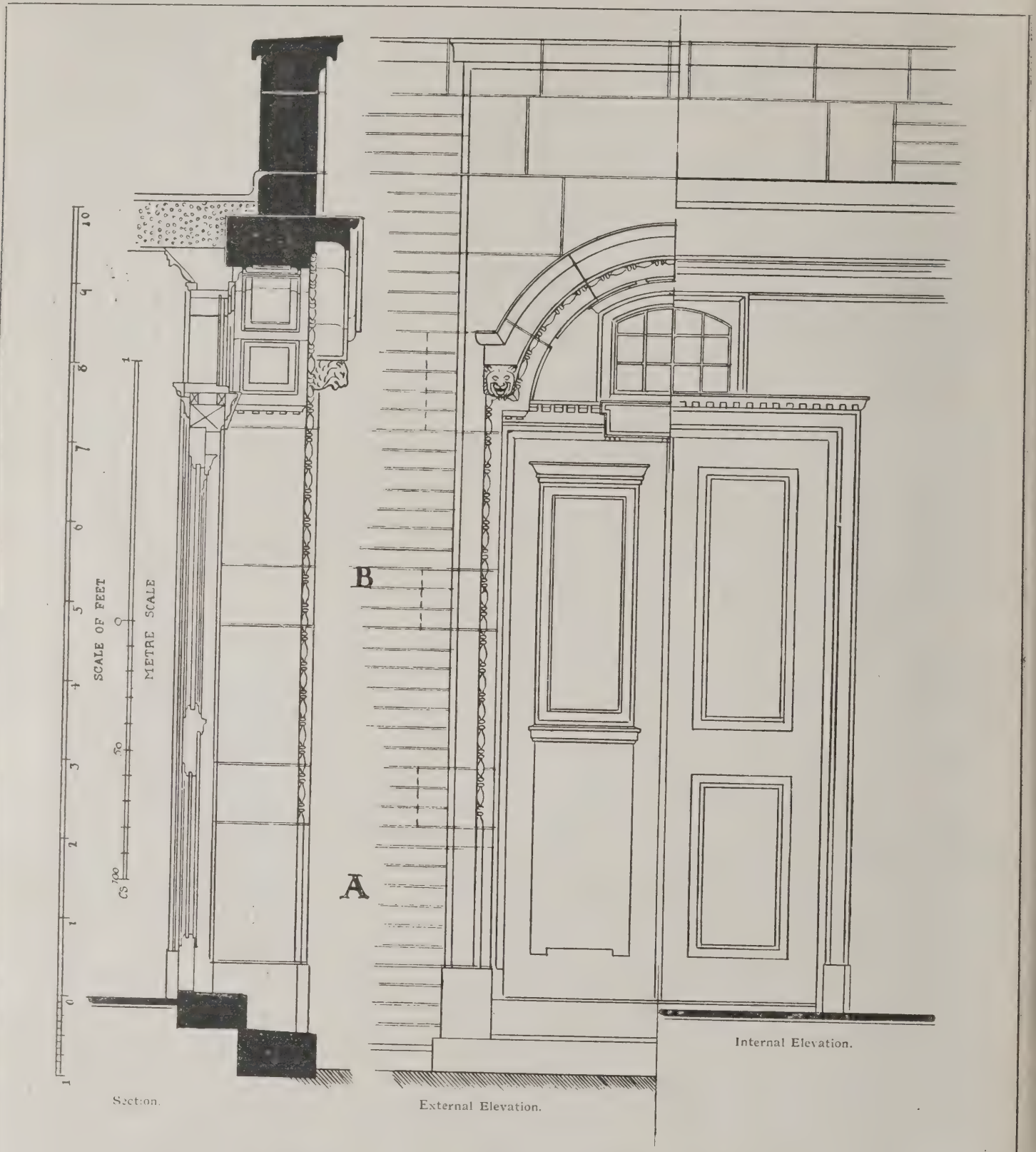
Venice Art Exhibition. The Venice Chamber of Commerce has bought Mr. Lavery's picture of "The Sok (Market Place), Tangier." The oil painting "Bed Time," by Mr. L. C. Taylor, of Oxford, has been bought by the Minister of Public Instruction for the National Gallery in Rome. This is the only picture by a foreign artist purchased so far for the gallery this year. Last year the only foreign work bought for this gallery was Mr. Lavery's picture "Polymnia." Mr. Lavery has sold his picture, "The Coronation of Edward VII. at Westminster" to an Italian purchaser.

Sale of a Famous Rembrandt. It is announced that Rembrandt's "Portrait of a Young Polish Cavalier of the Lysowski Regiment," commonly known as the "Polish Rider," has been purchased from the family of Prince Tarnowsky, through the agency of Messrs. Carfax and Co., by Mr. Henry Clay Frick, the millionaire collector of New York, at what price is not stated. Dr. Bode has the following note on the picture, which is regarded as Rembrandt's finest figure subject: "Whole length figure, nearly half the size of life. Signed on the right on a stone: Re. . . Painted about 1655. Canvas: H. 1m. 15cm. 1m. 33.5cm. A strip of about 12 centimètres has been added at the bottom, while on the right a strip of at least the same width has been cut off and replaced by a narrow strip about the width of a finger. Exhibited at Amsterdam in 1898."

LEGAL.

Corporation Trading.

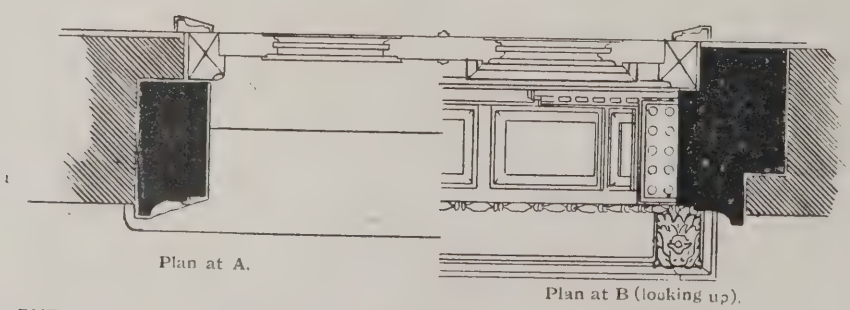
In the High Court of Justice (Chancery Division), last week, Mr. Justice Neville delivered judgment in the case of the Attorney-General v. Corporation of Leicester, which, at the instance of a ratepayer, raised an important question as to the corporation's powers with respect to their electric light undertaking. Under the Electric Lighting Acts, 1882 and 1888, for the County Borough of Leicester, and under a Provisional Order of the Board of Trade, confirmed by a special Act, the corporation were authorised to supply electricity within their borough. Briefly, the contention of the plaintiff was that the corporation were exceeding their powers by "carrying on the trade or business of providing, selling, supplying, erecting, installing, altering, and repairing electric light cables, wires, fittings, electric bells, and motors for working various machines, in connection with houses and buildings, both within and outside their area." Plaintiff claimed a declaration to the effect that defendants had no power to carry on such business, and he asked for an injunction restraining them. The defence was a denial of the allegations, and a claim that under Section 10 of the Electric Lighting Act, 1882, and the Order and Special Act, "they were entitled to do all such things and acts as were necessary or incidental to their duty and right to supply, and the supply of energy within their area." Defendants had showrooms in one of the principal streets of Leicester, with windows in which were exhibited for sale all kinds of electrical fittings and appliances.—For the plaintiff, Mr. Felix Cassel, K.C., and Mr. M. Drucquer contended that defendants' powers were restricted to the business of generating and supplying electrical energy, and did not extend to carrying on generally the business of electrical engineers and contractors.—For the defendants, Mr. Danckwerts, K.C., and Mr. McCardie, argued that the supply of electricity did not cease at the consumer's terminal, but continued to the lamps on the consumer's premises, and included all fittings and appliances. —Mr. Justice Neville, in delivering judgment, said that if the right to supply energy does not itself include the right to wire and fit the premises supplied, he thought the right could not be claimed as incidental. In his Lordship's opinion, "supply within the meaning of the Act and Order is completed at the consumers' terminals. The installation of electricity and provision of fittings," the judgment continues, "is in my opinion a separate business incidental to the use, but not to the supply, of energy. I think that the defendants have misinterpreted their powers and have been carrying on a business in excess of them. I think the plaintiff is entitled to the declaration and injunction asked for, and that the defendants must pay the costs of the action."—A stay of the injunction was granted, pending appeal.



Section.

External Elevation.

Internal Elevation.



Plan at A.

Plan at B (looking up).

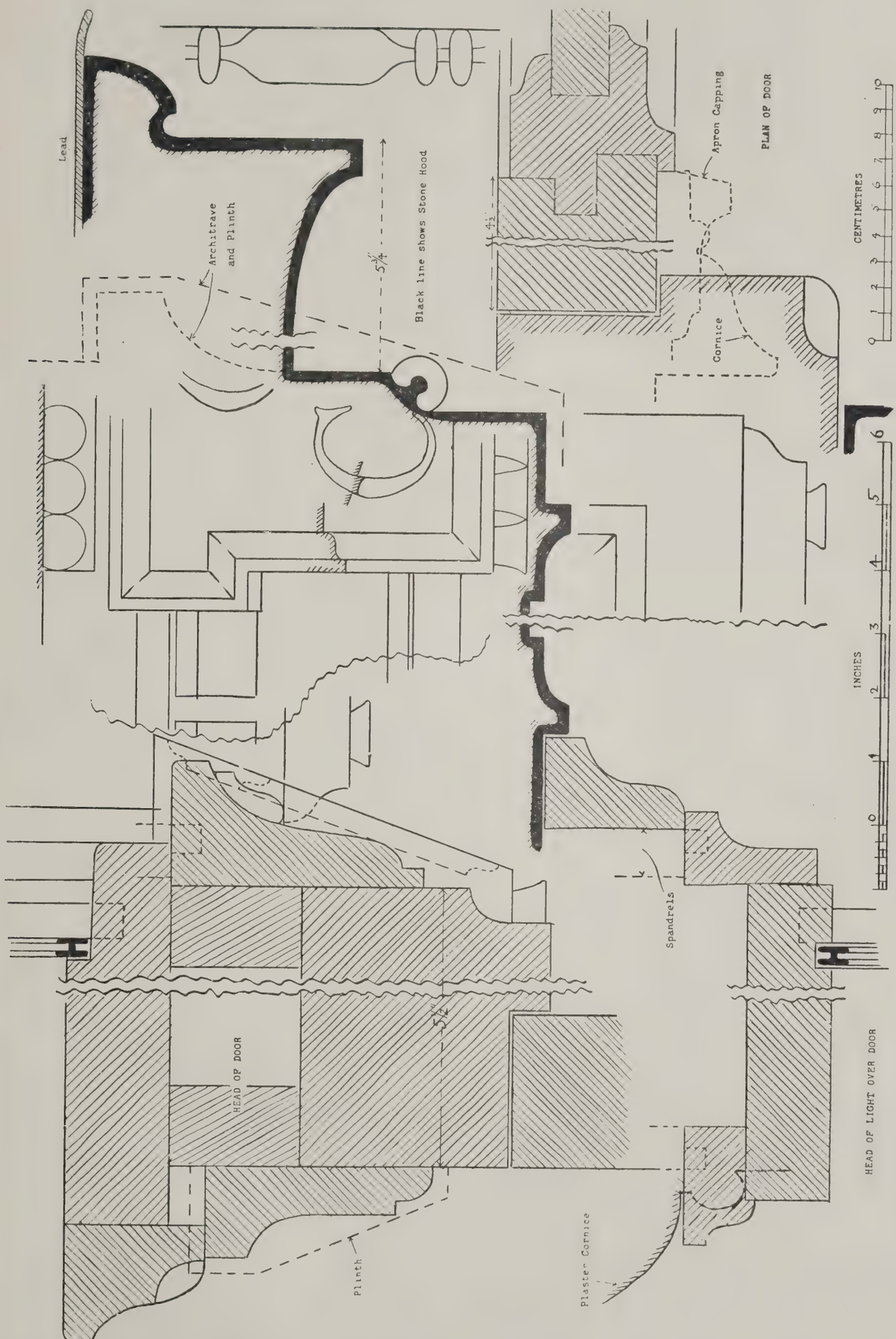
ENTRANCE DOORWAY, THE CLERGY HOUSE, WESTMINSTER CATHEDRAL.
THE LATE J. F. BENTLEY, ARCHITECT.



One of the outstanding traits of the late Mr. Bentley was his thoroughness—a quality shown throughout the whole fabric of the new cathedral at Westminster, from the initial conception of the scheme down to the smallest detail of it. And, like every other part of the building, this doorway to the Clergy House exhibits the most careful consideration in its design and construction. The door itself is painted a soft green colour, in harmony with the red brick walling and the Portland stone surround. The consecration of the Cathedral takes place this week

ENTRANCE DOORWAY, THE CLERGY HOUSE, WESTMINSTER CATHEDRAL.
THE LATE J. F. BENTLEY, ARCHITECT.

UNIVERSITY OF ILLINOIS



ENTRANCE DOORWAY, THE CLERGY HOUSE, WESTMINSTER CATHEDRAL: DETAILS. THE LATE J. F. BENTLEY, ARCHITECT.

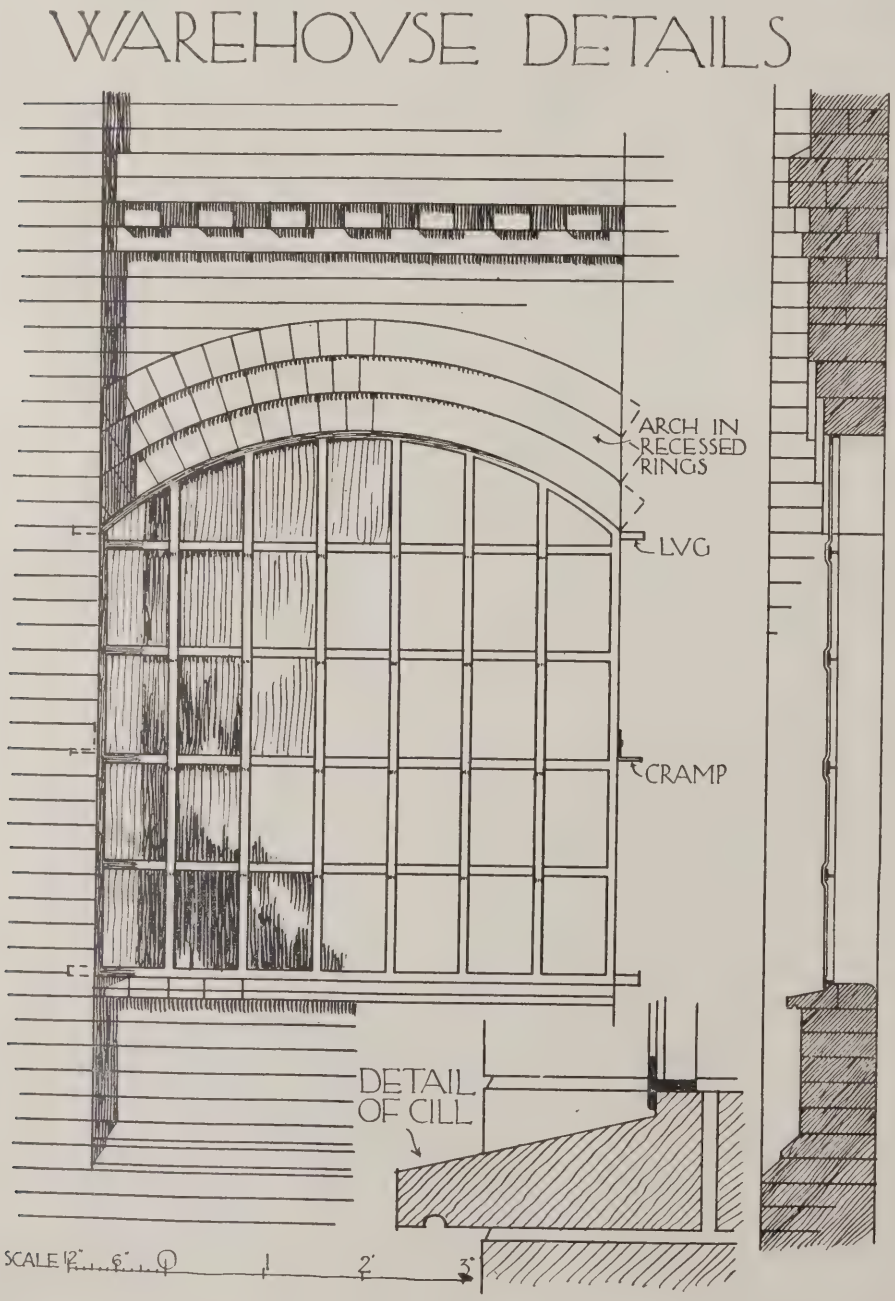
D

PLAIN BRICKWORK.

By EDWIN GUNN, A.R.I.B.A.

A building compulsorily plainly built is too often abandoned as hopeless, without the expenditure of any thought from the point of view of design. Such a building can be, and (one is pleased to acknowledge) frequently is, made interesting by careful and appropriate detail, not necessarily expensive. One or two points to which attention may be profitably directed are suggested in the accompanying illustration, representing a "window unit" of a brick factory or warehouse building. In such buildings the essential external facts are the piers running continuously from ground level to top floor. These are the construction—between them is a mere curtain; part brick, part glass. Their lines may therefore well be emphasized by recessing the curtain (slightly, to avoid waste of floor space within). There is no form of brick arch so economical, practical, and generally satisfactory as the header arch in rings, provided a good rise is given—1 in 5 is a satisfactory ratio of rise to span. A slight recessing of each ring below the topmost adds interest to such an arch; 1½ins. is quite sufficient—as it is for most minor brick projections, which look coarse if more is given them. The skew-backs of the arch, as shown, cut into the pier as dotted on the right. Cheap steel sashes, built of T sections, can now be obtained, of quite pleasing appearance. The frames should be constructed of L section, except at the bottom, where a T section may be used in conjunction with a blue Staffordshire cill-brick of the pattern shown, to form a satisfactory water-bar joint, much better than the customary finish. The head and water-bar should run through clear of the sides of the frame, to serve as lugs for building in, and additional angle cramps on the sides should also be provided. To prevent the risk of the glazing being blown in, holes for metal sprigs should always be provided in the steel tees. Where a string or band is required, something of the type shown makes a satisfactory treatment.

The effect of a plain brick building such as this is often marred in the attempt to improve it by the introduction of "better" bricks in band and arches. It is best when the whole is of similar bricks, i.e., if the building is faced with stocks, let the arches be of stocks also—though of course an alternated-course treatment throughout is often a great success, and patterns in dark headers are always appropriate.



THE TREATMENT OF PLAIN BRICKWORK.

ENQUIRIES ANSWERED.

N.B.—Owing to the very great increase in the number of enquiries received the Editor desires to give notice that answers to the following enquiries can no longer be undertaken :—

(1) Enquiries about buildings to measure in particular towns and districts.

(2) Enquiries embodying questions which have been set in examination papers.

(3) Enquiries which ask for or require the preparation of special designs as part of the answer.

Correspondents are particularly requested to be as brief as possible. The querist's name and address must always be given not necessarily for publication.

The Editor is willing to answer enquiries from readers who require information on architectural, constructional, or legal matters. Such information must be regarded as the gratuitous advice or information of a friend, and not as the professional opinion of one who holds himself out as possessing expert knowledge on the subject in question. The Editor will, however, avail himself of the assistance of a large staff of experts in the matters above mentioned, but the enquiries sent must be on the express understanding that he is not to be held responsible for any delays, mistakes, inaccuracies, or negligences which may occur.

Enquirers whose questions involve possible legal proceedings are strongly urged to consult their solicitors before taking definite steps in regard thereto.

Answers by post will be sent if the enquiry is accompanied by a postal order for 1s. made payable to Technical Journals, Ltd. and crossed, and stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

This fee of 1s. required for answers by post is in no case to be regarded as payment for the answer given, but merely as a registration fee to meet the extra clerical and other expenses incurred in dealing with these special replies.

The Editor also reserves the right of refusing to reply to any question that he may deem to be unreasonable or unsuitable, and it must be understood that both question and reply will, as a rule, be published in these columns.

Books on Mixing Paints.

O. G. (HECKMONDWIKE) writes: "Can you recommend a book dealing with mixing paints, to be used for steam pipes, also for painting iron-work outside. One or two paints that I have mixed have lost their colour as soon as the steam pipes got hot."

—The subject of painting hot-water pipes and ironwork is referred to in Pearce's "Painting and Decorating," to be obtained from Batsford, 94, High Holborn, London (price 10s. post free). We are not aware of any book dealing specially with the subject.

Gothic Work near Wilmslow for R.I.B.A. Intermediate Exam.

A. R. M. (OLDHAM) writes: "Can you recommend any Gothic work in the neighbourhood of Wilmslow, Cheshire, for the testimonies of study R.I.B.A. intermediate examination?"

—Wilmslow Church has fairly good windows of Decorated and Perpendicular dates, one of which would be a suitable subject for measurement. At Mobberly, four miles west of Wilmslow, the church has a very fine rood loft, which would also make an interesting subject. G.

Notice Clause in a Lease.

BARTHOMLEY writes: "I enclose copy of a clause (not reproduced) from a lease, and a notice which has been sent to terminate the same at the end of the first seven years. Please inform me if the notice is quite in order. The original lease is between B and P, but the premises have been sublet to T on exactly the same terms. The lease says six months' notice must be given. You see by the date of the notice that 7½ months' notice has been given to D as B's agent, who has acknowledged receipt of notice."

—The facts appear to be that B let the house to P, and P sublet to T. T having given notice to vacate the premises at the end of the seven years, P now gives notice to D as B's agent in accordance with the clause in the lease, to terminate the lease at the same date. This is more than a six months' notice, but is dated to expire on the right day. This is a perfectly good notice, and as it has been accepted by the landlord's agent everything is in order. X.

Calculating Thichness of Walls for Tank.

OMAR (BATLEY) writes: "I should be obliged if you could give me a method of calculating the necessary strength and thickness of brick walls forming a tank to contain a given quantity of water, such as five to ten thousand gallons. Please say, also, which you consider the more efficient, brick or reinforced concrete, for the purpose."

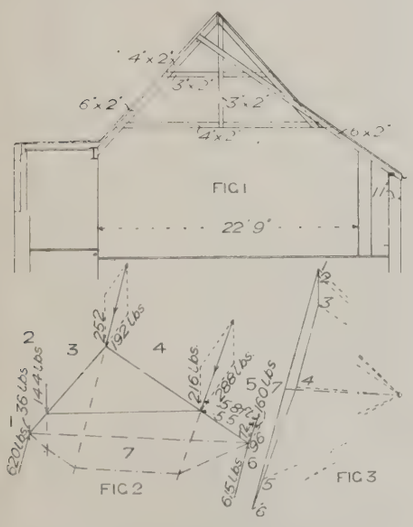
—It is not possible in these columns to give a reply that will cover all possible cases of tank construction. It is necessary to know whether the tank is on the surface of the ground, partly sunk or wholly below ground level, also the depth and length of sides, as all these points affect the question of construction. As to efficiency both brickwork and reinforced concrete may be equally efficient and the comparative cost in the two materials would depend upon the circumstances of the case. The only general statement that can be made is that the thrust upon the side of a water tank will vary directly as the depth from the surface, $p=wh$, where p=pressure per square foot in lbs., w=weight of water in lbs. per cubic foot=62.5, h=depth from surface of water in feet. The total pressure per foot run upon the side of tank will be $P=\frac{1}{2}wh^2$, and the centre of pressure will be at one-third the height.

HENRY ADAMS.

Collar-Beam Roof Trusses.

G. N. (NORTHANTS) writes: "Kindly advise with regard to plan of roof at Greens Norton, with transverse and longitudual sections [not reproduced]. Owing to our client desiring (1) a hipped end to balance with the end of the other wing of the house (we are adding about 30ft. to one wing), and (2) a height of 10ft in the upper room, yet we are still to keep the eaves level with other wing and roof of wing we are lengthening. We cannot put heavy purlins to carry the rafters, and principals cannot be inserted owing to the bay and ingle opposite. We purpose constructing the roof as shown, timbers spiked together, but we are uncertain owing to inexperience whether the construction—each rafter forming a truss so to speak—is sound, or if not strong enough, where it may be improved so as to relieve the walls of any undue thrust."

—The method of roofing proposed, as shown in Fig. 1, has a very makeshift appearance. On the long side the trusses will



"COLLAR-BEAM ROOF TRUSSES."

be equivalent to collar-beam trusses, for which the span is far too great. With 6in. by 2in. rafters the stress in them will reach 24 cwt. per sq. in., and unless they have diagonal braces to the tie beams, they will require a section of not less than 9in. by 3in. to bring the stress down to the usual limits, but at any rate 7in. by 2½in. would be the least that could be used. The following is the mode of working adopted: Draw out the frame diagram Fig. 2, which also shows the loads calculated from 21lbs. per ft. sup. structural load and 28lbs. per ft. sup. normal wind pressure. The load line, Fig. 3, may be set down, and the reactions found by means of a funicular polygon. The maximum bending moment on the long rafter will be at the junction with the collar and equals $(615\times5.5)-(160\times5.8)=2694.5$lb.-ft. or $\frac{2694.5\times12}{112}=288.7$ cwt.-ins. The section modulus of the 6in. by 2in. section proposed $=\frac{bd^2}{6}=\frac{2\times6^2}{6}=12$, therefore the stress per sq. in. $C=\frac{M}{Z}=\frac{288.7}{12}=24$ cwt. per sq. in.; with the 9in. by 3in. section $Z=\frac{3\times9^2}{6}=40.5$ and $C=\frac{288.7}{40.5}=7$ cwt. per sq. in. which is still a little above the usual limit.

HENRY ADAMS.

Charges for "Extras."

ANXIOUS (DRAYCOTT) writes: "The builder's estimate accepted for a small house from plans, details, and specifications are, say, £600. The client, during the course of erection of the house, orders many extras, such as electric bells, more expensive fire-grates, bath, heating apparatus, etc. Am I entitled to charge the client on the full amount on completion of house, say, £675, or should my charge be based on the original estimate of £600?"

—It is presumed, from the statement of facts, that there is no architect employed. As a rule there is an "extra" clause in a building contract, which provides that no extras can be charged for unless approved by the architect; and such a provision must be strictly followed (Thames Iron Works v. Royal Mail Steam Packet Co., 8 Juv. N.S. 100). But if there is no extra clause, and it can be proved that the employer ordered something which was not included in the specifications, it is clear that the builder can recover the value of the work done and materials supplied (Buxton v. Cornish, 1 D. and L. 585). But if the builder has done the extra work without an order, the building owner is not liable to pay for it (Dobson v. Hudson, 1 C.B. N.S. 659). It would seem that, in the present case, there should be no difficulty in proving orders for the extra and better work. X.

Right of Authority to Examine Drains.

E. S. W. (WANDSWORTH) writes: "Please state (1) Under what acts and by-laws do the district surveyor and sanitary inspector of a certain borough work, and from whom can copies of such acts and by-laws be obtained? (2) Has a district surveyor or sanitary inspector the authority to enter premises to examine drains or fittings without first showing to the satisfaction of the owner or occupier that there is a nuisance existing, or that owing to there being illness in the house there is every cause to believe that the drains or fittings are defective? (3) There being no apparent defects in the drains or fittings of certain domestic premises, are the facts that the drains and fittings are out of date and the drains without manholes sufficient for the district surveyor or sanitary inspector to demand the right to examine and test the same?"

—As to (1) having regard to the other queries, it is probable that the authorities of the borough in question are acting under the powers conferred on them by the Public Health Act, 1875, as amended by the Public Health Act, 1907, an "adoptive" measure, which has probably been adopted by the borough. As to the by-laws, these can be obtained from the town clerk gratis or at most for a few pence. As to (2), the borough surveyor has extensive rights in the matter of inspection. Section 41 of the Public Health Act, 1875, as amended by section 34 of the Act of 1907, provides that on the written application of any person to a local authority stating that any drain, water-closet, earth-closet, privy, ashpit, or cesspool, on or belonging to any premises within their district is a nuisance or injurious to health, or where on the report in writing of their surveyor or inspector of nuisances the local authority have reason to suspect that any such drain, water-closet, earth-closet, privy, ashpit, etc., is a nuisance or injurious to health, the local authority may empower their inspector either with or (in cases of emergency) without notice to enter any such premises and cause the drains to be opened up. If the drain, or etc., is found to be in proper condition, the damage must be made good at the cost of the local authority. If the drain, etc., "appear on examination to be in bad condition, or to require alteration or amendment," the owner or occupier may be called upon to put it right, and if he fail to do so, the work may be done by the local authority at his expense. As to (3), the fact that drains and fittings are out of date may justify inspection; but the occupier cannot be compelled to go to the expense of bringing them up-to-date, as the section does not apply to structural defects (Fulham Vestry v. Solomon, 1896, 1 Q.B. 198). It should, perhaps, be mentioned that if the surveyor says that he has good grounds for believing there is a nuisance, he may apply the smoke test to the drains either with the consent of the owner, or by order of the court. X.

Cold Storage of Beer.

NEMO (CLECKHEATON) writes: "Kindly inform whether sketches [not reproduced] of proposed walls and roof for a conditioning store for bottled beer are suitable. If not, would you please suggest improvements? Is it necessary for the floor to be insulated in a manner similar to the roof, but slag wool not as thick? The floor will be 3ft. above ground. Do you think a flat concrete roof is preferable to a slated roof? Specification No. 7 gives the temperature for beer from 33 degs. to 45 degs. Fah. I am informed that it should be 54 degs. Fah. Which is correct?"

—The section on cold storage in "Specification No. 7" was written by experts, but there may be a difference of opinion as to the best temperature. For the walls the proposed section A would be suitable. For the roof slate boarding and felt would be better than battens. It would be desirable to provide some insulation for the floor, but this need not be so elaborate as that for the walls or roof. Probably a double floor would be suitable, formed by putting 4in. by 2in. joists the opposite way to the present joists, filling in with slag wool and boarding over.

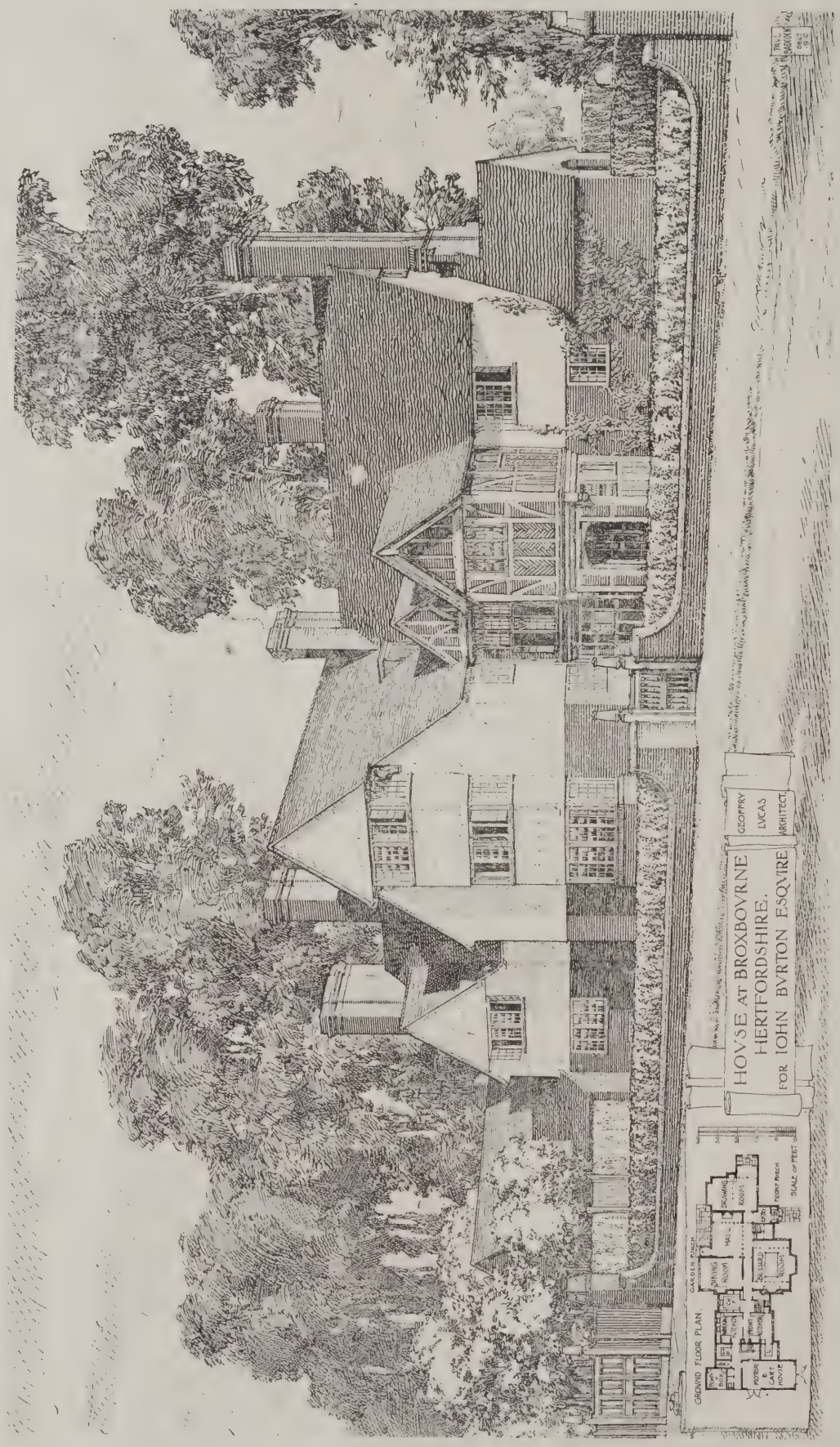
HENRY ADAMS.

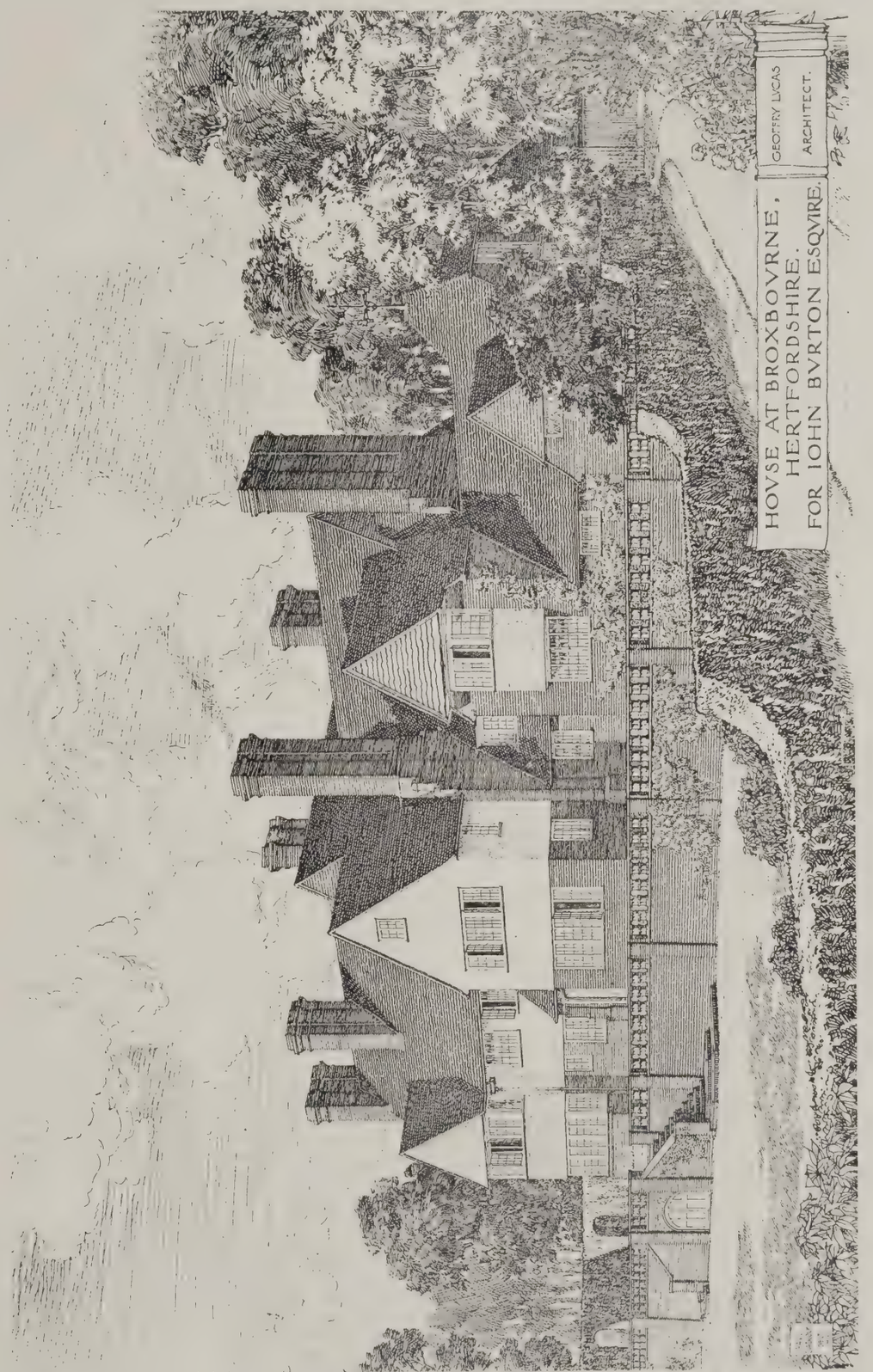
Colourless Preservative for Old Woodwork.

A. D. R. (RUGBY) writes: "Could you tell me of a reliable restorative and preservative substance for the external woodwork of an old Gothic porch of the fifteenth century. I want some substance that will not destroy the present grey colour and texture so fascinating in these delightful old examples."

It is very difficult to recommend anything for the purpose you mention. It will be necessary to experiment with a very small portion. Probably oiling with raw linseed oil would be the best thing to do under the circumstances. This will make the colour considerably more mellow, but will affect the general appearance less than any other preservative of which we know. For old oak picture frames a mixture of equal parts of spirits of wine and glycerine rubbed over the surface has an excellent effect, and it is just possible that this might prove satisfactory, although we expect it would be necessary to renew fairly frequently.

A. S. J.


HOVSE AT BROXBOVRNE
HERTFORDSHIRE.
FOR IOHN BVRTON ESQVIRE
GEOFFRY LVCAS ARCHITECT
GROVND FLOOR PLAN
SCALE OF FEET


HOVSE AT BROXBOVRNE,
HERTFORDSHIRE.
FOR IOHN BVRTON ESQVIRE.
GEOFFRY LVCAS
ARCHITECT.

HOUSE AT BROXBOURNE, HERTS.

This house has just been completed at Broxbourne, Herts., for Mr. John Burton, on a site adjoining the New River, which flows at the bottom of the garden. The materials are unpicked red-brick facings, cream-coloured roughcast, and hand-made roof tiles. The half-timbered porch is solidly built of English oak with brick nogging. The staircase is of oak, and the hall and staircase are oak panelled. The drawing-room and hall have oak floors. J. Willmott and Sons, of Hitchen and Hornsey, were the general contractors for the work, while Wainwright and Waring, Ltd., of Chiswick, supplied and fixed the lead glazing and wrought iron casements. The Artificers' Guild, Ltd., of Maddox Street, W., supplied the weather vane, ironmongery for front and garden doors, and gas fittings for ground floor rooms, Ramsey and Co., Ltd., of Victoria Street, S.W., the general ironmongery; Bolding and Sons, Ltd., of Davies Street, W., the sanitary fittings; Messrs. Thos. Elsley, Ltd., Bratt, Colbran and Co., and Clark, Hunt and Co., furnished grates, etc. The quantities were prepared by Messrs. J. Gandy and Bennison, of 22, Essex Street, W.C., and the architect was Mr. Geoffry Lucas, A.R.I.B.A., of 14, Hart Street, Bloomsbury Square, W.C.

NEW BUILDINGS.

PROPOSED.

Aberdeen.—At a recent meeting of the Aberdeen University Court, a plan was submitted of the proposed site for building an additional library, classrooms, and examination hall accommodation at King's College, which was generally approved by the Court.

The plan showed the site of the classrooms at the north end of the ground, fronting High Street, formely occupied by the Old Aberdeen Brewery, the library being extended to the north of the present library and at right angles to it. The cost of the building is expected to be upwards of £14,000. Alterations on Professor Harrower's house were authorised, at an estimated cost of from £230 to £250.

Four sets of plans, involving an expenditure of £10,440, have been submitted to the Plans Committee of the Aberdeen Town Council, including a plan of a dwelling-house for six tenants, plans for stores, and a plan for alterations and additions to Holburn Street Public School. The great bulk of the estimated expenditure is in connection with the enlargement of Holburn Street School by Howburn Place.

It is understood that the contract for the new block of buildings to be erected at the corner of Union Street and Huntly Street, for the Royal Insurance Company has been secured by Mr. Alexander Anderson, builder. The contract will involve something like £6,000.

Barnard Castle.—The plans of the new chapel proposed to be erected at the North Eastern County School, at Barnard Castle, have been prepared by Mr. W. D. Caroe, F.R.I.B.A., London, and a view of the interior is on exhibition at the Royal Academy. The new building will be 100 feet in length, and will provide room for between 300 and 400 worshippers. The seating will be arranged lengthways as in many school and college chapels, and a stained-glass window will be placed in the chapel in memory of the late Mr. Thompson Richardson, one of the original benefactors and governors of the school. As Provincial Grand Master of Durham Freemasons, Lord Barnard will shortly lay the foundation-stone.

Barnet.—The workmen's dwelling scheme of the Barnet Urban District Council, which has now been before the public for some three years, formed the subject of an inquiry at the local town hall last week before Mr. W. H. Collin, Local Government Board Inspector. It is proposed to build, as a first instalment, twenty-nine houses at £190 each—a total of £5,510, to which must be added £2,800, the cost of the eleven acres of land to be acquired for sites. The matter will duly be reported on to the Local Government Board.

Bedford.—The Town Council has approved the following plans:—Alterations to "Engine and Tender," Midland Road; eight houses, Firbank Road, additions to out-buildings, 65, De Parys Avenue, extension to Vulcan Works, additions to Newnham Rooms, shop and premises, Midland Road.

Bexhill.—An enquiry has been held at the Town Hall by Mr. H. Shelford Bidwell, M.I.C.E., into the application of the Bexhill Council, for the sanction of the Local Government Board to a loan of £6,700 for the defence works on the west parade.

Blackrock (Ireland).—Mr. P. C. Cowan, Chief Engineering Inspector of the Local Government Board, has held an inquiry into the application of the Blackrock Urban District Council for a supplementary loan of £500 for the purpose of erecting working-class lodging-houses.

Brixham (Devon).—An enquiry has been held by Mr. F. H. Tulloch, M.Inst.C.E., at Brixham, on behalf of the Local Government Board, into the application of the Urban District Council for sanction to borrow £800 for alterations and additions to the Town-hall.

Cambridge.—The Town Council has approved the following plans:—Alterations, Panton Street, and Coronation Street, bay window, Trinity College, house Priory Road, shop front, 39, Regent Street, cloister, Grange Road, seven houses, Paradise Street and Grafton Street, workshop and w.c., Grafton Street, three houses, Mawson Road, store house, Caius Street.

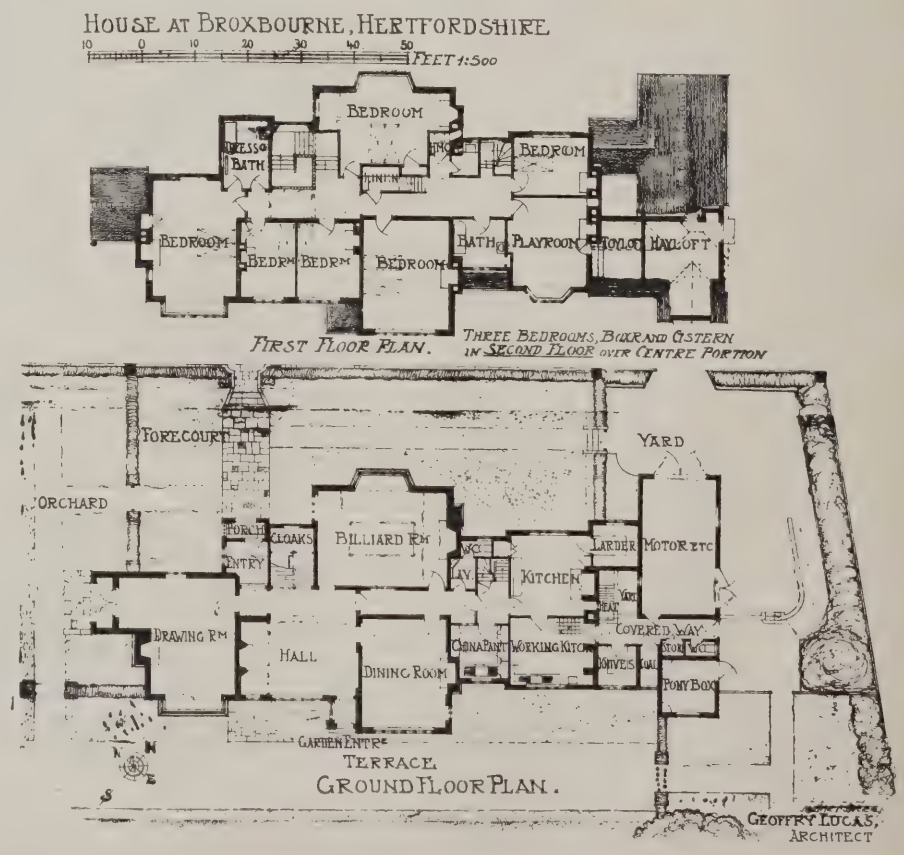
Clydebank.—The Clydebank Dean of Guild Court has passed the plans presented by Messrs. John Brown and Company, Limited, shipbuilders, for a new boatshed to be erected in Clydebank Shipbuilding yard. The boatshed will really be a covered building berth, and is designed to facilitate the construction of smaller craft such as torpedo-boat destroyers. The building will be 400 feet in length, and 113 feet in breadth. Messrs. Brown also received permission to make an addition to their offices.

Dublin.—Mr. P. C. Cowan, M.Inst.C.E., Chief Engineering Inspector to the Local Government Board, has held an inquiry in the Council Chamber, City Hall, to consider the details of an application which is being made by the Municipal Council for the sanction of the Local Government Board to a loan of £18,207 for the carrying out of an improvement scheme, under Part 1 of the Housing of the Working Classes Act, 1890. The area of the proposed scheme is known as the Cook Street area.

Dundee.—The St. Andrews Provincial Committee for the Training of Teachers have now secured a site in Dundee for the proposed new Training College and Demonstration-School. The site, is situated in Park Place, in the vicinity of University College, and the properties acquired for the purpose include the Caird Nurses' Home and several villas on the east side of Park Place, and to the north of Harris Academy. Possession of the ground, which extends to about 268 poles, is to be had in May next, and it is expected that the new buildings will take a couple of years thereafter to complete. The total cost of the new buildings is estimated at about £60,000 including £13,700 for the site.

Eton.—The Rural District Council has approved the following plans:—New house at Marsham Waye, Gerrard's Cross, new entrance lodge at Iver, four lock-up shops, Oak End Waye, Gerrard's Cross, upper part to be built at some future time; new house near Potter's Cross Road, Iver, new house, Orchehill Avenue, Gerrard's Cross, additions to the Red House, Taplow.

Halifax.—At the Halifax Town Hall, Mr. M. Keppel North, M.I.C.E., has held a public inquiry on behalf of the Local Government Board into the application of the Watch Committee of the Corporation, for power to borrow £2,045 to erect a district police station at Warley Road, King Cross.



GEOFFRY LUCAS, A.R.I.B.A., ARCHITECT.

Leven.—At a recent special meeting of Leven Dean of Guild Court, plans were submitted by Messrs. Haxton and Walker, architects, Leven, for a higher grade school to be erected for Scoonie School Board, at Mitchell Street, Leven, which were passed by the Court. The School Board have accepted contracts for the erection of the school, the total cost of which will be £5,200

London, N.—The Hornsey Borough Council has approved of the following plans:—Dwelling-house in Stormont Road, Highgate, dwelling-house in Southwood Lawn Road, Highgate, motor and conservatory, dwelling-house in Stormont Road, Highgate, dwelling-house in Duke's Avenue, Muswell Hill, plans for two dwelling-houses in Rookfield Avenue, Crouch End, alteration in and additions to No. 44, Wightman Road, South Harringay, alterations in and additions to No. 1, Fairfield Gardens, Hornsey, dwelling-house in Cholmeley Park, Highgate, and two dwelling-houses in North Hill, Highgate.

London, S.E.—Messrs. F. and E. Davey, Ltd have obtained the contract for the building of a new L.C.C. school, at Manor Lane, Lewisham, the sub-contractors being Messrs. Matthews and Company, 61, St. Mary Axe, E.C. The heating arrangements for the new schools will be in the hands of Messrs. H. J. Cash and Company, Limited, Caxton House, Westminster.

The London County Council has decided not to proceed further in the matter of building a new secondary at Dulwich to replace the county secondary schools at Forest Hill and Sydenham Hill Road.

The Bishop of Southwark has written the Vicar of St. Nicholas, Deptford, that he will recommend the Ecclesiastical Commissioners to make a grant of £1,000 towards the restoration of St. Nicholas Parish Church, which has been condemned by the London County Council.

Long Melford.—A new ferro-concrete bridge is being constructed across the Stour, near Long Melford, by Messrs. Holloway Brothers (Limited), of London. The structure will consist of three spans of 31ft., the ends being supported upon four rows of ferro-concrete piles. The piles are 16in. square by 35ft. long, and the two end rows are placed about 9ft. from the abutment walls. Arched main beams 3ft. deep at the haunches and 1¼ft., in the centre by 9in. wide are supported directly upon the piles, and across beams 9ft. 9in. long by 5in. wide and 12in. deep are placed at 5ft. intervals. The bridge which is to cost £1,100, will provide a 20ft. roadway between kerbs and a footpath 2ft. 6in. wide at each side. The footpath is supported by corbels placed at every 10ft., with an overhang of 18in. The ferro-concrete decking will be 5½in. deep under the roadway and 4in. under the footpaths.

Richmond.—The Town Council has approved the following plans:—New parish hall, Church Road, amended plan of new house, Beechwood Avenue, conservatory, No. 30, Kew Road.

Slough.—The following plans have been approved by the Urban District Council:—Four houses in Montague Road, two in Martin Road, one in Ledger's Road, mill, stables, and cart shed in Colonial Road, additions and alterations at the "Crown" hotel, and a secondary school in William Street.

Swansea.—The Christian Science Society, Swansea, have purchased a site on Walter Road, for a church and lecture hall, and the latter is to be built immediately. The cost of the buildings when completed will be £10,000, Mr. Glendinning Moxham, F.R.I.B.A., Swansea, having been appointed architect.

Teignmouth.—An inquiry has been held at the Town Hall, Teignmouth, by Mr. Reed M.Inst.C.E., for sanction to borrow further moneys for works of sea defence. The Clerk to the District Council, having given the details as to population, rateable value, etc., said the amount required would be £4,750, of which sum £2,000 had already been sanctioned on account.

IN PROGRESS AND COMPLETED.

Balby (Doncaster).—The corner-stone in connection with the extension and enlargement of Balby Church, near Doncaster, has been laid. The present church was built in 1847, and 30 years later was enlarged by the addition of a north aisle, thus bringing the accommodation up to 270. The present enlargement scheme provides for the extension of the nave and north aisle 60ft. in an easterly direction, with vestries, and the erection of a south aisle, which would cost about £3,000, but at present the building of the south aisle and one vestry is left in abeyance, though should funds be forthcoming the full scheme will be carried out. It is now only proposed to lengthen the nave and south aisle, to erect a new chancel, and to make a vestry on the north side, which will add 60ft. to the length of the church. The plans were drawn by Mr. Temple Moore, the well-known church architect, and the building contract is in the hands of Messrs. Mullins and Richardson, builders, of Balby, whose estimate for the work is £1,850, though the furnishing, heating, and other details will bring the total cost up to £2,100. The subscriptions already received amount to £1,400.

Birmingham.—The new public baths just erected by the City Council in Nechells Park Road were opened by the Lord Mayor on Wednesday last. The new baths, which are intended to serve the Nechells Ward, containing an estimated population of 32,218, are built upon a site purchased by the Corporation in February, 1903, at a cost of £1,373 10s., and contains an area of 1,709 square yards, with a frontage of 87ft. to Nechells Park Road and 183ft. to Aston Church Road. The buildings, which involved an estimated expenditure of £21,995, exclusive of site, were designed by Mr. Arthur Harrison, F.R.I.B.A., and are in the modern Renaissance style of architecture; the walls are built in red brick, with stone colour terra-cotta dressings and facings to windows, porticoes, turrets, copings, etc. The internal walls are lined with coloured glazed bricks forming skirtings and dadoes, with ivory white glazed brick filling and terra-cotta treatment to cornices, windows, etc. The floors are laid with marble Terazzo paving, and the major portion of the woodwork has been carried out in pitch pine, and varnished. The main building, containing the swimming bath, measures 109ft. in length and 59ft. in width between walls, and the water area of the swimming bath is 82ft. 6in. in length by 35ft. in width, the floor constructed with a gradient giving a depth of from 4ft. 6in. at the shallow end to 7ft. at the deep end. The bath contains about 95,000 gallons of water. There are promenades on all sides, 7ft. wide, and 63 dressing rooms. A spectators' gallery has been constructed over the dressing rooms on all sides, giving seating accommodation for upwards of 400 persons. The builders are Messrs. John Bowen and Sons, Balsall Heath, and the engineering work has been designed and carried out under the directions of Mr. Job Cox.

Byfleet (Surrey).—The foundation-stone of the new Church of St. John the Baptist has been laid, the temporary iron church having become quite inadequate for the needs of the residents. The proposal is to build a church to seat 600, at an estimated cost of £10,000, but as it will take some time to raise such a large sum, it was deemed advisable to proceed at once with the erection of a portion of the building. The present undertaking comprises the chancel, chancel aisle, north and south transepts, one bay of the nave, the spire and two vestries. The estimated cost of this is £7,000, of which £4,500 has been received. The new church is from the designs of Mr. W. D. Caröe. F.R.I.B.A., architect, London, and is being built by Mr. W. G. Tarrant, of Weybridge. It is to be of Doulting stone, with flint facings, having a red tiled roof, Gothic tracery windows, and oak doors. Its total length will be 133ft., and extreme width across the transepts 84ft., whilst the height will be 41ft. Over the chancel there will be an oak shingle spire, 38ft. high. On either side there is to be a nave arcade with arches. The arcades are to be semicircular, with stone vaulted ceilings, and large pillars of Ridge Park stone. The ceiling will be panelled in oak, whilst inside and out there will be a mediæval finish to the stone work. Accommodation for 300 people will be provided; the paving will be of wood block and red tiles, and the heating by hot water. Foundations have been laid for the whole of the church, the portion left over comprising three bays of the nave and the narthex.

Colchester.—Sir Thomas Barrett-Lennard has laid the foundation-stone of the new lunatic asylum which has been necessitated by the want of accommodation in Essex. The buildings, which are now nearly half-finished, are being erected at a cost of over £248,000 on a site about two miles north of Colchester, and they will accommodate 2,000 patients. The new buildings include a large recreation hall with stage and proscenium, and it was mentioned that one of the finest cricket grounds in the Kingdom would be laid out.

Crumlin (Mon.).—The new miners' rescue station, situate in a field adjoining the Great Western Railway, has been completed, being built of red brick. The building includes galleries representing the passages of a coal mine for the purpose of training squads of men, rooms for cleaning, overhauling, repairing, and storage of the apparatus, and residential quarters for the instructor and his family. Men from each colliery will be trained in squads to form brigades for rescue purposes in the event of accidents. The contractors are Messrs. Gregory Brothers, Pontnewydd, and the architect Mr. Webb, Blackwood. It is estimated that the cost of the erection and the equipment of the station will be about £2,000.

Dunblane.—The Memorial Chapel of the Queen Victoria School, Dunblane, the foundation-stone of which was laid by the late King Edward, has been formally opened by the Moderator of the Church of Scotland. The chapel, which is rectangular in plan, forms the chief architectural feature of the school buildings, and is of the late Gothic style, of a distinctly Scottish character. There is one transept and a small chancel, with a nave and two aisles. There is also a small back gallery primarily intended to accommodate a band. Seating accommodation is provided for 400 people. At the junction of the transept with the nave there is a massive central tower and spire. The exterior of the building is rough-cast, with stone base and stone dressings at the entrance door, windows, etc., and the roofs are covered with special slates selected to harmonise with the stone and rough-cast. The architects are Messrs. John A. Campbell and A. D. Hislop, Glasgow.

Eastbourne.—The foundation-stone of extensive additions to St. John's Church, Eastbourne, was recently laid, the architect being Mr. A. R. G. Fenning, F.R.I.B.A., of Lincoln's Inn-fields, London. The whole cost of the work will be borne by Mr. and Mrs. Rube, who intend it as a memorial of their late son, Lieutenant E. A. R. Rube, of the King's Dragoons, who died at Lucknow. In the chancel there will be a new oak reredos designed by Mr. Arthur Blomfield, F.R.I.B.A., and at the south side of the sacrarium a marble monument to Lieutenant Rube will be erected. The nave is to be lengthened, two new aisles (taking the place of the existing ones) will be built, and there will be a new clerestory. Rising to a height of about 110ft., the new tower will have four pinnacles and an oak shingle spire.

Market Harborough.—The Cottage Hospital which has been erected on a site given by Mr. George Green, J.P., C.C., on the Coventry Road, Market Harborough, has been formally opened. The cost of the building was £2,100.

Meltham (Huddersfield).—The memorial-stones of a new school, to cost £2,000, have been laid at Meltham, towards the cost of which, £1,080 has already been raised.

SOCIETIES' REPORTS.

Manchester Society of Architects.

Manchester Society of Architects paid a visit to Peover Hall, near Knutsford, Cheshire, on June 11th, under the leadership of Mr. Isaac Taylor. By the courtesy of Sir H. S. Mainwaring, Bart., arrangements had been made for the members to be conducted through the Hall and adjoining buildings. The main portion of the Hall, a red brick building, of Georgian date, is hardly an inspired piece of work, although it has a very simply and effectively treated staircase. The large Elizabethan wing, however, containing a huge kitchen and five upper rooms, has delightful charm. The fine colour of the old brickwork and stone, the stone mullioned and transomed windows, the grouping of the chimneys and sharply pointed gables all contribute to an effect of the utmost beauty. It was this portion of the group of buildings that figured most prominently in members' sketchbooks. The stables are extremely interesting, especially the earlier block, containing Jacobean stalls sumptuously adorned with oak columns and characteristic strapwork of the period. The adjacent church contains in the side chapels some fine tombs of the Mainwarings.

On the Tuesday evening following a number of members visited Middleton, and inspected two elementary schools, by Messrs. Edgar Wood and Sellers, under the guidance of Mr. Sellers. While it is quite the usual thing nowadays to find elementary schools planned with every requirement and convenience, duly supplied with good lighting and proper aspect, it is rarely that one finds these qualities combined with so serious an attempt at architectural expression as in the case of the Elm Street and Durnford Street schools. At Elm Street the treatment of the entrance court, with groined cloisters at the sides and a semicircular sweep of low buildings in front of the central hall, and the striking treatment of the interior of the central hall and its fenestration are the outstanding features of a remarkable design; while at Durnford Street, where the plan is on more usual lines, the building towers up in great masses, the dignity of which is immensely enhanced by the severity and restraint of the design.

The Junior Institution of Engineers.

At the last meeting of this Institution a paper entitled "Notes on the running of an Electricity Works," by Mr. L. Marshall Jockel, winner of the Durham Bursary of 1908, was read and discussed. The paper contained an account of the author's observations during the time he held a subordinate position in an electricity works supplying current for lighting and traction purposes, etc.

A recent visit of the Institution was to the "Daily Mail" printing office, Carmelite House, and was very largely attended. The operation of the Linotype machines, "Autoplate" casting machines, and the printing presses in the machine room were all shown, and the details of the work explained to the members. Mr. Chas. F. Hart, Mechanical Manager, kindly arranged the necessary facilities.

The last visit was held on Saturday last, to Letchworth for inspection of the Garden City, when its features of architectural and engineering interest were pointed out.

The Institution of Mechanical Engineers.

A southern district meeting was held at the committee room, Royal Pavilion, Brighton, on Saturday, June 18th. The following papers were read: "Some Aspects of the Housing and Town Planning Act, 1909," by Mr. T. C. Barralet, surveyor to the Godstone R.D.C. (member), and "Notes on the Use of Concrete," by Mr. Spencer Sills, assistant city surveyor, Rochester (member). After lunch specially conducted visits were paid to the Corporation Destructor Works and the Falmer Waterworks, by kind permission of Mr. H. Tillstone, the borough surveyor, and Mr. J. Johnston, M.Inst.C.E., the borough waterworks engineer.

TRADE AND CRAFT.

A Double Flush Cistern.

A demonstration was given recently of a new double flush cistern (Newland's patent) at the premises of Messrs Sibley and Co., 171, Queen Victoria Street, E.C. The tank consists of two compartments which are operated by the same handle, and which can, if desired, be flushed in rapid succession. The internal mechanism, which is quite simple in character, is all worked from one central axis; and the parts being interchangeable, and thus allowing of the inlet valve being placed upon either side of the cistern, the apparatus, unlike the ordinary type, can be fixed in any required position. The cistern is oblong on plan, and is divided roughly into two square chambers, each of which contains two gallons of water. The tank in which is inserted the inlet valve (and this, as already explained, can be either) naturally fills first, and the water, passing over the internal division, enters the second, and fills that also, when the supply is automatically cut off. The cistern works mechanically, the striking handle being thrown into position after each flush. At the conclusion of the second flush the operation has, of course, to be repeated. The two float balls have a somewhat greater lifting power than the single ball, and thus render more certain the proper shutting off of the water supply. A chamber fixed below the syphoning tubes contains an anti-syphoning tube which is said entirely to overcome the noise and trembling which usually accompany the ordinary type of cistern. Among the advantages claimed for this new invention are that it is practically silent, is least liable to be affected by frost, and, in consequence of the improved syphoning plunger, renders unnecessary a second operation of the handle. The invention is protected in every civilised country.

COMPETITIONS.

New Bridge, Rochester.

At a meeting of the Rochester Bridgewardens, seven schemes and tenders were received for the construction of Rochester Bridge. These were submitted to the consulting engineers, Messrs. Baker and Hintzig, who strongly recommended that the tender of Messrs. William Arroll and Sons. should be accepted although the price was £7,000 above the lowest tender. The difference, it was stated, was mainly due to a provision for making the bridge fit for traffic during the reconstruction work. The Bridgewardens accepted Messrs. Arroll's tender, subject to the approval of the Charity Commissioner.

LIST OF COMPETITIONS OPEN.

JULY 9. PROPOSED USHER HALL, EDINBURGH. Particulars given in our issue of April 20th. Inquiries to be addressed to Thomas Hunter, Town Clerk, City Chambers, Edinburgh.

JULY 20 YSTRADGYNLAIS SEWERAGE SCHEME. The Rural District Council will pay £20 for the most suitable scheme for sewering Ystradgynlais Lower. Particulars from Mr. T. Watkins, surveyor to the Council, Ystradgynlais.

JULY 25. NEW ELEMENTARY SCHOOL, WINCHESTER. Designs are invited from Hampshire Architects for Elementary School Buildings to accommodate 330 children. Particulars of Thomas Holt, Town Clerk, Town Hall, Winchester.

AUGUST 23. COUNTY OFFICES AT NAVAN for the Meath County Council. Inquiries to the Secretary, Meath County Council, Ireland.

AUGUST 31. COVENTRY. NEW ELEMENTARY SCHOOL in Centaur Road. Limited to Architects practising in Coventry. Particulars given in our issue of March 16th.

SEPT. 5. THE QUEEN'S UNIVERSITY OF BELFAST. Enlargement of the present buildings at a cost of about £52,000. Particulars in our issue of June 1st.

NO DATE. ASHTON-ON-MERSEY. WESLEYAN SUNDAY SCHOOL. Limited to Architects practising within ten miles of Sale. Inquiries to Mr. J. O. Barrow, Barker's Lane, Ashton-on-Mersey.

NOTES ON PAINTING AND DECORATION.

By A. S. JENNINGS.

I should like to supplement my hints on varnish-testing with a few further notes. The subject is brought back to my mind by hearing of oak varnish being offered at the astonishing price of 2s. 6d. a gallon! Considering that the best oak varnish costs at least 10s. to 12s. a gallon, the question occurs, How can the superiority of one over the other be ascertained? I have already explained the method of varnishing painted boards and making a comparison between the varnish to be tested and one which is known to be of first-class quality. But one may go further and make a comparison with a very cheap varnish. Take a sheet of glass and support it at an angle of 45 degrees. Pour on the middle of it at the top a little of the varnish to be tested and spread it out right and left with the finger, allowing it to run down the glass without further interference. Leave a space on each side, and to the left pour on a little of a really good varnish, and on the right a little of the two-and-sixpenny quality. Now watch the behaviour of the three varnishes, and you will obtain some valuable information concerning the probable durability of the varnish under test. The one that is of good quality will probably run down and flow out quite smoothly, while the inferior stuff will in every likelihood separate and probably become cracked, "alligatored," and go wrong generally. Another very useful test is to apply one or two coats of varnish to a sheet of non-absorbent black paper. Allow a week for it to become quite dry and hard. If the paper is then bent or folded the film will, if the varnish be a good one, be so elastic as not to be affected, but if of inferior quality it is certain to crack or at least chip.

Although "paint removers" or paint solvents have now been on the market for some years, it is curious to note how few people, other than decorators, know anything of their qualities. Architects, as a rule, when spoken to concerning this class of specialities, imagine that reference is made to the old-fashioned and very nasty paint solvents which consisted of a mixture of soda and quicklime. These, however, have now given place entirely to a mixture of liquids of which acetone or fusil oil is the chief ingredient. The liquid is brushed on the paint, which in a very short time is rendered so soft that it may readily be scraped off. The surface is then wiped down with a piece of "waste" dipped in benzine or turpentine, and the work is ready for repainting. When these mixtures are used outside they are apt to evaporate too quickly, and to prevent this in the best brands wax is mixed with it, which holds the fluid. I have used these paint removers on old painted work consisting of perhaps a dozen coats. In very hard cases a first coat may only take off a portion of the paint, and a second coat of the "remover" may be required.

COMING EVENTS.

Saturday, July 2.

EDINBURGH ARCHITECTURAL ASSOCIATION. —Annual Excursion to Floors Castle and Kelso Abbey.

Thursday, July 7.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS. — Excursion meeting to Blyth. Leaves Newcastle-on-Tyne Central Station, 1.42 p.m.

FEDERATION NEWS.

National Federation.

The annual meeting of the Joint Committee of Appeal under the agreement between this Federation, the National Association of Master Plasterers and the National Association of Operative Plasterers, was held in London on June 20th. The business was of a formal character, and it was reported that no disputes were pending. An interesting discussion took place on the question of the desirability of setting up arbitration committees under the Workmen's Compensation Act to settle compensation cases.

Mr. A. G. White and Mr. T. Otley were re-elected joint secretaries to the Board. Mr. S. Smethurst was re-elected chairman, and Mr. A. J. Scrivener vice-chairman.

Meeting of the Administrative Committee.

A meeting of this committee was held in London on June 21st. In addition to the usual routine business, the committee considered the following matters of general interest.

Contractual Referees in Building Contracts, with special reference to the further steps to be taken to put an end to the practice of appointing officials employed by Municipal and other public authorities in the dual capacity of architect, surveyor, or engineer for works, and of sole Contractual Referee in regard to disputes that may arise in connection with the work they are directing.

Protection of Members.—The meaning of accepting a tender "for the sum of £——, as per quantities," is commonly understood to make the quantities part of the contract, and to involve the measuring-up at completion with payment for the work actually done. By the recent decision in re Wallace v. Douglass, it would appear that a contract in the terms indicated is a lump sum contract.

The case arose between a sole contractor and his sub-contractor, the latter tendering to do certain work for a certain sum as per quantities, and the former accepting the tender in similar terms. On completion, the sole contractor wished to measure up the whole work and pay for what had actually been done, but the sub-contractor refused, claiming that the contract was for a lump sum and that only the variations should be dealt with. According to the decision of the county court judge, the sub-contractor is right.

The matter is deemed of importance to the trade, and has been sent forward by the Northern Centre with a view to asking the National Federation to contribute to the cost of an appeal. The committee has made a recommendation accordingly to the Executive Council.

Annual Conference of Secretaries.—The annual conference of secretaries was authorised, and it is proposed to hold it about the 20th October in Manchester. Suggestions for subjects for discussion and promises of contributions in the shape of papers are desired, and will be appreciated. In order to afford more time for discussion, it is proposed to have the papers set up and distributed beforehand to those who intimate their intention to be present.

Recommendations to and subjects for discussion at the general meeting, on 27th July, were considered, and the following approved:—

Proposed Addition to Rules of Conciliation.—"That it be a recommendation from the National Board to the parties to the Conciliation scheme, that members of the various Conciliation Boards who may be members of any Board having considered a case, shall not sit personally on any subsequent hearing of the said case, but shall send substitutes."

P.C. Sums in Quantities.—Discussion on the principles underlying the present practice in regard to P.C. sums in quantities.

Quantities and Specifications.—Discussion on "Are architects justified in endeavouring to enforce the literal interpretation of obsolete specification descriptions in respect to materials."

Any other subjects which may be approved by the President.

Summer Meetings at Chester.—It was intimated that the Lancashire, Cheshire, and N. Wales Federation, which has the local arrangements in hand, are giving a dinner on Tuesday evening, July 26th, to the representatives attending.

It is hoped that a Mayoral reception may be arranged for Wednesday morning, the 27th July, also an excursion to Llandudno or some other place in North Wales, for Thursday, the 28th July.

Secretary's Report.—The Secretary submitted his report for month ending 31st May, from which we hope to give extracts in a future issue.—A. G. WHITE, Secretary.

South-Eastern Centre Conciliation Board.

The annual meeting of the South-Eastern Centre Board of Conciliation was held in London on June 13th. The business was of a formal character, there being no disputes before the Board. Mr. W. F. Wallis was re-elected chairman, and Mr. Somerset vice-chairman. Mr. A. E. Hatcher was re-elected operative secretary, and Mr. A. G. White undertook to continue to act as employers' secretary pro tem. pending a definite appointment. A discussion took place on the question of the advisability of setting up arbitration committees under the Workmen's Compensation Act.

Northern Counties Federation.

A meeting of the Executive Council of the Northern Counties Federation of Building Trade Employers was held at Sunderland on June 2nd, Mr. A. Ross presiding.

The draft circular for distribution among the members respecting the Executive Council's recommendation to renew their members' workmen's insurance with the official company (the Federated Employers' Insurance Association, Ltd., Manchester) was approved of.

Attention was drawn to the decision given by Mr. Justice Ridley in the case of Wallace v. Douglass and its effect upon members of the Federation. The decision makes a tender "as per quantities" a lump-sum contract, which is in direct conflict with the practice of builders and contractors, who, having incorporated the bills of quantities in their contract, have relied upon their being the basis of the contract and upon being paid for their work in accordance with such bills. An appeal against the decision has been lodged. A summary of the facts, and the interpretation placed upon the National form of contract when the bill of quantities is incorporated into the contract, was given by the secretary, who mentioned that Mr. Stephen Easten, of the Newcastle Association, of which the defendants are members, had brought this question before this Federation and the Northern Centre, which latter body had arranged to draw up and forward the case to the National with a request that they will prosecute the appeal, as the question is of vital interest to the building trade. Mr. Hope said he had seen London agents and interviewed the National secretary, and discussed the matter with him. It was unanimously resolved:—"That this Federation approve of the action of Mr. Easten in bringing this case before this Federation and the Northern Centre, and thank him for the pains he has taken in the matter. They also thank the Northern Centre for the decision arrived at by that body. Further, that this Federation is of opinion that the case is a legislative matter affecting the building trade, and urge upon the National Federation the importance of dealing with the matter on those grounds, and giving their utmost support to financing the appeal. Further, that pending the consideration by the National Federation, Messrs. Ritson and Hope take all necessary steps in connection with the appeal, and that the steps already taken by Mr. Hope be approved of."

The secretary reported that arrangements had been entered into for the organisation of a branch at Bishop Auckland. He hoped to be able to make similar arrangements in connection with the Durham and Chester-le-Street Districts.

The proposed amendment forwarded to the National Federation by the Lancashire, Cheshire, and North Wales Federation with respect to Clauses 30 and 31 of the National form was discussed. It was agreed that the proposed amendment is desirable without expressing any opinion as to the time being opportune to seek this and other amendments.

Attention was drawn to the lamented death of Mr. Wilfon A. Rycroft, secretary of the Newcastle Association, and it was resolved: "That letters of condolence be sent to his family expressing this Federation's sympathy" It was agreed to hold the quarterly meeting at Darlington.—W. H. HOPE, Solicitor, Secretary.

Barrow-in-Furness.

At the monthly meeting of Barrow-in-Furness Master Builders' Association, the secretary read a notice of matters the operatives desired to bring before the Conciliation Board, but it was pointed out that as the matters had not been previously discussed by the local representatives of masters and men, it was out of order.

The annual meeting of the Conciliation Board was held, at which the officers for the year were appointed, and a statement of grievences by the operatives was made, but was not discussed, as the rule had not been observed as to local committee dealing with them first. A meeting of the local committee was arranged for.

At a meeting of the Local Committee of Employers and Employees, the questions which the operative joiners wished to be discussed were introduced by their secretary, but the matter had to be postponed for further inquiry.

The question as to whether the airship shed at present in process of erection came under the category of ordinary building construction was next discussed, but as a final decision could not be arrived at, and as the building was so near completion, it was decided that where an erection was again taking place of a special character, such as this, the contractor should notify the secretary of the Operatives' Society, and the matter duly be considered, so as to meet the views of the operatives and avoid breaking any of the accepted local rules.

The secretary of the operative bricklayers introduced the question of plasterers encroaching on their work, which it was stated was done to a considerable extent. It was pointed out by the employers that in small jobbing work it was almost impossible to avoid this, but agreed that it should not be done to any extent, and the matter would be brought up at a special meeting to be held.

At a special meeting of the Association held immediately after the close of the foregoing meeting the result of the meeting was reported, and the secretary was instructed to write to the master plasterers asking them to see to it that in future they carefully avoid encroaching on the work of the bricklayers.

A representative was appointed to assist the committee of the Local Hospital Saturday demonstration.

The remainder of the evening was spent in consideration of matters in relation to workmen's compensation insurance.—J. BAKER, Sec.

Manchester, Salford, and District.

The quarterly meeting of the General Committee of the Manchester, Salford, and District Association was held on May 26th, Mr. Samuel Gerrard presiding.

Messrs. J. Hibbert and Co., builders, Messrs. Huntingtons, Ltd., slaters; and Albert Riley, painter, were considered, and they were duly elected to membership.

The half-yearly report drafted by the secretary was considered, and adopted for presentation to the annual general meeting of the association, and was also the annual statement of accounts.

A notice to amend rule 31 of the L.C. and N.W. Federation by making provision for the names of hon. members to be included in the official lists of Federation members, was considered and unanimously agreed to.

The annual general meeting was held at the Boardroom, Blackfriars Street, on May 26th, Mr. Samuel Gerrard presiding.

The minutes of the half-yearly meeting held in November last were read and confirmed.

The half-yearly report as presented by the Committee was considered and duly adopted for circulation amongst the members. This report, though showing a slight decrease in membership (the cause of which is attributed to bad trade, necessitating several members giving up business), places before the members the good work the association has been carrying on during the past half-year. The number of meetings held in connection with the association for the half-year totalled 39. The relations between the association and the various operative societies are reported to be of the happiest nature.

The master concretors' separate society are considering the advisability of disbanding their association, with a view to transacting their business in future as a branch of the general organisation.

As regards unsatisfactory conditions of contract, the association have been very successful in approaching architects and public bodies in getting such objectionable conditions amended, notably with respect to the Salford Town Hall extension, many sole arbitration clauses, and applications for priced schedules to accompany tenders.

Mr. Harry S. Daniels, of the firm of Messrs. James Daniels and Sons, of Pendleton, was elected president of the association for the ensuing year. Messrs. W. Tinker (Messrs. Young, Tinker and Young) and Mr. James Higson, J.P., were elected the senior and junior vice-presidents respectively. Mr. William Green (Messrs. Megarity and Co.) was elected the hon. treasurer, and Messrs. John Gibbons and James Daniels were duly elected hon. auditors for the ensuing year. The General and Emergency Committees of the association were re-elected with the substitution of Mr. Wm. Davies for Mr. James Daniels, now member ex-officio. The branch trade committees were duly elected, as were the representatives on the Executive Board of the Lancashire and Cheshire Federation, and the Standing Trade Committees of the same Federation. The representatives of the Local Conciliation Board were also re-elected.

On the recommendation of the General Committee, a new rule was adopted to provide for the admission of manufacturers, merchants, and dealers, commercially interested in the building or allied trades, to become associate members of the association.

A draft set of rules as sent up by the stonemasons' branch, to be binding on the members of their branch, were before the meeting, but as they did not receive support no action was taken thereon.

The following was adopted as a new rule of the association:—"That no member of this association shall deposit open schedules with architects or public authorities for any work within the Manchester area except with the consent of the General Committee of the association."

A proposal was considered from the stonemasons' branch for the adoption of a rule to prevent a member of the association from going on to the job of another member until such member has been fully paid off for the work he has done, or has given his consent in writing. As this had not been before the General Committee, it was decided to defer consideration thereof until the committee have had an opportunity of discussing the same.—JOHN TOMLISON, Secretary.

York.

An executive meeting of York Association was held at the Old George Hotel on May 31st, the president (Alderman J. Birch) in the chair.

The question of builders refusing to tender for work above a certain figure unless quantities were supplied, which had been referred to the executive, was adjourned, pending receipt of particulars as to action taken on the same subject by the Yorkshire Federation.

The official forms of sub-contract were considered and approved, and it was resolved to purchase a supply for use by the members.

The forthcoming revised rates of tariff offices for workmen's insurance, together with the cover given, were considered. It was felt that the heavy increases proposed were in many cases unduly excessive. The secretary was in communication with reputable offices, and he was instructed to obtain full particulars from non-tariff offices as to cover afforded and rates, and report to a future meeting of the executive.

It was resolved to hold an excursion, and the place selected was the Lake District. The secretary was instructed to carry out all arrangements.

Mr. W. Mansfield was placed on the executive, vice Councillor G. Mansfield, deceased. Mr. W. Birch was placed on the local Board of Conciliation vice Councillor Mansfield, deceased.

A new member was elected.—J. HAGUE, Solicitor, Secretary.

Sheffield.

The monthly meeting of Sheffield Master Builders' Association was held on June 9th, the president, Mr. W. Longden, in the chair.

Mr. Davidson, secretary of the Yorkshire Federation, attended, and gave some particulars of the Federation insurance scheme, through which members were recommended to effect their insurances.

It was mentioned by the secretary that the date for the projected excursion to Paris and Brussels appeared to have been inconvenient, and as the number of replies received did not warrant its going forward at present it had been cancelled.

A report was given of the deputation to the City Council in regard to by-laws, more especially as affected the sizes of roof timbers, this deputation having taken very strong exception to the excessive increase of sizes. (Since the meeting the deputation have met a representative of the Architects' Society who was primarily responsible for the insertion of the sizes objected to, and, as a result, the sizes suggested by the association have been confirmed to the City Council. It is expected, however, that the deputation, along with a representative of the architects, will have an opportunity of further discussing the matter with the Council before the by-laws are formally passed.—THOS. SMITH, Secretary.

Nottingham.

The Local Conciliation Board having failed to come to an agreement on the proposed working rules, of which notice had been given by the Builders' Labourers' Society, the matter was referred to the decision of a Board of Trade arbitrator on the application of both parties.

The Board of Trade appointed Mr. A. A. Hudson, and Mr. Hudson attended at the Nottingham Exchange on June 8th, when representatives of the Association of Building Trades Employers and of the Builders' Labourers' Society laid the case before the arbitrator.

The arbitrator's award has now been received, and is as follows:—

WORKING RULES OF THE BUILDERS' LABOURERS IN NOTTINGHAM AND DISTRICT.

RULE 1.—WAGES.

The standard rate of wages for builders' labourers shall be 6½d. per hour all the year round.

Labourers shall carry 9 common bricks, 8 facings, and 8 blues, all round until the walls of any building are 30ft. from the ground level, and one brick less above that height. The labourer when working on chimney shafts when they exceed 50ft. from the ground level, repairs to boiler seatings and flues, and to bakehouse ovens, and bridge foundations, and culverts when working in water, shall receive ½d. per hour extra.

This rule not to apply to excavators, unless engaged on buildings or building operations. In the case of any aged workmen not being considered efficient, it is open to the employer to make arrangements with the Society for a lower wage.

RULE 2.—WORKING HOURS.

From the nearest Monday to the 1st March to the nearest Monday to the 31st of October:—Monday, 8 a.m. to 5 p.m.; Tuesday, Wednesday, Thursday, Friday, 6 a.m. to 5 p.m.; Saturday, 6 a.m. to 12 noon. Total, 51½ hours.

Note.—The labourers undertake to agree with any change of the working hours of the bricklayers.

From the nearest Monday to the 31st of October to the nearest Monday to the 31st of January:—Monday, Tuesday, Wednesday, Thursday, Friday, 8 a.m. to 4.30 p.m.; Saturday, 8 a.m. to 12 noon. Total, 41½ hours.

From the nearest Monday to the 31st of January to the nearest Monday to the 1st of March:—Monday, Tuesday, Wednesday, Thursday, Friday, 8 a.m. to 5 p.m.; Saturday, 8 a.m. to 12 noon. Total, 44 hours.

One hour for dinner throughout the year from 12 noon to 1 p.m.; half-hour for breakfast for the eight summer months, from 8 a.m. to 8.30 a.m. (Mondays excepted).

RULE 3.—OVERTIME.

A full working day to be made before overtime be charged. For the time worked after the ordinary day is concluded till 8 p.m. time-and-a-quarter shall be paid; after 8 p.m. until starting time on the following morning time-and-a-half shall be paid. From 12 noon on Saturday to 12 midnight time-and-a-half shall be paid. From 12 midnight Saturday to starting time on Monday morning double time shall be paid; and double time for Christmas Day.

Note.—In urgent cases where found necessary to employ two gangs, the day rate shall apply to night gangs the same as day gangs, with an addition of ¾d. per hour.

Note.—Where the works are stopped from any cause over which the workman has no control, the full working day shall not be required to entitle to overtime rate.

This rule does not apply to slaters' labourers.

RULE 4.—OUT-OF-TOWN WORK.

Any workman being discharged when working out of town, or not paid on the works, shall have notice given him to take his tools with him, and in default of such notice he shall be paid for his time in going over and bringing them home, and third class railway fare.

RULE 5.—PAYMENT OF WAGES.

Payment of wages to commence as soon as work has ceased, and if more than half-an-hour elapse between the time of leaving work and the commencement of payment of wages the time shall be paid for as if actually at work. (See Rule 3.)

RULE 6.—AUTHORITY OF EMPLOYERS.

Each employer shall have power to conduct his own business in any way he may think advantageous, in the matter of letting work, in using machinery and implements, and in all details of management, not infringing these rules.

RULE 7.—CONCILIATION.

Should any difference arise between employer and employed, either party may require the same to be laid before a meeting of six persons chosen by the employers and six by the employed, and their decision shall be final and binding on both parties. In case such persons fail to meet or to come to a decision within fourteen days from the difference arising, the question shall forthwith be referred to the Local Conciliation Board, and should this Board fail to come to a decision within fourteen days from the date of reference of such question to it, the secretary of the Building Trades Employers' Association or the secretary of the Federated Builders' Labourers of Great Britain and Ireland (Nottingham Branch) shall be at liberty to call upon the Board of Trade to appoint an arbitrator, and the decision of such arbitrator shall be final and binding on both parties. No strike or lock-out, nor other suspension of work, shall take place until such procedure has been followed.

RULE 8.—SHEDS AND MESS-HOUSES.

That there shall be a lock-up shop provided for workmen to get their meals in, and to put their tools in with safety.

RULE 9.—NOTICE.

That these rules be considered binding, and if either party wish for any alteration they shall give the other six months' notice.

The above are the working rules referred to in my award published this 13th day of June, 1910.—(Signed), A. A. HUDSON.

W. J. BARTON, Secretary.

Sunderland and District.

A general meeting of the Sunderland and District Building Trades Association was held on May 25th, Mr. J. Morice Wright in the chair.

The recommendation received from the Executive Council of the Northern Counties Federation recommending the continuance of the Federated Employers' Insurance Association, Ltd., of Manchester, as the official insurance company of the association, was considered, and it was resolved:—"That this association fall in with the recommendation of the Executive Council of the Northern Counties Federation; at the same time, should any member desire to insure with another company, that he be requested to insure through the association's agency, otherwise that he pay to the association a sum equal to the commission on his insurance placed through another agency, and thereby lost to the association."

The recommendation from the Executive Council of the Northern Counties Federation with respect to the affiliation of Allied Trades Associations with the local associations was approved of, as was also the recommendation with respect to quantities being supplied for all jobs of over £500, and over, becoming the Federation rule.

The proposed amendments forwarded to the National Federation by the Lancashire, Cheshire, and North Wales Federation with respect to clauses 30 and 31 of the National form of contract were considered, and, with the exception of the time suggested for the payment of the balance of the contract sum, were approved of.

A report was given as to the proceedings of the annual meeting of the Northern Centre Conciliation Board, at which the matter of the violation of the local stonemasons' working rules was considered, and at which a resolution was passed that the member in question should be requested to conform to the working rules. — W. H. HOPE, Secretary.

Plumbers v. Heating Engineers.

Operative plumbers frequently protest against work to which they (the plumbers) lay claim being done by heating engineers, and recently the matter has been brought to a crisis at Sheffield, where upon several occasions the plumbers have upon this account struck work. Consequently a joint conference of all parties concerned was arranged, and this was held on June 8th at the Builders' Exchange, Sheffield. The Master Builders' Association was represented by Messrs. William Longden (president), A. J. Forsdike, and T. Eshelby; Sheffield Architects' Society, by Messrs. Mitchell Withers, J. R. Wigfull, and W. C. Fenton; the Master Heating Engineers, by Messrs. F. Biggin, H. S. Moorwood, and Thos. H. Firth; the Operative Heating Engineers, by Messrs. M. Brummitt, L. Green, and R. Sewell; the Sheffield Master Plumbers, by Messrs. C. Hickson, J. Baxter Corrie, and H. A. Ward; and the Sheffield Operative Plumbers, by Messrs. T. Walton, W. H. Hall, and E. Robinson. Mr. A. J. Forsdike was voted to the chair.

In opening the proceedings the chairman pointed out the disinterestedness of the architects and builders, whose sole desire was the avoidance of the friction to which the rival claims had given rise. In these days of conciliation boards, the stoppage of works by means of strikes was not the best method of settling disputes.

Mr. Hall, on behalf of the Operative Plumbers, contended that the placing of pipes for the conveyance to and from domestic utensils was plumber's work. If it had been found that for large installations copper was a better material than lead, that was no reason why another set of men should be employed on the work. Fitters had been employed to place certain pipes, and plumbers were called in to finish the work. If the plumber was necessary at all, he was necessary from the commencement, and therefore the work should be in the hands of the plumbers.

Mr. Walton, supporting, laid stress on the point that the change of men was not a necessary consequence of the change of material, and deprecated the tendency to connne the work of the plumber to the small domestic jobs in which lead pipes were employed.

Mr. Robinson, following on the same side, said that the fitters were encroaching further by carrying the pipes for cold supplies.

Mr. Ward, speaking on behalf of the Master Plumbers, said that latterly they had not been allowed many opportunities of quoting for work which the operative plumber was able to do in a more systematic manner than the fitter.

Mr. J. B. Corrie said it seemed to have become the custom for the heating engineers to submit schemes to the architects, instead of architects specifying what they should do, otherwise the plumbers might jointly be taken into consideration. He did not see why the duties of the heating engineer should not cease at the installation, or not necessarily at the installation if that was governed by steam.

Mr. C. Hickson said that this trouble had only become acute during the past five or six years. He thought that there would always be friction until a line of demarcation was drawn by the architects, defining precisely where one trade should end and the other begin.

Mr. L. Green, speaking on behalf of the Operative Heating Engineers, said that he did not think that the operative plumbers had, during the last six or seven years, done a quarter of this kind of work as compared with the fitters, who claimed a right to do copper work without interference from the plumbers.

Mr. L. Brummitt said that as an operative heating engineer he had been for fourteen years accustomed to work on all kinds of domestic supplies, except lead. He held that plumbers could not handle copper or iron as well as fitters could.

Mr. F. Biggin, speaking for the Master Heating Engineers, said that he understood that the claim of the plumbers was to do all the pipe work from the heaters or calorifiers, but nothing had been said as to the size of pipes. He denied that it was correct to say that the plumber was called in to finish the work of the fitter. If the plumbers tendered for and obtained heating and hot-water service work, no objection would be raised by the heating engineers. The formal claim of the heating engineers was that the plumbers had no right to claim a monopoly of the fitting and fixing of pipes in hard metals to the exclusion of every other trade. Heating engineers had carried out work in connection with pipes in hard metals for a long period of years, and employed a class of workmen thoroughly trained and specially qualified, and they claimed the equal liberty to do in all metals other than lead all domestic engineering, including water supply, warming, ventilation, cooking, and laundry work. Mr. Biggin produced a number of plans showing the intricacies of heating installations, and, commenting on these, he contended that it was absolutely untenable and altogether unreasonable for the plumbers to claim that after the engineers had submitted such plans, and worked out all the calculations respecting boiler capacity, calorifier, mains, pumps, etc., the plumbers should come in and claim the work of the fitter for whom the specification had been prepared, and say that they alone should have the monopoly of fixing all the pipes from the calorifier.

Mr. Moorwood and Mr. T. H. Firth supported, the latter urging that the matter should be settled on a national basis as early as possible.

The representatives of the architects being asked for their views, Mr. J. R. Wigfull said he questioned whether the master plumbers were competent to design such engineering work pure and simple as Mr. Biggin had shown. He knew that plumbers were competent to do hot water supplies in lead or copper, and the only solution he could see was one of compromise, whereby neither side would forbid the other from doing his own trade. No architect, he said, claimed to be competent to design and carry out such plans as had been shown them; they had enough in sanitary plumbing, without interfering with hot water. He thought it ought to be agreed that leadwork was purely plumber's work, and that in regard to copper and iron pipes, neither side should attempt to debar the other from doing such work as came in their way.

Mr. Mitchell Withers said that it would be better to have the matter settled once for all by arbitration than to go on fighting in guerilla fashion.

Mr. W. C. Fenton agreed that with regard to large installations, the architects had neither the time nor ability to design them, and they looked to heating engineers to design and carry out the work.

Mr. E. Robinson said that Webster defined plumbing as the art or trade of piping buildings, formerly exclusively done in lead. In the case of roofing, the slater was not done out of his job where tiles are substituted. Copper work on large buildings had come to stay, and as it would be used more and more, plumbers must protect their industry, or there would be nothing left for them to do.

Mr. Sewell said that the operative plumbers had advanced no valid argument showing their right to monopolise the work.

After further discussion, Mr. Fenton moved: "That the Operative Plumbers be requested to suggest to their members the desirability of an early national conference or arbitration between the master and operative heating engineers and the master and operative plumbers, and that in the meantime no stoppage of work take place, and any strike in operation be cancelled." This was carried with only one dissentient.—THOS. SMITH, Secretary, Sheffield Master Builders' Association.

(For further Federation News, see p. xiv)

COMPLETE LIST OF CONTRACTS OPEN.

In this list are included, as a rule, only those contracts for which tenders are returnable about **five days** or longer after the date of this issue. Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders. The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

June 30. **ROMFORD (Essex).**—Erection of a new Council school and mentally defective centre at Romford, for the Essex Education Committee. Send names with a cheque for £2 2s. (as deposit), to the Committee's Architect, A. S. R. Ley, 54 and 55, Bishopsgate Street Without, London, E.C., by or before June 30. Any tender recommended for acceptance will be subject to the approval of the Essex C.C. and the L.G.B. A bond for the due and proper completion of the work will be required from an approved guarantee society

June 30—July 12. — **NORHAM-ON-TWEED.**—Erecting a new Council School, to accommodate 144 scholars, at Norham-on-Tweed, for the County of Northumberland Education Committee. Send name and address to C. Williams, Secretary to the Education Committee, The Moothall, Newcastle-on-Tyne, not later than June 30, together with a deposit of £2 2s. for specification and bills of quantities. Plans for the work may be inspected at the office of the Education Committee, at the above address, or at the office of A. H. M. Weddell, Town Clerk, Berwick-on-Tweed, and tenders must be forwarded to the Secretary.

July 4. **DARLINGTON.** (See "Engineering.")

July 4. **DENBIGH.**—Alterations to the Denbigh Free Reading Rooms. Plans and specifications may be seen on application to James Hughes, architect, Denbigh, to whom tenders are to be sent.

July 4. **SOUTHEND-ON-SEA.**—Alterations and additions to Leigh Road and Brewery Road Council Schools, for the Education Committee. Plans, specifications, and conditions may be seen, and form of tender obtained, on deposit of a cheque for £1 1s., upon application to Ernest J. Elford, C.E., borough engineer and surveyor. Tenders to be delivered at the office of J. W. Barrow, Clerk to the Committee, Education Offices, Municipal Buildings.

July 4. **TRIM (Ireland).**—Erecting 16 houses in the Urban District of Trim, according to the plans and specifications prepared by C. K. Douglas, A.M.Inst.C.E., which may be inspected at the office of the Town Clerk, Town Hall, Trim, where copy of specification, bill of quantities, and form of tender can be had on deposit of £1. Tenders, addressed to Chairman of the Council, will be received by the Town Clerk. The work must be completed within six months from date of Architect laying out plots. The contractor whose tender may be accepted must be prepared to enter into a bond with two solvent sureties for the due performance of contract.

July 4. **FOOTSCRAY (Kent).**—Enlargement of Longlands Council School at Footscray, Kent, for the Kent Education Committee. Plans and specification, prepared by the Committee's Architect, (Wilfred H. Robinson, M.S.A.), and conditions of contract may be inspected at the office of the Committee. Send name and address, accompanied by a deposit of £1, to Fras. W. Crook, secretary, Caxton House, Westminster, S.W. The person whose tender is accepted will be required to provide two sureties who will enter into a bond to the Committee for the satisfactory completion of the contract. Tenders must be addressed to Thos. Beeton, Corner House, Church Avenue, Sidcup.

July 4. **GORAGHWOOD (Ireland).**—Erection near their Goraghwood Station of a timber-framed storage bin, etc., about 50 feet x 50 feet, and averaging about 35 feet high, with timber roof, covered with corrugated iron, for the Directors of the Great Northern Railway Company, Ireland. Also an engine and boiler house, etc., about 75 feet long by 36 feet wide. Sides and roof to be steel framed and covered with galvanised corrugated iron. Drawings and specifications may be seen at the office of F. A. Campion, chief engineer, Amiens Street terminus, Dublin, or copies of them at the office of the district engineer, Belfast, and forms of tender can be obtained. Tenders should be delivered to T. Morrison, secretary, Secretary's Office, Amiens Street terminus.

July 5. **MITCHAM.**—(a) Erection of a tool house, etc., at the Burial Ground; and (b) about 100 yards of paving in granite setts and about 150 yards of tar-paving for footways, for the P.C. Drawings, etc., can be inspected on deposit of £1, at the office of R. M. Chart, Clerk to the Council, The Vestry Hall, Mitcham.

July 5. **LONDON, W.**—(a) Works of alteration at, and painting, etc., of Turnham Green School; and (b) painting, etc., of certain schools, for the Chiswick U.D.C. Forms of tender and copies of the specification, may be obtained by application to Edward Willis, A.M.I.C.E., Surveyor, Town Hall, Chiswick, where the plans, form of contract, and other documents may be inspected. Tenders are to be delivered to Ernest F. Collins, Clerk of the Council.

July 5.—**WHITLEY BAY.**—Erection of a new station at Whitley Bay, for the Directors of the North Eastern Railway. Plans and specification may now be seen and quantities and further information obtained upon application to William Bell, the Company's Architect, Central Station, Newcastle-on-Tyne. Quantities supplied on personal application to parties tendering for the whole of the works. Tenders to be sent to the Secretary at York.

July 5. **WOKING.**—Erection of a new sorting office at Woking for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster, Woking. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be delivered addressed to the Secretary, H.M. Office of Works, etc., London, S.W.

July 5. **MAIDSTONE (Kent).**—Erection of offices, workshops, stores, etc., upon the Council's wharf in St. Peter Street, Maidstone, for the Bridges and Roads Committee of the County Council, in accordance with drawings and specification, which may be seen at the office of the County Surveyor, West Borough Chambers. Bills of quantities can be obtained upon a deposit of a cheque for £3 3s. Tenders to be forwarded to W. B. Prosser, Clerk of the Council Sessions House, Maidstone. Fair wages clause.

July 5. **BELFAST.**—Erection of engine and accumulator house, also water storage cistern, at "The Abbey" Auxiliary Workhouse, Whiteabbey, for the Guardians, in accordance with plans and specifications prepared by Young and Mackenzie, Engineers, etc., which can be seen at the office of Joseph W. Robb, Clerk of the Union, Clerk's Office, Union Workhouse, where copy of schedule of quantities and form of tender can be had on payment of 10s. not returnable. Tenders to be lodged in the Tender-box, Boardroom, Workhouse. The tenders should set forth the names of two sureties who are willing to enter into a joint and several bond for the due performance of the contract.

July 5. **LONDON, E.**—Erection of proposed nurses class-room and addition to drug stores, etc., at the District Sick Asylum, Devons Road, Bromley, E., for the Managers, in accordance with plans and specification prepared by their architects, J. and W. Clarkson, 136, High Street, Poplar, E. The drawings and conditions of contract may be seen at the offices of the architects, and a copy of the specification and form of tender obtained upon payment to the architects of a deposit of £5. Tenders to be addressed to Walter R. Foskett, Clerk to the Managers, at the Asylum, Devons Road, Bromley-by-Bow, E. Parties tendering will be required to declare that they pay the rate of wages and observe the hours of labour that are generally recognised by the trade unions and considered fair in the trade, and will be required to provide two approved sureties, each bound in the amount of the contract, for the proper fulfilment thereof.

July 6. **LONDON, S.E.**—(a) alterations to Bermondsey Town Hall, Spa Road; (b) internal painting and decorating of same, for the B.C. See advertisement in this issue for further particulars.

July 6. **PEMBROKE (Co. Dublin).**—Construction of shelters for hackney cab and car drivers, at Morehampton Road and Pembroke Road, in the Urban District. Plans, specifications, etc., can be seen at the office of J. C. Manly, Clerk to the Council, Town Hall, Ball's Bridge, Pembroke, Co. Dublin, to whom tenders must be sent. The work to be completed within three months of acceptance of tender, and security will be required for the execution of the contract.

July 6. **DARENTH (near Dartford).**—Erection of work-rooms at Darenth Asylum, Dartford, Kent, for the Metropolitan Asylums Board. Specification and plans may be seen by intending contractors at the office of T. W. Aldwinckle, 20, Denman Street, London Bridge, S.E. Bills of quantities, with form of tender, may be obtained at the office of the Board, Embankment, E.C., on deposit of £2. Tenders must be delivered at the office of the Board.

July 6. **LONDON, N.**—Repairs to certain chimney stacks and for constructing an escape staircase at the North-West Block at their Additional Workhouse, Hazleville Road, Hornsey Rise, N., for the Shoreditch Guardians. Specifications and drawings can be seen at the office of F. J. Smith, F.R.I.B.A., Parliament Mansions, Victoria Street S.W. Tenders must be delivered to the Guardians at their meeting to be held at the Temporary Boardroom, 213, Kingsland Road.

July 6. **LONDON, S.E.**—Alterations and additions to certain staff buildings at South Wharf Small-pox Shelter, Rotherhithe, for the Metropolitan Asylums Board, in accordance with drawing, conditions of contract, and specification prepared by W. T. Hatch, M.I.C.E., M.I.M.E., engineer-in-chief. Drawing, conditions of contract, specification, and form of tender may be inspected at the office of the Board, Embankment, E.C., and can be obtained upon deposit of £1. Tenders, addressed as noted on the form, must be delivered at the office of the Board.

July 6. **CHIPPING ONGAR (Essex).**—Execution of (a) general painting and repairs, (b) tiling and roof repairs, and (c) alteration to kitchen in administrative block at the children's homes at Chipping Ongar, for the Hackney Guardians. Specifications, conditions of contract, and forms of tender can be obtained of Frank R. Coles, Clerk to the Guardians, and the drawing relating to the alteration to the kitchen in administrative block may be seen at the Guardians' offices, Sidney Road, Homerton, N.E. The contractor will be required to give approved security in a bond, the form of which may be seen at the Guardians' offices. Tenders must be delivered at the office of the clerk. Tenders are, so far as they relate to section (c)—i.e., alteration to kitchen in administrative block—conditional upon the sanction of the Local Government Board.

July 7. **SOUTHEND-ON-SEA.**—(See "Engineering.").

July 7. **NORTH CURRY (Somerset).**—Erection, during August, of a new class-room at the National school. Plans and specification can be seen on application to Cecil Dennis, at North Curry, to whom tenders must be sent.

July 7. **LINGDALE (Yorks.).**—Alteration to shop premises at Lingdale, and for shop fixtures, for the Skelton-in-Cleveland Co-operative Society. Plans and specifications can be seen at the Society's office at Skelton upon application to Mr Videan.

July 7. **WHISTON (Prescot, Lancs.).**—Repairs and alterations at Cumber Lane farm house and buildings, Whiston, for the Guardians. Specifications and plans may be seen at the office of James Gandy, architect, Masonic Buildings, St. Helen's, on deposit of 10s. Tenders to be sent to A. F. Mann, clerk, Union Offices, Whiston, Prescot.

July 8. **MEXBOROUGH.**—Whole or separate tenders for Mexborough new mixed and infants' school, and special subjects block (builder, joiner, slater, plumber, plasterer, painter), for the West Riding Education Committee. Plans may be seen, and specifications, with quantities, obtained on application to the Education Architect, County Hall, Wakefield. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders must be addressed to Francis Alvey Darwin, Clerk of the County Council, at above address.

July 8. **MATLOCK.**—Alterations and additions to Smedley's Hydropathic, consisting of 32 bedrooms, etc., etc., for the Directors. Tenders are invited for work connected with the following trades:—Mason, bricklayer, concretor, excavator, and drainage, joiner, plasterer, plumber, glazier and painter. Persons desirous of tendering will please inspect the site and take their own quantities from plans and specifications, which will be on view at the Secretary's Office of the Hydro, from June 24 to July 5. Tenders to be sent addressed to the "Chairman of the Board of Directors."

July 9. **NAAS (Ireland).**—Erection of a house at Naas. Drawings, etc., may be seen at the house of Mrs. H. E. Sargent, 1, Victoria Terrace, Naas

July 12. **ASHINGTON.**—Erection of their proposed Council chambers, offices, and caretaker's house in Station Road, Ashington, (whole tender), for the U.D.C. Names at once to Osborne Blythe, Architect, Ashington, with a deposit of £2 2s., when quantities will be forwarded to them. Drawings, etc., can be seen at the Architect's office

(*Continued on next page.*)

July 9. **NELSON.**—Various works required in connection with car shed extension, for the Electricity and Tramways Committee. Plans and specifications may be seen and forms of tender obtained on application at the office of W. Shackleton, A.M.I.C.E., borough engineer and surveyor. Tenders to be sent to J. H. Baldwick, town clerk, Town Hall, Nelson.

July 9. **WICKLOW.**—Rebuilding of Aughavannagh Bridge, including the removal of the old arch, etc., and the erection of a temporary wooden bridge, for use during rebuilding, for the Wicklow C.C. Cost not to exceed £330. Plan and specification can be seen at the County Surveyor's Office, Wicklow. Tenders must be addressed to the County Surveyor, Wicklow.

July 12. **LONDON, S.W.**—Pointing, painting, and executing certain other repairs, at "A" and "B" Blocks, of the Workhouse, "C" Block (Guardians' Offices), and the Arthur Street and Britten Street Blocks of the Workhouse., Chelsea, for the Chelsea Guardians. Copies of the conditions and specification and form of tender may be obtained from C. W. Shepherd, Clerk to the Guardians, 250, King's Road, Chelsea, S.W., 22nd June, 1910, to whom tenders must be sent.

July 14. **CHESTERFIELD.**—Enlargement of Chesterfield Post Office, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster, Chesterfield. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on deposit of £1 1s. Tenders must be delivered, addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

July 14. **GOODWICK (Pembroke).**—Erection of a new Council school building at Goodwick, for the Pembrokeshire Education Authority. Drawings and specifications may be seen on application to Captain Phillips, "Stop-and-Call," Goodwick, and also at the office of the Authority's architect, D. E. Thomas, 17, Victoria Place, Haverfordwest. Bills of quantities and forms of tender may be obtained at the architect's office upon deposit of £1 1s. Tenders must be delivered to William Davies George, Clerk, County Education Offices, 9, Quay Street, Haverfordwest.

July 17. **MERTHYR TYDFIL.**—Erection of a pair of cottage homes for children at Hirwain, for the Merthyr Tydfil Guardians. Plans and specification may be seen, and bills of quantities obtained at the office of the architect, Thomas Roderick, Clifton Street, Aberdare. The contract to be entered into between the Guardians and the contractor whose tender is accepted will contain a Trade Union clause involving employment of Trade Unionists, payment of Trade Union wages, and no subletting. Tenders must be sent to Frank T. James, Clerk to the Guardians, 134, High Street, Merthyr Tydfil.

July 20. **SHIPTON BELLINGER (Hants.).**—Erection of a new Council school, for ninety-nine children, and teachers' house at Shipton Bellinger. Plans, specification, and conditions of contract may be seen, and bills of quantities and other information obtained at the office of W. J. Taylor, County Surveyor, The Castle, Winchester, after July 6. A deposit of £2 2s. will be required for a copy of the bills of quantities and form of tender, which must be made by cheque payable to the Hants County Council and crossed Bank of England, or particulars will not be sent. Each tender is to be delivered to H. Barber, Clerk of the County Council, The Castle, Winchester.

No date. **KENILWORTH.**—Erection of proposed new Parochial Hall. Names to Harry Quick, Architect, 35, Hertford Street, Coventry.

ENGINEERING.

July 4. **DARLINGTON.**—Enlargement of Hopetown Subway, Darlington, for the directors of the North Eastern Railway. Plans may be seen, and specifications, etc., obtained, on personal application at the office of C. F. Bengough, the Company's Engineer at York.

July 4. **DUBLIN.**—Construction and erection of twin Scherzer rolling lift bridges across the entrance to the Royal Canal, North Wall Quay, Dublin, for the Port and Docks Board. Specification and drawings can be seen at the office of the Engineer of the Board, John P. Griffith, M.Inst.C.E., East Wall, Dublin, from whom any further information required can be obtained. If on examination of the specification and drawings, intending contractors should desire to obtain copies, these, together with the special printed form of tender, can be obtained on deposit of £5. Contractors are required to state whether they have constructed Scherzer rolling lift bridges, or other opening bridges, and to give full particulars of such works and the names of engineers under whom these were carried out, and to whom reference may be made. Tenders must be on the special form, and addressed to the Secretary, Port and Docks Office, Westmoreland Street, Dublin.

July 5. **BELFAST.**—(See "Building.")

July 5. **MEXBOROUGH.**—Heating Mexborough Garden Street Council School, for the West Riding C.C. Copy of specification may be obtained of W. R. Hudson, Education Offices, Mexborough, on receipt of a stamped addressed foolscap envelope. Tenders to be sent to the above.

July 5. **MANCHESTER.**—Reconstruction of Brook Bridge, Barlow Moor Road Chorlton-cum-Hardy, for the Manchester Corporation. Plans may be seen and specification, bill of quantities, and form of tender obtained on application at the City Surveyor's Office, Town Hall, Manchester, on deposit to the City Treasurer of £2 2s. All cheques or postal orders are to be made payable to the order of the Corporation of Manchester. Tenders, enclosed in the official envelope and addressed to the Chairman of the Withington Committee, are to be delivered at the City Surveyor's Office.

July 5. **MANCHESTER.**—Manufacture, delivery, and in some cases the transport and erection of the steelwork and ironwork required for nine bridges and one subway on the Aqueduct between Walkden and Audenshaw, the weight being about 700 tons, for the Corporation Waterworks Committee. Specification and form of tender may be obtained on application to G. H. Hill and Sons, civil engineers, Albert Chambers, Albert Square, Manchester, and 3, Victoria Street, Westminster, upon receipt of cheque for £2 2s. as deposit. Tenders, addressed to the Chairman of the Waterworks Committee, must be forwarded to the Secretary, Waterworks Offices, Town Hall, Manchester.

July 5. **BIRKENHEAD.**—Construction of a new landing stage, and placing the same in position at the end of the new ferry pier, for the Corporation. Drawings of the proposed deck arrangement, etc., and a statement of sundry dimensions and requirements to be observed and included in specifications and tenders to be submitted by builders tendering for the building of the stage, may be obtained on application to the Ferries Manager, Woodside, Birkenhead, on deposit of £1 1s. The contractor will be required to execute a formal contract for the execution of the work, to be prepared by the town clerk, the draft of which can be seen at the office of the Ferries Manager, and also together with two approved sureties to execute a bond or bonds for the performance of contract. Rate of wages, etc., clause to be observed. Designs, drawings, specifications, and tenders, to be sent to James Fearnley, town clerk, Town Hall, Birkenhead.

July 6. **PENKRIDGE.**—Contract No. 1.—Supply and delivery to Penkridge Goods Station, London and North Western Railway, of 362 tons (or thereabouts) of 6in., 4in., and 3in. cast-iron spigot and socket pipes; also for five tons (or thereabouts) of specials, for the Cannock R.D.C. Specifications and form of tender may be obtained from Herbert M. Whitehead, Engineer to the Council, Penkridge, Stafford, on deposit of a £5 Bank of England Note. Tenders, on the prescribed form, must be sent to A. W. Carver, Clerk to the Council, Union Offices, Cannock, Staffs.

July 6. **PENKRIDGE.**—Contract No. 2.—Carting, laying, and jointing of 12,139 yards (or thereabouts) of 6in., 4in., and 3in. cast-iron water mains, including the supply and fixing of all necessary fittings, valves, and appurtenances. Plans, sections, and detail drawings may be inspected at the office of the Engineer to the Council, and specification, bill of quantities, and form of tender may be obtained from Herbert M. Whitehead, Engineer to the Council, Penkridge, Stafford, on deposit of a £5 Bank of England Note. Tenders on the prescribed form must be sent to A. W. Carver, Clerk to the Council, Union Offices, Cannock, Staffs.

July 7. **SOUTHEND-ON-SEA.**—Extension of Southchurch Esplanade, for the Corporation. The esplanade will be approximately 1,260 feet in length, 69 feet in width, and will be protected by an apron wall. Copy of the general conditions, specification, and duplicate copies of the bill of quantities and form of tender may be obtained and plans inspected on application to Ernest J. Elford, M.Inst.M.E., borough engineer, Municipal Buildings, Southend-on-Sea, on deposit of £5 5s. Tenders to be delivered to H. J. Worwood, town clerk, Town Clerk's Office, Southend-on-Sea.

July 8. **BEDFORD.**—Construction of cast-iron water mains (varying in size from 15in. diameter to 9in. diameter), from the reservoirs to Bushmead Avenue, Bedford, a total length of about 1½ miles, for the Corporation. Drawings and specification can be seen, and bills of quantities and forms of tender and all information obtained, upon application to N. Greenshields, A.M.I.C.E., Borough and Waterworks Engineer, Town Hall, Bedford. Tenders, addressed to the Chairman of the Waterworks Committee, to be delivered at the above address.

July 12. **LONDON, S.W.**—Alterations to the superstructure of and new steelwork for Battersea Bridge, for the L.C.C. Drawings, specifications, bills of quantities, form of tender, etc., may be obtained on application to the Chief Engineer of the Council, Maurice Fitzmaurice, C.M.G., at the County Hall, Spring Gardens, S.W., upon deposit to the Cashier of the Council of £3. Full particulars of the work and conditions of contract may be obtained at the County Hall before the payment of this fee. Tenders must be upon the official forms, and the instructions therein must be strictly complied with. Fair wages clause.

July 14. **LONDON, S.W.**—Constructional schemes and tenders based thereon for the erection in reinforced concrete of vaults and retaining wall for the public offices extension, Westminster, S.W., for the Commissioners of H.M. Works and Public Buildings. Any system or systems of construction may be adopted for the whole or part of the work, and full details must be furnished immediately for examination, if necessary. Drawings, specification, and a copy of the conditions and form of contract may be seen on application at H.M. Office of Works, Storey's Gate, London, S.W., and copies of the plans, specification, and form of tender may be obtained upon deposit of £2 2s. Contractors tendering will have to satisfy the Commissioners as to their capacity to erect reinforced structures. Tenders must be delivered to the Secretary at above address.

July 16. **BURNLEY.**—Construction of an impounding reservoir, with catch-waters, aqueducts, meter houses, etc., at Hurstwood, near Burnley, for the Burnley Corporation. Plans may be seen, and specification, schedule of prices, form of tender, and all other particulars obtained on application to J. Diggle and Son, engineers, 14, Victoria Street, Westminster, S.W., and Hind Hill Street, Heywood, Lancashire, on deposit of £5. Tenders must be sent to Peregrine Thomas, town clerk, Town Hall, Burnley.

July 28. **LONDON, S.E.**—Construction of exit iron staircases and the necessary structural alterations in connection therewith at their St. George's Workhouse, Mint Street, Borough, S.E., for the Southwark Guardians. The specification, conditions of contract, and forms of tender may be obtained of their architect, A. J. Wade, 104, Harvist Road, Brondesbury, N.W., on deposit of £1 1s. Tenders should be addressed to the Guardians and delivered at the offices of Sydney Wood, Clerk to the Guardians, Union Offices, Ufford Street, Blackfriars Road, S.E. Fair wages clause.

SANITARY ENGINEERING.

July 5. **GUISELEY.**—Making of about 146 yards of 9in. pipe sewer, with the necessary manholes and appurtenances thereto in Ings Lane, for the U.D.C. Plans and specification may be seen and bills of quantities and full particulars may be obtained from 9 a.m. to 10.30 a.m. on application to Joe Battye, surveyor, Town Hall, Guiseley, on deposit of 10s. Tenders must be sent to M. Rennard, clerk, Guiseley, near Leeds.

July 6. **LITTLEHAMPTON.**—Provision of a refuse destructor in connection with their intended sewage pumping station, for the U.D.C. Detailed particulars and plan may be obtained on application to the Clerk to the Council, and further information will be supplied by the engineer, H. A. Johnson, M.I.C.E., The Exchange, Bradford. Tenders to be sent to Arthur Shelley, clerk, Littlehampton.

July 6. **MIDDLETON.**—Sewering of Cheetham Street, Middleton. Plans may be seen and specification, quantities, and form of tender, which will contain a fair wages clause, may be obtained on application to W Welburn, borough surveyor, Town Hall, Middleton. Tenders, addressed to the Chairman of the Surveyor's Committee, must be delivered to Frederick Entwistle, Town Clerk, Town Hall, Middleton.

July 7. **LYMINGTON.**—Cleansing of the outfall sewer on the Mudlands outside Lymington for the T.C. Specifications may be seen at the office of J. Davis Rawlins, Town Clerk, 38, High Street, Lymington, and it will be desirable for persons tendering to inspect the outfall. Tenders should be sent to the above.

GLAZING.

July 4. **DUBLIN.**—Roof glazing (wooden sash bars and putty) of their new engine shed and offices at Adelaide and Windsor, near Belfast, for the Great Northern Railway Co. (Ireland). Parties wishing to tender may see the drawings and specification at the office of F. A. Campion, chief engineer, Amiens Street terminus, Dublin, or copies of them at the office of the District Engineer, Belfast, and can obtain forms of tender and bills of quantities at those offices. Tenders, made out on the forms supplied by the company, should be delivered to T. Morrison, secretary, Amiens Street Terminus, Dublin.

July 4. **BELFAST.**—Roof glazing (wooden sash, bars, and putty), of their new engine shed and offices at Adelaide and Windsor, near Belfast, for the Directors of the Great Northern Railway Company (Ireland).—Drawings and specification may be seen, and forms of tender and bills of quantities obtained, at the office of F. A. Campion, Chief Engineer, Amiens Street Terminus, Dublin, or copies of them at the office of the District Engineer, Belfast. Tenders, made out on the forms supplied by the Company, should be delivered to T. Morrison, Secretary, Secretary's Office, Amiens Street Terminus, Dublin.

IRON AND STEEL.

July 4. **DUBLIN.**—(See "Engineering.")

July 6. **PENKRIDGE.**—(See "Engineering.")

July 4. **NOTTINGHAM.**—Supply and delivery at Nottingham of 400 tons of steel rails of the British Standard Section No. 4, for the Tramways Committee of the Corporation. Drawings may be seen, and copies of the specification and form of tender obtained, on applying to Arthur Brown, M.InstC.E., City Engineer, Nottingham, on deposit of £1 1s. Tenders to be delivered to J. A. H. Green, Town Clerk, Guildhall, Nottingham. Fair wages clause.

July 28. **LONDON, S.E.**—(See "Engineering.")

(Contracts continued on page xii.)

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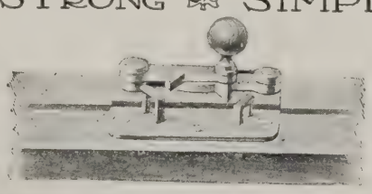
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PAINTING.

July 4. **BURY (Lancs.).**—Painting required at the various recreation grounds and cemetery, for the Corporation. Specifications and forms of tender may be obtained upon application being made to Arthur W. Bradley, A.M.I.C.E., borough engineer, Bank Street, Bury. Tenders to be delivered to the Town Clerk, Bury.

July 4. **ENNISKILLEN.**—Painting the Town Hall, for the T.C. Specification may be seen on application to Thomas Elliott, borough surveyor, from whom all information may be had. Tenders will be received by A. W. G. Ritchie, town clerk, Town Hall. Parties tendering for the work must give the names of two solvent persons who will join the contractor in a bond for the performance of contract.

July 4. **GRIMSBY.**—Painting 48 almshouses, Weelsby Street, for the Fishermen and Sailors' Harbour of Refuge Almshouse Trust, Weelsby Street, Grimsby. Specification may be seen with James Davis, Grimsby Port Missionary, Mission House, Freeman Street Market, to whom tenders should be sent.

July 5. **LONDON, W.**—(See "Building.")

July 5. **POOLE.**—Painting required to be done at the workhouse, for the Guardians, according to specification, which may be seen on application to Ed. Van Schepdael, architect, Wimborne Road, Poole. Tenders to be sent to P. E. L. Budge, Clerk to the Guardians, Union Offices, 139, High Street, Poole.

July 6. **CHIPPING ONGAR (Essex).**—(See "Building.").

July 6. **LONDON, S.E.**—(b) Internal painting and decorating of Bermondsey Town Hall, Spa Road, for the B.C. See advertisement in this issue for further particulars.

July 6. **LONDON, S.W.**—Painting, distempering, general repairs, etc., at their administrative block, Prince's Row, S.W., for the Guardians of the St. George's Union. Specifications may be obtained from Thomas Worlock, Clerk to the Guardians, Guardians' Offices, Prince's Row, Buckingham Palace Road, S.W., to whom tenders must be sent.

July 6. **LONDON N.E.**—Cleansing various wards, etc., at their Infirmary, High Street, Homerton, N.E., for the Hackney Guardians. Specifications, conditions of contract, and forms of tender can be obtained at the Guardians' offices, Sidney Road, Homerton. The contractor will be required to give approved security in a bond, the form of which may be seen at the Guardians' offices. Tenders must be delivered to Frank R. Coles, Clerk to the Guardians.

July 12. **LONDON, S.W.**—(See "Building.")

July 14. **LONDON, S.E.**—Painting work and repairs at their casual wards, Great Guildford Street, S.E., for the Guardians of Southwark Union, London. Specifications and conditions of contract may be obtained at the offices of Sydney Wood, clerk, Union Offices, Ufford Street, Blackfriars, S.E. Tenders should be addressed to the Guardians and delivered at the Clerk's offices. Fair wages clause.

July 26. **DRINGHOUSES.**—Painting and colour-washing the Dringhouses Council School, for the Bishopthorpe District Education Committee. Specifications may be obtained from F. Parker, West Riding Education Office, Selby.

ROADS AND CARTAGE.

July 4. **GRIMSBY.**—Construction of a high level footpath at the Wintringham Road subway, for the T.C. Plans and quantities may be obtained at the office of H. G. Whyatt, borough engineer and surveyor, 170, Victoria Street, Grimsby. Tenders to be addressed to the Chairman of the Highways Committee, and delivered at the office of the Town Clerk, West St. Mary's Gate.

July 4. **EAST DEREHAM.**—Supply of 350 tons (more or less) of 2½in. broken granite, and 350 tons (more or less) of 1½in. broken granite, to be delivered free at the East Dereham Station of the Great Eastern Railway Company before the end of November, 1910, for the U.D.C. Forms of tender may be obtained on forwarding a stamped addressed foolscap envelope to the surveyor, H. G. Himson, Theatre Street, East Dereham. Tenders to be sent to B. H. Vores, clerk to the Council.

July 4. **WAKEFIELD.**—Re-paving of the roadway over and approaches to Maudland Bridge, situate in Westgate, in the City of Wakefield, for the West Riding Highways Committee. General conditions, specification, bill of quantities, etc., may be obtained at the office of F. G. Carpenter, West Riding Surveyor, County Hall, Wakefield. A deposit of £1 will be required. Cheques, etc., must be forwarded and made payable to "The West Riding Treasurer," at the County Hall, Wakefield. Tenders to be delivered at the office of the above.

July 4. **TEDDINGTON.**—Making-up of part of Udney Park Road:—247 lineal yards of 12in. by 6in. straight Norwegian granite kerb, and laying; 244 lineal yards Tees Scoriæ sett channel, and laying; 1,233 super. yards roadway formation; 440 super. yards tar paving. Plan and specification may be seen, particulars and form of tender obtained, on application to Marshall Hainsworth, Surveyor, Council Offices, Tedington. Tenders must be delivered to G. H. Salmons, Clerk, Council Offices, Teddington.

July 5. **MITCHAM.**—(See "Building.")

July 5. **TYNEMOUTH.**—Laying whinstone chip paving in lanes north of Morpeth Terrace and east of Elsdon Terrace, High Chirton, and in Mill Street, North Shields. Plans and specification may be seen at the office of John F. Smillie, Borough Surveyor, Tynemouth, to whom tenders are to be sent.

July 5. **COWES (I.O.W.).**—Supply and delivery of broken granite and gravel, or other suitable road material, as may be required during a period of one or three years, for the U.D.C. Further particulars may be obtained at the office of John W. Webster, Engineer and Surveyor to the Council. Tenders to be delivered at the office of H. C. Damant, Clerk to the Council, High Street, Cowes.

July 5. **CUDWORTH.**—Supply and delivery of about 150 tons 2½in. granite, about 800 tons 2½in. slag, for the U.D.C. Tenders are also invited for steam rolling and scarifying for about six weeks during the year ending March 31, 1911. Forms of tender can be obtained from W. T. Lynam, Surveyor, Council Offices, Cudworth, upon receipt of a stamped addressed envelope. Tenders to be addressed to the Clerk to the Council, Council Offices, Cudworth.

July 5. **CHINGFORD.**—Making-up, paving, kerbing, lighting, etc., the Bateman Road and Royston Avenue,, for the U.D.C., in accordance with plans and specifications prepared by the surveyor, J. T. Griffin, copies of which and form of tender may be obtained on application, and upon deposit of £2 2s. The contractor will be required to enter into a bond for the performance of contract. Tenders to be delivered to Leonard C. Bowen, clerk, 34, Station Road, Chingford.

July 5. **LONDON, S.W.**—Wood paving and other works at the Pavement, Clapham, Clapham Park Road, and Lower Richmond Road, Putney, for the Wandsworth B.C. Forms of contract, specifications, and drawings may be seen, and forms of tender obtained, at the Borough Engineer's Office, No. 215, Balham High Road, S.W. Tenders must be delivered at the Council House, East Hill, Wandsworth, S.W., and may be placed by the persons tendering in the tender box provided for the purpose. Fair wages clause.

July 5. **RISHTON (Lancs.).**—Labour and part materials in sewering, paving, etc., the following streets or parts thereof, for the U.D.C.:—Back Bridge Street South, back Shuttleworth Street South, back Stourton Street South, back Spring Street West, back Commercial Street West, back Clifton Street North, and back Cliffe Street East. Plans may be seen and specifications and forms of tender obtained on application to the Surveyor at the Council Offices, Brook Street, Rishton. Tenders must be sent to J. J. Adams, clerk.

July 6. **FLEUR-DE LIS.**—Construction of a new road, etc., for the Mynyddislwyn U.D.C. Specification, etc., can be obtained, and plans inspected, upon application to the Engineer, E. Watkin Edwards, Council Offices, Pontllanfraith, upon deposit of £1 1s.

July 6. **WANSTEAD (Essex).**—Annual supply of 3,000 tons (more or less) of Guernsey granite or Quenast stone, broken to 1½in., 1⅝in., and 2in. gauge, delivered at Snaresbrook Station (G.E.R.), by such instalments and in such quantities as may be directed in writing from time to time by the Surveyor, beginning August 1, for the Wanstead U.D.C. Forms of application may be obtained on application to the Surveyor, Council Offices, Wanstead. Tenders to be delivered at the Council Offices.

July 5. **FEATHERSTONE (Yorks.).**—Street works in Albert Street, Post Office Road (part of), Newport Terrace, Wilson Street, and Whiteley Street, within their district, which include kerbing, flagging, channelling, macadamizing, etc., for the U.D.C. The plans may be inspected, and copies of the specification, bill of quantities, form of tender, and general conditions obtained, on application to Samuel Chesney, engineer and surveyor, Council Offices, Featherstone. Applications must be accompanied by a deposit of £1. A fair wages clause will be inserted in the contract. Tenders, together with the priced quantities, must be received by J. A. Haigh, clerk, Council Offices, Featherstone.

July 6. **HOVE.**—Paving and other works in Hove Street (from Church Road to South side of the Connaught Hotel). Further particulars may be obtained and plan and specification seen at the office of the Borough Surveyor (H. H. Scott). Tenders, on forms supplied, must be addressed to H. Endacott, Town Clerk, Town Hall, Hove.

July 6. **LONDON, W.**—Making up of Pleydell Avenue and Vaughan Avenue, for the Chiswick U.D.C. Forms of tender and bills of quantities may be obtained by application to E. Willis, A.M.I.C.E., Surveyor, Town Hall, Chiswick, where the plans, specifications, form of contract and bond, and other documents may be inspected. Tenders to be delivered to Ernest F. Collins, Clerk of the Council.

July 6. **HERNE BAY.**—Paving, etc., of the following streets, for the U.D.C.:—Oxenden Square, Marine Drive East, Section 1; Marine Drive East, Section 2; Marine Drive East, Section 3. Plans, sections, and specifications can be seen, and forms of tender obtained from F. W. J. Palmer, Surveyor to the Council, Town Hall, Herne Bay. Tenders to be addressed to Joseph Jubb, Clerk to the Council, Town Hall, Herne Bay.

July 6. **LONDON, S.W.**—Forming new roads and paths, and laying out grounds at the new infirmary, St. James Road, Wandsworth Common, for the Wandsworth Guardians, in accordance with the drawings and specification prepared by their architect, J. S. Gibson, 5, Old Bond Street, W. The drawings, specification, and conditions of contract may be inspected, and form of tender obtained, at the architect's office, on deposit of a £10 Bank of England note. Tenders to be delivered in the envelope supplied, at the offices of the Guardians, Union Offices, St. John's Hill, Wandsworth, S.W.

July 6. **EASTLEIGH (Hants.).**—Grading, draining, and tar paving the playgrounds at Cranbury Road Girls' and Infants' Council Schools, Plan and conditions of contract may be seen, and specification and other information obtained at the office of W. J. Taylor, County Surveyor, The Castle, Winchester. The plan and conditions of contract can also be seen at the school. A deposit of 10s. 6d. will be required for a copy of the specification and form of tender, which must be made by cheque payable to Hants. County Council, and crossed Bank of England, or particulars will not be sent. Tenders to be delivered to H. Barber, Clerk of the County Council, The Castle, Winchester.

July 6. **EASTLEIGH (Hants.).**—Grading, draining, and tar paving the playgrounds at Winchester Road Council School. Plan and conditions of contract may be seen and specification and other information obtained at the office of W. J. Taylor, County Surveyor, The Castle, Winchester. The plan and conditions of contract can also be seen at the school. A deposit of 10s. 6d. will be required for a copy of the specification and form of tender. Deposits must be made by cheque payable to Hants County Council, and crossed Bank of England, or particulars will not be sent. Tenders are to be delivered to H. Barber, Clerk of the County Council, The Castle, Winchester.

July 11. **CHURCH (Lancs.).**—Supply of 1,200 superficial square yards of 2½in. concrete flags, for the U.D.C. Tenders to be sent to W. E. Wood, surveyor, Church.

July 12. **GRANGETOWN.**—Completion of the channelling, crossings, footpaths, and carriageway in Roberts Street, Grangetown, for the Eston U.D.C. Plans, specification, and bill of quantities may be seen and form of tender and any further particulars obtained on application to C. McDermid, District Surveyor, Council Offices, Whitworth Road, Grangetown, S.O., Yorks. Tenders to be delivered at above offices.

July 12. **WEMBLEY.**—Making-up of Ecclestone Mews and Mostyn Avenue, for the U.D.C. Drawings and specifications may be seen at the office of Cecil R. W. Chapman, surveyor, Public Offices, Wembley. Copies of quantities for both contracts, with forms of tender, may be obtained at the office of Fredk. W. Rodd, clerk, Public Offices, Wembley, upon deposit of £2 2s. Tenders, in the envelope provided, must be delivered at the Clerk's office.

July 13. **TWICKENHAM.**—Forming, levelling, kerbing, paving, channelling, metalling, and making good portions of the footpath on the west side of London Road, between Ivy Bridge and The Limes, for the U.D.C. Plans and specification may be seen, and bills of quantities and forms of tender obtained, on application at the office of Fred W. Pearce, F.S.I., Surveyor to the Council, Town Hall, Twickenham, and the deposit of £1 1s., at the office of H. Jason Saunders, Clerk to the Council, Town Hall, Twickenham, to whom tenders must be sent.

MISCELLANEOUS.

July 4. **BAILDON WOODBOTTOM.**—Asphalting the playgrounds at Baldon Woodbottom Council School for the West Riding County Council Education Department. Specifications can be obtained from Edward H. Steel, Penny Bank Chambers, Shipley, to whom tenders must be sent.

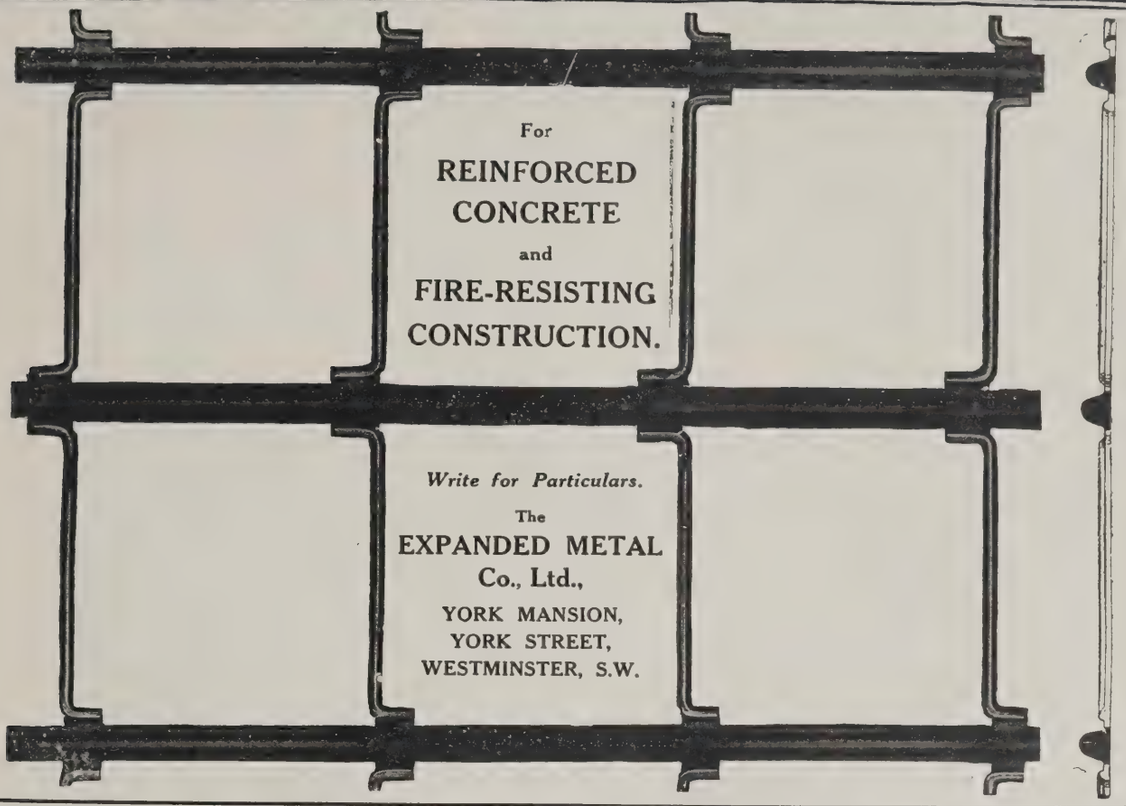
July 5. **LONDON, E.**—Plastering work in the "O. and P." ward at the Sick Asylum, Devons Road, Bromley-by-Bow, London, E., for the Managers. Printed forms of tender, with all particulars, together with copies of specification, may be obtained on application to the engineer and superintendent of labour at the Asylum. Tenders must be delivered to Walter R. Foskett, Clerk to the Board, Clerk's Offices, Devons Road, Bromley-by-Bow, London E.

July 7. **LONDON, W.**—Twenty-four Canadian birchwood ward lockers for their infirmary, Marloes Road, W., for the Kensington Guardians. Forms of tender and all information can be obtained upon application at the office of W. R. Stephens, Clerk, Guardians' Offices, Marloes Road, Kensington, W., to whom tenders must be sent. Fair wages clause.

July 11. **THORNE (Yorks).**—Asphalting playgrounds, repairing school walls and boundary walls at the Thorne Council school, for the Education Committee. Specifications may be obtained on early application to E. L. Harrap, W.R. Education Offices, Goole.

(Contracts continued on page xiv.)

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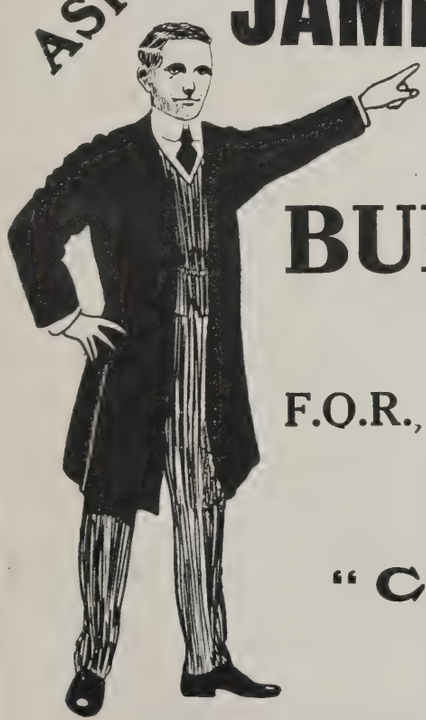


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LATE CONTRACTS.

BUILDING.

July 4. **TRURO.**—Erection and completion of a new farmhouse at Maiden Green Farm, near Truro, occupied by R. Pascoe. Plans and specifications may be seen at the old farmhouse, or at the offices of Morley B. Collins, architect, Clinton Road, Redruth. Tenders to be sent to G. C. Hancock, The Manor Office, St. Agnes.

July 4. **BUCKIE.**—Mason, carpenter, Slater, plumber, plasterer, painter, and glazier works of alterations on property at No. 84, Main Street, Buckie, for John Gunn. Plans and specifications are to be seen, and offers lodged, with Wm. Hendry, architect, Buckie.

July 5. **KEIGHLEY.**—Erection of offices and additions to Park Works, Keighley. Quantities may be obtained from John Haggas and Sons, Architects, North Street, Keighley, to whom tenders must be sent.

July 5. **CHATHAM.**—Erection of a shelter at the Victoria Gardens for the T.C. Plans and specification can be seen on application at the Borough Surveyor's Office, Town Hall, Chatham. Tenders to be delivered at the Borough Surveyor's Office, Town Hall, Chatham.

July 5. **BUNNEY (St. Austell).**—Erection of a dwelling-house at Bunney, near St. Austell, for William Chappell, of Stenalees. Plans and specifications may be inspected either at the residence of the proprietor, or at the office of W. H. Richards, at Biddick's Court, St. Austell, to either of whom tenders should be sent.

July 5. **TRURO.**—Construction of shelters in connection with the contemplated improvement works on Worth's Quay. Conditions, specifications, and drawings of the proposed buildings can be seen at the office of Fredk. S. Barnes, Assoc. M.Inst.C.E., City Engineer and Surveyor, Municipal Buildings, Truro, to whom tenders should be sent.

July 5. **MEXBORO'.**—Excavators', masons', bricklayers', joiners', slaters', and plasterers' work in connection with the erection of a proposed hotel, to be known as the Park Hotel, at Mexboro', for the Barnsley Brewery Co., Ltd. Applications to be made to Harold T. Raper, Architect and Surveyor, Oakwell Brewery, Barnsley, where quantities can be obtained, and plans and specifications may be inspected.

July 5. **ELGIN.**—Mason, carpenter, slater, and plasterer works of:—1, Additions to farm dwelling-house at Bardon, Birnie; 2, alterations on farm dwelling-house at Trochail, Birnie; and for the mason, carpenter, and slater works of:—3, New steading at Moor of Linksfield, Elgin; 4, new cattle court, and re-roofing part of steading at Hangingfolds, Birnie. Plans and specifications may be seen at the Seafield Estates Office, Elgin, and offers will be received by David T. Samson, Factor.

July 6. **OAKENSHAW.**—Erection of new Wesleyan Sunday school at Oakenshaw. Send names to E. Vincent King, A.R.I.B.A., Architect, 24, Westgate, Dewsbury, before July 6.

July 6. **MANCHESTER.**—Erection of a corrugated iron building, at the Stanley Grove Municipal School, Longsight, for the Education Committee, Manchester. Plans and a copy of the specification may be obtained at the Education Offices, Deansgate, Manchester, on a deposit of £1 1s. Cheques to be made payable to the Accountant, Education Offices, Deansgate, Manchester.

July 8. **BODMIN.**—Re-building a footbridge at Temple, for the Bodmin R.D.C. Plan and specification may be seen on applying to R. Hopper, D. C. Temple. Tenders to be forwarded to John Pethybridge, Clerk to the Council, Bodmin.

July 8. **SHAFTON.**—Erection of a new Wesleyan Sunday school at Shafton. Plans and specifications may be inspected and quantities obtained on application to G. Moxon and Son, Architects, Central Chambers, 26, Church Street, Barnsley, to whom tenders must be sent.

July 8. **NEWPORT.**—Supply and erection of one wooden water-cooling tower, natural draught, with a capacity of 200,000 gallons per hour. Specification may be had on application to the Borough Electrical Engineer, H. Collins Bishop, M.I.E.E., Town Hall, Newport, Mon., on receipt by the Treasurer to the Corporation of a deposit of £3. Extra copies of specification will be supplied at the rate of 2s. 6d. each, such sum not being returnable. Tenders to be delivered, addressed to the Town Clerk, in the envelope provided.

July 9. **BURTON PEDWARDINE.**—Alterations and repairs to the Burton Pedwardine Council School. Apply to the County Surveyor, 53, High Street, Grantham.

July 9. **BALA.**—Erection of a church house at Bala. Plans, specifications and full particulars can be seen at the Rectory, Bala, at which address tenders are to be delivered to the Rev. James Davies.

July 12. **WEST SUFFOLK.**—Fittings required at Woolpit Cookery Room, tar-paving the playground at Bildeston Council school, and providing a screen, etc., at Mildenhall infants' Council school, for the West Suffolk Education Committee. Specification and form of tender may be obtained on application to the building inspector, A. Ainsworth Hunt, Shire Hall, Bury St. Edmunds. Tenders, addressed to Fred. R. Hughes, Secretary to the Committee, Shire Hall, Bury St. Edmunds, are to be delivered at the County Education offices.

July 14. **DEWSBURY.**—Erection of Batley Carr Council school (all or any of the work required), for the Education Authority. Plans and specifications may be seen, and a copy of quantities obtained, at the office of the architects, Holtom and Fox, Corporation Street, Dewsbury. Tenders must be delivered to S. G. Bibby, Secretary, Education Department, Town Hall, Dewsbury.

No date. **CHARD (Somerset).**—Erecting front fencing, entrance gates, and boundary walls, also laying asphalt paths at the Baptist Chapel, Perry Street, Chard Junction. Full particulars can be obtained on application to Messrs. Symes and Madge, Architects, Chard.

ENGINEERING.

July 11. **CHORLEY.**—Supply and laying of cast-iron water mains, with valves, hydrants, etc., for the R.D.C. Particulars may be obtained (on deposit of £1) at the office of Alban Jolly, Surveyor to the Council, at 9, High Street, Chorley. Tenders must be sent to R. E. Aspden, Clerk, 14, High Street, Chorley.

SANITARY ENGINEERING.

July 9. **STANWIX (Carlisle).**—Laying 232 yards of 6in. sewer at Edentown, Stanwix, for the Carlisle R.D.C. Plans and specification may be inspected and bills of quantities obtained at the office of Mr. Joseph Graham, Civil Engineer. Tenders to be sent to H. B. Lonsdale, Clerk

PAINTING.

July 4. **WHITEHAVEN.**—Painting and decorating of the Secondary School buildings, for the Governors. Full particulars and specifications can be seen at the school in Catherine Street, Whitehaven, till July 2.

July 4. **LONDON, S.W.**—Painting work and repairs to the South Branch Library, Wandsworth Bridge Road, for the Fulham B.C. Specification and full particulars may be obtained on deposit of £1 1s. from the Borough Engineer and Surveyor, at the Town Hall, Fulham. Contractors will be required to observe the usual trade union conditions as to wages and hours of labour, and to indemnify the Council against all claims with respect to accidents to workmen. Tenders must be addressed to J. Percy Shuter, Town Clerk, Town Hall, Fulham, S.W.

July 9. **LOCKERLEY (Romsey).**—Internal Renovation of Lockerley Endowed C. of E. school buildings, for the Managers. The County Surveyor's specifications may be seen at the school. Tenders must be addressed to the Rev. J. P. May, The Rectory, Lockerley, Romsey.

July 14. **LONDON, S.E.**—External painting and internal decorating (part of) the workhouse at Ladywell Road, Lewisham, S.E., for the Bermondsey Guardians, according to the specification of A. H. Newman, F.R.I.B.A., etc., and quantities by W. T. Farthing and Son, of 46, Strand, W.C. Printed forms of tender, bills of quantities, and specification, containing full particulars and conditions of contract, can be obtained at the office of E. Pitts Fenton, Clerk, No. 283, Tooley Street, S.E., between the hours of ten a.m. and 12 noon daily, from July 4 to July 8, 1910, by depositing a £10 Bank of England note (cheques or cash will not be received). Tenders and other documents above referred to must be sent to the Clerk personally at his office.

No date. **WORSBRO' DALE.**—Painting, etc., at Ebenezer Church, Worsbro' Dale.—For particulars apply, No. 90, High Street, Worsbro' Dale.

No date. **TADCASTER.**—Painting and tarring the outside wood and ironwork of cottage, office, workshops, stabling, zinc roofs on sheds, gates and auction mart, situate at Bridge Foot.—Particulars may be obtained from J. Cundall and Son, Auctioneers, Sherburn, E.R., York.

No date. **LONDON, W.**—Cleaning and repainting wards 49, 50, 51, and 52, at their workhouse, Poland Street, Oxford Street, W., for the Westminster Guardians. Specification of works and form of tender, containing all necessary information, can be obtained from their architect, William Lockwood, 12, Sherwood Sreet, Piccadilly Circus, W.

ROADS AND CARTAGE.

July 9. **METHLEY.**—Asphalting of the playgrounds at Methley, Mickletown Council School, for the Education Committee. Specifications may be obtained from B. Leah, Education Office, Castleford, by whom tenders must be received.

July 11. **ENFIELD.**—Making up the private streets in the district known as Falcon Road (part of), Ponders End; Rotherfield Road, Enfield Wash, for the U.D.C. Plans and specifications can be seen, forms of tender, and all information obtained, on application to Richard Collins, the Council's Surveyor, at the Public Offices, Enfield. Separate tenders for each road (on the forms supplied only), to be sent to T. W. Scott, Clerk to the Council, Public Offices, Enfield. The tenders must be accompanied by a schedule of hours of labour, and of prices and wages to be paid for different classes of work, which schedule will be embodied in the contract. Fair wages clause.

FEDERATION NEWS.

(See also pages 693 and 694.)

Wakefield.

A meeting of the members of Wakefield and District Association was held at the Great Bull Hotel, Wakefield, on June 2nd, Alderman Judge (president) in the chair.

The president and Mr. Fallas reported on the business dealt with at the meeting of the Yorkshire Federation Executive Council, recently held in Huddersfield, which they had attended on behalf of the association, and a discussion took place on workmen's compensation insurance and the suggested increase of the rates of insurance by the various insurance companies, and it was decided that further enquiries should be made as to the proposed new rates, and a special meeting held before July 1st, when many of the present insurances expire.

Certain correspondence with the Yorkshire Federation was read dealing with the objections of the members of the association to the new form of sub-contract which the Federation had issued, and a resolution was passed expressing the opinion that the form of sub-contract was unfavourable to sub-contractors, and asking for certain amendments to be made therein.—J. Beaumont, Secretary.

Wigan and District.

ALTERATION OF WORKING RULES.

Disputes having arisen between the employers and operatives in joiners', plumbers', and painters' branches of the trade, and the two first-named being unable to come to any agreement, the Board of Trade were asked to appoint an arbitrator to settle the questions in dispute. The arbitrator, Mr. A. A. Hudson, of London, after hearing the employers and operatives, has given his award, and the following are the chief alterations to the old rules:—

Carpenters and Joiners.—Hours of work for summer months.—Working hours on Mondays to be 7 a.m. to 5.30 p.m., on other days from 6.30 a.m. to 5.30 p.m., and on Saturday from 6.30 a.m. to 12 noon. Hours of work for winter months.—Winter months start 12th day of November to 2nd day of February (both days inclusive); inside workmen start 8 a.m. to 5 p.m., with one hour for dinner; and men working outside start 8 a.m. to 4.30 p.m., with half an hour for dinner, Saturday, 8 a.m. to 12 noon. Rate of wages.—The rate of wages to be 9d. per hour, overtime to be 10d. per hour for first five hours; all overtime afterwards to be paid at the rate of 1s. per hour; Sundays and Bank Holidays to be paid double time; first week in August to be 10d. per hour.

Plumbers.—Hours of work for summer months.—The working hours for summer months from 1st March to 31st October shall be: Mondays from 7 a.m. to 5.30 p.m., on the four following days from 6.30 a.m. to 5.30 p.m., and on Saturday from 6.30 a.m. to 12 noon. Hours of work for winter months.—The working hours for winter months from 1st to 30th November, and from 1st to end of February, shall be 7.30 a.m. to 5 p.m., Saturday 7.30 to 12 noon; from 1st of December to 31st January shall be 8 a.m. to 5 p.m., Saturdays 8 a.m. to 12 noon. Rate of wages.—The rate of wages to be 9d. per hour, overtime to be paid at the rate of time and a half for the first three hours and double time after that until starting time next morning; Sundays and Bank Holidays to be paid at the rate of double time. Country jobs.—Men sent out on country jobs to have their railway fares and lodging paid by the employer.

Painters.—Wages.—The rate of wages has been increased from 8½d. per hour to 9d. per hour. Hours of labour.—The working hours from 1st March to the 31st October shall be for the first five days from 7.30 to 6 p.m., on Saturdays from 7.30 to 12 noon. During the months of February and November the working hours shall be 7.30 a.m. to 4.30 p.m., on Saturdays 7.30 a.m. to 12 noon. From 1st December to 31st January from 8 a.m. to 4 p.m., Saturdays 8 a.m., to be at the boundary at noon. Breakfast to be had before starting work.

A new rule has been inserted to the effect that all priming must be done by a practical painter or his apprentice.

The new rules have been signed by the employers and operatives, and came into force on the 1st of May.—J. N. Rigby, Secretary.

Hours and Wages.

At Rochdale, in accordance with the rules coming into force after June 30th, the winter working hours for building trade operatives will be 43½ per week. At Preston the wages and hours for labourers are:—Masons' labourers, 49½ in summer, 42½ in winter, at 5½d. per hour; bricklayers' labourers, 49½ in summer, 44 in winter, 6d. per hour; plasterers' labourers, 49½ in summer, 41 in winter, 6d. per hour. These items should be noted in connection with the tabular lists issued to Federation members.

For other Federation news, including reports from the National Federation, the Northern Counties Federation, Barrow-in-Furness, Manchester and District, York, Sheffield, Nottingham, and Sunderland, as well as a special report of the conference at Sheffield with respect to the demarcation between plumbers and heating engineers, see pages 693 and 694.

* * *

One or two Federation reports to hand are held over for want of space.

* * *

A legal case with respect to corporation trading is reported on p. 681, and is commented upon in an editorial note on p. 669.

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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, ARCHITECTS' AND BUILDERS' JOURNAL, *Caxton House, Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Saturday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Aberbeeg (Mon.). — For erection of a Council school for mixed and infants at Ty'r Graig, Aberbeeg, for the Abertillery Education Committee. Speir and Beaven, architects, Borough Chambers, Wharton Street, Cardiff.

S. Shail, Llandaff ...	£14,800 0 0
D. Lewis, Llanhilleth	14,400 0 0
T. F. Howells, Cardiff ...	14,004 10 0
E. Turner and Sons, Cardiff ...	13,924 0 0
D. Davies and Sons, Cardiff	13,878 0 0
J. J. Thomas, Nelson	13,870 12 2
J. Jenkins, Ltd., Newport ...	13,570 0 0
D. W. Davies and Howell,* Cardiff	13,469 0 0

*Accepted.

Abersychan.—For the erection of 18 houses, with boundary and retaining walls, and formation and making of roads at Snatchwood, Abersychan, for the Abersychan, British, and Talywain Industrial Co-operative Society, Ltd., A. Gordon Babbidge, architect, Clarence Chambers, Pontypool.

Morgan and Evans, Pontnewynydd ...	£4,407
W. Branch, Abersychan	4,317
Powell Bros., Pontypool	4,231
E. Sainsbury, Pontypool	4,140
W. and A. Davies,* Abersychan ...	4,104

*Accepted.

Bridport (Dorset).—For erection of a house, West Bay, Bridport, for Captain H. B. Nicholson. Crickmay and Sons, architects, 13, Victoria Street, Westminster and Weymouth, Dorset.

C. H. Green	£3,360 0 0
W. J. Cooper	3,245 0 0
Jenkins and Sons	3,123 0 0
Wort and Way	3,099 10 0
Trask and Sons	3,018 0 0
Wakeham Bros.,* Plymouth ...	2,895 0 0

*Accepted.

Bromley (Kent).—For extensions to premises, 44 to 51, High Street, for F. Medhurst, Ltd. Walter Pamphilon, architect, 21, Finsbury Pavement, E.C.

Graty	£3,819
Hill and Gurr	3,489
Crossley	3,475
Lowe	3,429
Pearce	3,300
Duthoit	3,297
Arnaud	3,130

Carlisle.—For the extension of buildings at the Central Electric Lighting Station in James Street, for the Corporation. Henry C. Marks, M.I.C.E., city engineer and surveyor.

W. Baty	£2,697
J. H. Reed and Sons	2,660
J. Logan	2,655
W. Martin	2,549
J. and R. Bell	2,380
E. Musgrove	2,355
J. Laing and Son*	2,304

Engineer's estimate, £2,300.
*Accepted.

Coventry.—For erection of a public elementary school to accommodate 1,254 children, at Mile Lane, Coventry, for the Corporation. F. Foster, surveyor, Masonic Buildings, Little Park Street, Coventry.

W. and J. Webb, Birmingham	£19,321 0 0
T. Higgs, Northampton ...	18,881 8 0
J. Dallow and Sons, Birmingham	18,564 0 0
Kelley and Son	18,323 1 4
A. A. Wincott	18,316 0 0
G. F. Smith and Sons, Leamington	18,200 0 0
T. Randle	18,000 0 0
J. W. Smith and Co., Birmingham	17,997 0 0
A. J. Lord, Wolston	17,400 0 0
T. Hickman, Market Harboro'	17,309 0 0
T. Adams and Son, Daventry ...	17,304 9 0
E. Harris	17,197 0 0
W. H. Gibbs, King's Heath ...	17,071 0 0
W. Moss and Sons, Ltd., Loughborough	17,000 0 0
Executor of C. Garlick,* Gosford Street	16,850 0 0

Rest of Coventry.
*Accepted.

Croydon.—Recommended for acceptance for erection of two additional isolation pavilions, additions to the administrative block, laundry block, etc., at the Borough Hospital, for the Sanitary Committee.

T. W. Moss, Rayleigh, £9,831 19s. 7d.

(Tenders continued on page xviii.)

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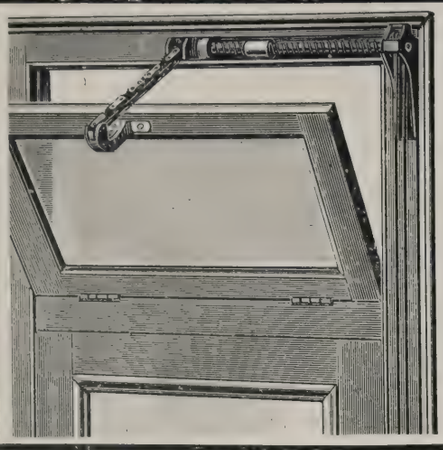
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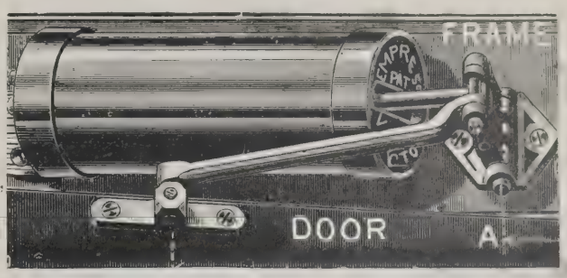


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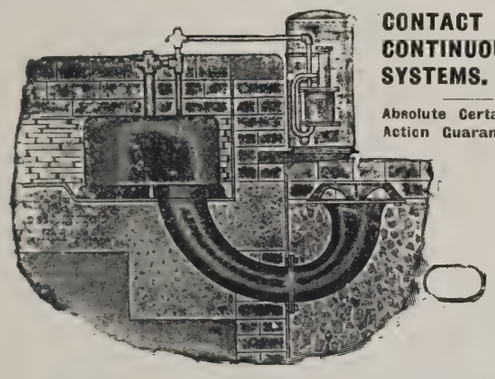
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Builder's Price Book, 1910	4s. 0d.	Mechanics' Companion (Templeton)	5s. 3d.
Building Construction (Allen)	7s. 11d.	Measuring and Valuing (Dobson)	7s. 6d.
Building Inspection (Purchase)	2s. 9d.	Measurement of Boards, Glass, etc.	4s. 0d.
Bungalow Residences (Harrison)	3s. 10d.	Model Engine Construction (Hasluck)	1s. 0d.
Cabinet Making (Hasluck)	1s. 0d.	Motor Car (Brewer)	5s. 4d.
Care of Stationary Engines (Hurst)	1s. 2d.	Motor Car Catechism (Knight)	1s. 8d.
Carpentry and Joinery	3s. 6d.	Packing Case Tables (Richardson)	3s. 6d.
Circular Carpentry (Collings)	2s. 6d.	Petrol Air-gas (O'Connor)	1s. 8d.
Decorator's Assistant	1s. 0d.	Plumbing (Buchan)	3s. 6d.
Electric Light for Country Houses	1s. 0d.	Portland Cement and its Uses	3s. 0d.
Electrical Engineering (Sewell)	5s. 5d.	Practical Plastering (Kemp)	2s. 0d.
Electricity in Factories (Haslam)	7s. 11d.	Practical Masonry (Purchase)	7s. 11d.
Every Man's Own Lawyer, 1910	7s. 1d.	Quantities and Measurements (Beaton)	1s. 6d.
Farm Buildings (Scott)	2s. 0d.	Rating and Assessment (Webb)	7s. 11d.
House Owners' Estimator (Simon)	3s. 6d.	Safe Use of Steam	0s. 6d.
House Painting (Davidson)	5s. 0d.	Sanitation of Country Houses (Gerhard)	8s. 10d.
How to Plan a House (Samson)	3s. 10d.	Slide Rule, How to Use (Hoare)	2s. 6d.
Illuminating (Whithard)	4s. 3d.	Smithy and Forge (Crane)	2s. 6d.
Joints Used in Building (Christy)	3s. 0d.	Steam and Hot-Water Heating (King)	12s. 11d.
Letter Painting (Badenoch)	1s. 6d.	Tables for Mechanics (Smith)	1s. 6d.
		Valuation of Real Property (Webb)	7s. 11d.

(*Tenders continued from page xvi.*)

Coventry.—For rebuilding business premises, Cross Cheaping, Coventry. F. Foster, architect, Masonic Buildings, Coventry.

J. Worwood	£1,550 0 0
Orr Bros.	1,466 [illegible]
W. and J. Webb, Birmingham	1,456 [illegible]
A. A. Wincott	1,420 [illegible]
Executor of C. Garlick ...	1,416 [illegible]
J. W. Smith, Birmingham ...	1,414 [illegible]
Kelley and Son	1,365 18 4
E. Harris	1,357 0 0
Lord, Wolston	1,327 0 0
T. Randle*	1,295 0 0

Rest of Coventry.

*Accepted.

Grange (Lancs.).—Accepted for erection of new premises, for the Bank of Liverpool, Ltd., Grange. John F. Curwen, F.R.I.B.A., F.S.A., architect, 26, Highgate, Kendal.

A. O. Thoms, Lancaster, £1,703.

Hadley Wood (Middlesex).—For erection of church room, Beech Hill Park Estate. Albert Kingwell, architect, Hadley Wood, Middlesex.

Kingerlee and Son	£1,494
Brightman	1,430
H. and E. Lee	1,410
Newby Bros.	1,376
Jones and Sons	1,350
A. J. Staines	1,344
Fairhead and Sons	1,337
E. Newton	1,319
Soule and Son	1,249

London, E.C.—For pulling down and rebuilding factory on the sites of 60 and 61, Red Lion Street, Clerkenwell Road, E.C., for Borgzinner Bros., Ltd. Walter Pamphilon, architect, 21, Finsbury Pavement, E.C.

Trollope and Colls	£8,226
Pitcher	7,868
Holland and Hannen	7,777
Prestige	7,699
Hall and Beddall	7,491
Harris and Wardrop	7,474
Perry Bros.	6,897

Maldon (Essex).—Rebuilding of shops, No. 122, 124, and 126, High Street, Maldon, Essex. J. Russell. Rogers, P.A.S.I., architect, Maldon.

A. Baxter	£1,385
John Rayner	1,285
Geo. Grimwood and Sons	1,098
F. and A. Shirling*	998

*Accepted

Pontefract.—Accepted for the erection of shop, warehouse, and house at Moorthorpe, for the Pontefract Industrial Society, Ltd., Garside and Pennington, architects, Pontefract and Castleford.

Swift Bros., South Elmsall, near Doncaster, brick, stone, and woodwork	£1409 0 0
G. Thompson, 69, Park Lane, Leeds, plumber and painting	144 0 0
G. Spurr, Pontefract, slater ...	60 15 0
T. W. Senior, Pontefract, plasterer	16 0 0

Portsoy.—Accepted for works in connection with erection of a new secondary school, for the Fordyce School Board:—

R. Mitchell, Huntly, mason; Murdoch, Banff, carpenter; Smith, Portgordon, plasterer; Macdonald, Portsoy, painter; Hutcheson and Co., Banff, slaters; H. J. Watson, Banff, plumber; total, £4,892 3s. 6d.

Pulham St. Mary Magdalen (Norfolk).—For alterations and additions to school, for the managers. Lacey and Upcher, architects, 6, Upper King Street, Norwich.

Wade and Son	£1,093 0 0
R. W. Riches	1,005 0 0
Scarles Bros.	997 0 0
Spencer, Santo, and Co.	996 0 0
J. S. Smith	957 0 0
H. Morris	950 0 0
H. C. Tofts	945 4 6
T. Gill and Son	944 0 0
H. A. Hipperson	944 0 0
A. H. Sampson	924 0 0
R. J. Dowe	900 2 10
E. J. Smith, Bunwell*	850 0 0

*Accepted after modification.

Tylorstown (Wales).—For erection of new premises for the Ferndale Industrial Co-operative Society. W. M. Lewis and T. N. Morgan, architects, Pontypridd.

W. Williams	£5,599 0 0
Jenkins and Sons, Porth ...	5,468 0 0
D. Richards, Ynyshir	5,320 9 6
D. Isaac, Ynyshir	5,298 10 0
W. Thomas and Co.	5,230 0 0
Rees and Co., Pontygwaith ...	5,181 12 8
A. Richards, Pentre	5,061 2 6
Davies and Howell	5,056 4 5
D. Davies and Sons	5,018 0 0
E. Turner and Sons	4,898 0 0
E. R. Evans and Bros.	4,871 0 0
J. Jones and Son, Pontypridd ...	4,850 11 8
W. Humphreys, Tylorstown ...	4,800 0 0
A. J. Colbourne, Swindon ...	4,776 3 9
W. H. Evans	4,595 4 6
Niblet and Davies*	4,540 14 2

Rest of Cardiff.

Reading.—Additions to the Workhouse, Reading, for the Board of Guardians. W. Roland Howell, F.R.I.B.A., architect, Reading, and 18, Percy Street, London, W. Contract No. 3 includes the building of block for aged and infirm. No. 4 for building committee room, mortuary, and sundry alterations to old parts of buildings, and No. 5 for heating works in the aged and infirm block.

Name.	Contract No. 3.	Contract No. 4.	Contracts 3 & 4 Combined.	Contract No. 5.
Margett and Son ...	£7,530	£1,895	£9,425	
F. Newberry ...	7,250	1,950	9,100	
Collier and Catley...	7,200	1,866	9,066	
R. Curtis	7,189	1,856	9,000	
G. Lewis and Bros.	7,127	1,833	8,960	
C. Sutton	7,037	1,840	8,870	
Patience and Son		7,788		
McCarthy E. Fitt*	6,972	1,743	8,700	
Godwin & Co. (withdrawn)	6,530	1,689	8,177	
J. Hart and Sons...				£624
W. T. Toogood & Co.				576
J. T. Spencer				500
G. H. Tucker				496
H. C. Goodman ..				475
Callas, Sons & May*				379

All of Reading.

*Recommended for acceptance.

Sandbach.—For additions to the Sandbach School, Sandbach, for the Governors of the Sandbach School Foundation. Alfred Price and Son, Sandbach, architects.

S. Jackson, Ltd., Smallwood ...	£4,132 0 0
L. Brown and Sons, Wilmslow	3,852 10 0
Birchall Bros., Middlewich ...	3,827 0 0
Bennett Bros., Burslem ...	3,800 0 0
J. Stringer,* Sandbach	3,764 0 0

*Accepted.

Torquay.—Recommended for acceptance for erection of municipal building, for the T.C.

R. Wilkins and Sons, Bristol, £28,869.

Truro.—Recommended for acceptance for erection of new schools, for the Cornwall Education Committee.

Hayle, J. Odgers, Redruth, £1,806; Penponds, W. H. Moyle, Chacewater, £1,523; Foxhole, R. Jacob, Bugle, £1,896 10s. 6d.

Wednesbury.—Accepted for erection of new elementary schools, for the Education Committee.

J. Summerhill and J. and G. Jellyman, Ltd., Wednesbury, £15,383.

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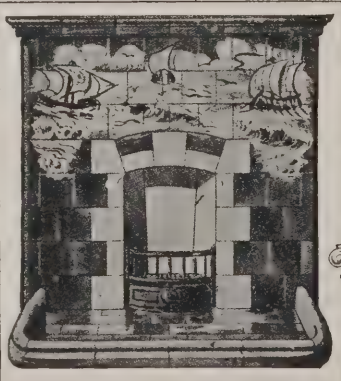
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